

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0121
SPORTSMAN YACHT CLUB INC.
SPORTSMAN YACHT CLUB HARBOR
CONTRA COSTA COUNTY

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

1. Sportsman Yacht Club Inc. (hereafter Discharger) submitted a Report of Waste Discharge (RWD) on 20 June 2002 with additional information submitted on 16 August 2002, 14 February 2003, 1 April 2003, 2 May 2003, and 23 May 2003 for maintenance dredging of the Sportsman Yacht Club Harbor.
2. The maintenance dredging activities regulated in this Order include disposal or discharge of dredged sediments into a Dredge Material Disposal (DMD) site, discharges of effluent from the DMD sites into surface water, dredge sampling, and water quality monitoring during dredging operations. The Discharger owns and operates the marina and the existing DMD.
3. The marina is situated west of the Antioch Bridge on the south shore of the San Joaquin River (Assessor's Parcel No. 051-040-065-8) in Section 16, T2N, R2E, MDB&M, at 3301 Wilbur Avenue, in Contra Costa County. The location of the marina is shown on Attachment A, which is attached hereto and made part of this Order by reference.
4. The Sportsman Yacht Club Marina is an off-channel boat harbor and marina connected to the San Joaquin River by a narrow, shallow, L-shaped channel. The marina has become heavily silted during the past ten years since it was previously dredged. The dredging project is needed to return the harbor to its original depth for boat navigation.
5. The Discharger plans to suction dredge approximately two acres of the bottom of the marina from the shoreline pilings adjacent to the San Joaquin River through the marina. The dredging activities will only be conducted within the marina, and no dredging will occur in the San Joaquin River. The dredging will be conducted until a nominal depth of six feet below mean lower low water is reached in the harbor. The dredging activities will be conducted according to the time schedule set by the California Department of Fish and Game, the United States Fish and Wildlife Service and the National Marine Fisheries Service to prevent harming Winter-run Chinook salmon and Delta smelt. The location of the dredging area is shown on Attachment B, which is attached hereto and made part of this Order by reference.
6. The dredging activities will remove approximately 10,000 cubic yards of sediment from the marina and discharge the spoils to a DMD pond situated on the southern portion of the site. The DMD has been previously used to store dredge materials.

7. Due to the limited time period available for dredge activities, the project may require several years to complete.

DESCRIPTION OF DREDGING OPERATIONS

8. The removal or excavation, transport and placement of dredge sediments are the primary components of the dredging process. Discharges from dredging operations may contain suspended solids, turbidity, oxygen-depleting compounds, and increased metal concentrations, which impact water quality near the dredging site.
9. A hydraulic dredge will be used to remove the sediment from the marina. The Discharger has purchased an eight-inch suction dredge for the project. A ten-foot suction tube will be used to remove the sediment from the marina and the dredge material is then pumped as slurry of 10 to 40 percent solids to the DMD for settling. The pump rate for the suction dredge is approximately 2,000 gallon per minute (gpm).
10. The Discharger is proposing to discharge effluent after settling from the DMD to the Sportsman Yacht Club marina, a water of the United States, at the point latitude 38° 01.43' and longitude 121° 45. 413'.
11. Sediment can be suspended in the water during dredging if entrainment of the dislodged sediments is incomplete.
12. Many chemical constituents are lipophilic and will preferentially sorb or attach to organically enriched or fine particles of sediment. Therefore, sediment contaminants may correlate with measured physical properties such as grain size and total organic carbon. Water column effects from dredging may occur when contaminants on the sediment particles are either dissolved or resuspended in the water column. Dredging operations may cause some degradation temporarily to surface waters as concentrations of turbidity, total suspended solids, and other wastes may increase and dissolved oxygen decrease as bottom sediments are disturbed in the excavation process. In order to determine if the dredging activities have an impact to the surface waters, receiving water monitoring is appropriate.
13. The discharge of dredge water from hopper dredges may increase the suspended sediment load of the surface waters in such a manner as to cause nuisance or adversely affect the beneficial uses and therefore is not permitted by this Order.

WASTE TREATMENT UNIT

14. The DMD is designed to provide settling of the hydraulic dredging slurry. The dimension of the DMD is approximately 262 feet in length, 102 feet in width and 17 deep with an approximately 2-to-1 (horizontal to vertical) side slope. The Discharger calculated the holding capacity of the DMD to be approximately 1,950,000 gallons, which does not include the two feet of required freeboard. Based on the estimated

dredge pump rate, the Discharger calculated that the retention time for the DMD is approximately 16.5 hours.

15. The DMD is designed so that the water may be either retained on site and disposed of through evaporation and percolation or be gravity fed through a floating filter basket. The basket is wrapped in a geotextile filter fabric and may be raised out of the DMD to prevent discharge from occurring. The Discharger has proposed to collect and analyze water samples from the DMD prior to initiating a discharge back to the river. If the test results indicates that discharge will not comply with effluent limitations, then the water may be retain in the DMD for disposal through evaporation and percolation.
16. Surficial soils are described as consisting of light brown colored fine silty sands. Based on the soil type, the hydraulic conductivity is estimated to be approximately 1×10^{-5} feet/second. On 22 April 2003, a soil sample was collected from the bottom of the DMD. The analytical result indicates that soil pH value is 6.81 standard units. Groundwater was identified at a depth of two feet below the bottom of the DMD.
17. Berms can fail, typically, from a lack of maintenance or overtopping due to wave action. This Order requires a minimum pond freeboard be maintained to prevent overtopping.
18. After dredging activities are complete and the dredge material dewatered, the berms of the DMD will be utilized to cover the dredge material. The area will be seeded/revegetated to prevent soil erosion.

CHARACTERISTICS OF DREDGED MATERIALS

19. The Discharger performed pre-dredge analysis on the sediment samples collected from the marina. The sample data includes chemical constituents present in extract extracted from dredged sediments using waste extraction test with the deionized water (DIWET). The DIWET data were used to predict the potential characteristics of leachate from dredge materials that are placed onto a DMD. The DMD is not equipped with a liner and therefore leachate from dredged sediments may migrate through the soil column to the underlying groundwater. Metal contaminants detected in the DIWET leachate at concentrations that have the potential to impact groundwater are cadmium, lead, and nickel. The DIWET extract concentrations are not intended to predict actual leachate concentrations that will occur in the DMD. The actual leachate concentrations for waste may vary depending on dilution, pH, salinity, and the oxidation state of the waste constituent. Soil monitoring in the DMD after the dredge material is dewatered is appropriate.
20. Leachate from the dredged material is expected to migrate downwards towards the underlying groundwater. As the waste migrates through the soil towards the groundwater, a degree of attenuation of constituents is will occur. Some of the processes that control attenuation include absorption, diffusion, dispersion and advection. Therefore, the concentration of a solute as it migrates to the groundwater is

related to the concentration of the solute in the DMD divided by an estimated attenuation factor. The Discharger has estimated that the soil column attenuation factor is approximately 22.

21. If the calculated attenuation factor is used, then the estimated concentrations of dissolved metals are below applicable Water Quality Goals for the protection of the beneficial uses of the underlying groundwater.
22. On 21 August 2002, the Discharger collected a sample from the marina. The sample was tested using the modified elutriates test (MET). MET data were used to predict the potential characteristics of return water discharges. The MET simulates the dredging process by mixing four parts river water and one part sediment. The material is then mechanically mixed and aerated for one hour. Afterwards, the mixture is allowed to settle for approximately 24 hours, or the length of time equivalent to the estimated retention time of the confined disposal facility. After settling, the supernatant is decanted off and then analyzed for various constituents of concern. Metal contaminants identified in the elutriate test in concentrations that have the potential to impact receiving waters are copper, total chromium, and nickel. The actual concentrations in the return water may vary depending on pH, hardness, and the retention time in the confined disposal facility.
23. On 22 April 2003, the Discharger collected a sample from the marina which was tested for total hardness. The analytical results show that the sample contained a total hardness of 90 milligram per liter as Ca CO₃.
24. Reduced, anaerobic conditions found in the sediments favor sulfide generation that generally makes metals biologically unavailable. Dredging operations expose the sediment/materials to oxygenated water and aerobic conditions that oxidize the sulfide complexes to sulfate salts resulting in an increase in acidity. As the acidity increase, the pH lowers which generally makes various metals more soluble, bio-available, and toxic. In order to maintain a neutral pH condition in the dredged materials, soil amendments, such as lime, can be added to the dewatered dredged materials to compensate for the acid generation. In order to determine that the dredge material is sufficiently neutralized, requirements for monitoring the pH value of dredged material is appropriate.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

25. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). These requirements implement the Basin Plan.

26. State Board Resolution No. 68-16 (“Statement of Policy with Respect to Maintaining High Quality Waters in California”) requires that the Regional Board, in regulating the discharge of waste, must maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board’s policies (e.g., quality that exceeds water quality objectives).
27. The discharges authorized by this Order are consistent with State Board Resolution 68-16 and 40 CFR 131.12 (the federal antidegradation policy). This Order establishes requirements that will result in best practicable treatment or control of the discharge to assure that pollution or nuisance will not occur and that the discharges will not unreasonably affect beneficial uses or result in water quality less than prescribed in the Basin Plans.
28. The surface water drainage is to the San Joaquin River in Contra Costa County and is within the designated boundary for the Sacramento-San Joaquin Delta.
29. The beneficial uses of the Sacramento-San Joaquin Delta are municipal and domestic supply; agricultural irrigation and stock watering; industrial process and service supply; water contact recreation; noncontact water recreation; warm fresh water habitat; cold fresh water habitat; warm water migration; cold water migration; warm water spawning; wildlife habitat; and navigation.
30. Designated beneficial uses of ground water are municipal and domestic supply, industrial service and process supplies, and agricultural supply.
31. Section 13267(b) of the California Water Code provides that: *“In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”*

The technical reports required by this Order and the attached “Monitoring and Reporting Program No. R5-2003-0121” are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

32. USEPA adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters (SIP), Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan) which contains guidance on implementation of the *National Toxics Rule* and the *California Toxics Rule*. CTR and NTR standards may be incorporated in waste discharge requirements where appropriate to implement the Basin Plans.
33. The Basin Plan numerical and narrative water quality objectives for surface and groundwater within the basin are achieved primarily through the adoption of waste discharge requirements. Where numerical water quality objectives are listed, these are limits necessary for the reasonable protection of beneficial uses of the water. Where narrative water quality objectives are applicable, the Regional Board must translate the objective following procedures set forth in Chapter IV of the Basin Plan into numerical limitations that implement the narrative objectives.
34. The Basin Plan identifies numerical water quality objectives for waters designated as municipal supply. These are the maximum contaminant levels (MCLs) specified in the following provisions of Title 22, California Code of Regulations: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) of Section 64449. The Basin Plan's incorporation of these provisions by reference is prospective, and includes future changes to the incorporated provisions as the changes take effect. The Basin Plan recognizes that the Regional Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
35. The Basin Plan contains narrative water quality objectives for chemical constituents, taste and odor, and toxicity. The toxicity objective requires that surface waters and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. The narrative tastes and odors objective prohibits concentrations of taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to water supplies, fish or other products of aquatic origin or that cause nuisance or otherwise adversely affect beneficial uses.
36. Section 13241 of the Water Code requires the Regional Board to consider various factors, including economic considerations, when adopting water quality objectives into its Basin Plan. Water Code Section 13263 requires the Regional Board to address the factors in Section 13241 in adopting waste discharge requirements. The State Board, however, has held that a Regional Board need not specifically address the Section 13241 factors when implementing existing numerical or narrative water quality

objectives in waste discharge requirements because the factors were already considered in adopting water quality objectives. These waste discharge requirements implement adopted water quality objectives. Therefore, no additional analysis of Section 13241 factors is required.

37. The discharges authorized by this Order are consistent with State Board Resolution 68-16 and 40 CFR 131.12 (the federal antidegradation policy). This Order establishes requirements that will result in best practicable treatment or control of the discharge to assure that pollution or nuisance will not occur and that the discharges will not unreasonably affect beneficial uses or result in water quality less than prescribed in the Basin Plans. The assimilative capacity of the underlying soil should prevent significant degradation of groundwater from infiltration of incidental waste constituents. The effluent and groundwater limits prescribed herein are intended to ensure that the assimilative capacity will not be exceeded. In addition, the Discharger must conduct effluent and soil monitoring. If the discharge is found to have the potential to cause water quality impacts, then the Discharger may be required to cease the discharge, change the method of disposal, or take other action(s) to prevent significant groundwater or surface water degradation.
38. Section 13260 of the CWC states that each Discharger covered under WDRs shall submit an annual fee. The filing fee accompanying the RWD is the first year's annual fee. The annual fee is based on the threat and complexity of the discharge (California Code of Regulations, Title 23, Division 3, Chapter 9, Section 2200).
39. This Order require a U.S. Army Corps of Engineers Section 10 permit (Rivers & Harbors Act) for dredging operations and may require a Clean Water Act (CWA) Section 404 permit for the discharge of the "effluent" to surface waters.
40. The discharge authorized herein and the treatment and storage facilities associated with the discharge are exempt from the requirements of Title 27, California Code of Regulations, Section 20005 et seq. The exemption, pursuant to Section 20090(b) of Title 27, is based on the following:
 - a. The Regional Board is issuing waste discharge requirements,
 - b. The discharge complies with the Basin Plan, and
 - c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.
41. Pursuant to Section 13263(g) of the CWC, discharge is a privilege, not a right, and adoption of these WDRs does not create a vested right to continue the discharge.
42. This Order does not preempt or supersede the authority of municipalities, flood control agencies, or other local agencies to prohibit, restrict, or control discharges of waste subject to their jurisdiction.

43. Minor maintenance dredge activities are exempt from provisions of California Environmental Quality Act in accordance with Title 14, California Code of Regulations, Section 15304(g).

SITE SPECIFIC CONDITIONS

44. The Delta waterways are CWA 303(d) listed for chlorpyrifos, DDT, diazinon, Group A pesticides and mercury.
45. Agricultural return flows and urban stormwater runoff discharges to the Delta have been found to contain organophosphorous (OP) pesticides. The Delta is 303(d) listed for both chlorpyrifos and diazinon. Hydraulic dredging utilizes river water for slurry transport and therefore, effluent discharges may also contain the listed OP pesticides.
46. The Basin Plan contains a general objective for turbidity, which for this area the discharge shall not exceed 150 NTU. Exceptions to the objective will be considered when a dredging operation causes an increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of the limits can be tolerated will be defined for the operation and prescribed in a discharge permit. Dredging operations can be modified to reduce the amount of turbidity. In addition, silt curtains or other measures may be employed to control any turbidity to within 300 feet from dredging operations. The point of compliance with the turbidity limitation shall be 300 feet downstream of the dredging operation.

However, the dredging operation cannot cause or contribute to acute toxicity in the water body at any point of discharge. Therefore, the point of compliance with the toxicity limitation shall be at the point of discharge (i.e. the dredging operation).

47. The San Joaquin River is subject to tidal influence, seasonal water pumping and agricultural return flows, which have significant impacts on the amount of water available for dilution, water quality and flow direction in the region. Furthermore, flow exchange in the marina may be very limited or stagnant at times. Therefore, no reliable dilution may be available in the receiving stream for a mixing zone.
48. The surrounding lands are zoned for industrial and commercial facilities within 300 feet of the property.

EFFLUENT LIMITATIONS FOR SURFACE WATER DISCHARGES

49. Sediments contain organic material and **Ammonia**. Dredging operations may result in the discharge of ammonia to the receiving stream. Furthermore, retention time in the confined disposal area may be insufficient to allow biological processes sufficient time to convert the ammonia to nitrate. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The RWD indicates that the discharge may contain ammonia concentrations of approximately 6.6 mg/l. U.S. EPA has developed Ambient Water Quality Criteria for ammonia, which is dependent on pH and the presence of

salmonids. Because salmonids may be present in the Delta during dredging operations, an effluent limitation, based on the Ambient Water Quality Criteria for ammonia with salmonids present, has been included in this Order.

50. The Basin Plan contains a chemical constituent objective for **Barium** of 100 µg/l in the Sacramento-San Joaquin Delta. The Delta waterways have been found to periodically contain barium concentrations that exceed the chemical constituent objective. Dredging operations utilize surface water for sediment transport and therefore, the discharge may contain concentrations of barium that also exceed the chemical constituent objective. The discharge has a reasonable potential to cause violation of the Basin Plan chemical constituent objective for dissolved barium. Therefore, a barium effluent limitation, based on the Basin Plan chemical constituents objective, has been included in this Order.
51. The CTR contains criteria for protection of freshwater aquatic life that vary with hardness. Based on information submitted with the RWD, the discharge may contain concentrations of copper as high as 38 µg/l and a hardness of 90 mg/l as Ca CO₃. The respective CTR 4-day continuous criterion for copper is 8.5 µg/l. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR Standard for **Copper**. Therefore, an effluent limit for copper, based on the CTR and presented in total concentration, has been included in this Order.
52. Based on information contained in the RWD, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR Standard for **Nickel**. Nickel is a heavy metal and was detected in the elutriate samples as high as 54 µg/l. Nickel toxicity is hardness dependent. The CTR limit for nickel is 48 µg/l for the 4-day chronic limit at 90 mg/l hardness. An effluent limit for nickel, based on the CTR and presented in total concentration, has been included in this Order.
53. The Basin Plan prohibits the discharge of toxic constituents in toxic concentrations. The Department of Health Service has adopted a primary maximum contaminate level for **Total Chromium** of 50 µg/l in drinking water. The San Joaquin River is designated for use as both domestic and municipal supply. Based on information contained in the RWD, the discharge may contain concentrations of total chromium as high as 60 µg/l. The discharge has a reasonable potential to cause violation of the Basin Plan for toxicity. Therefore, a total chromium effluent limitation, based on the Basin Plan toxicity objective, has been included in this Order.

Pesticides

54. The Basin Plan prohibits the discharge of toxic constituents in toxic concentrations. **Chlorpyrifos** can be toxic to aquatic organisms. Delta waters are CWA 303(d) listed for chlorpyrifos. The Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for chlorpyrifos is 0.014 µg/l for the 4-day average. Dredging operations utilize surface water for sediment transport, and therefore the discharge may contain concentrations of chlorpyrifos that also exceed the narrative objective. A chlorpyrifos

effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this Order.

55. The Basin Plan prohibits the discharge of toxic constituents in toxic concentrations. **Diazinon** can be toxic to aquatic organisms. Delta waters are CWA 303(d) listed for diazinon. The Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for diazinon is 0.05 µg/l for the 4-day average. Dredging operations utilize surface water for sediment transport and therefore the discharge may contain concentrations of diazinon that also exceed the narrative objective. A diazinon effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this Order.
56. The Basin Plan contains a pesticide objective for OC pesticides. The Basin Plan states, *“Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer.”* This Order contains an effluent limitation prohibiting the discharge of OC pesticides at concentrations detectable within the accuracy of analytical methods.

PUBLIC NOTICE

57. All the above and the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.
58. Interested agencies and persons were notified of the intent to prescribe Order for this discharge and provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
59. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that pursuant to Sections 13263 and 13267 of the California Water Code, Sportsman Yacht Club Inc., its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions:

1. The discharge from dredging operations, including material disturbed by the suction head during dredging, shall not cause or contribute to acute toxicity in the receiving waters.

2. Except as described in Finding No. 10, the discharge of waste from a DMD facility to surface waters and surface water drainage courses is prohibited.
3. Except for activities permitted by the U.S Army Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the CWA, soil, silt, or other organic material shall not be placed where such material could pass into surface water or surface water drainage courses.
4. Maintenance dredging shall be confined to the area of operation described in the Finding No. 5 and as shown on Attachment B.
5. Dredging activities shall not cause the floor of the harbor to exceed a maximum depth of six feet below Mean Lower Low water.
6. The discharge of dredged sediments shall be confined to the DMD.
7. Bypass or overflow of untreated or partially treated waste from the confined disposal facility is prohibited.
8. The discharge of dredge return water from hopper dredges to surface waters is prohibited.
9. Discharge of waste classified either as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated,' as defined in Section 13173 of the California Water Code, is prohibited.
10. The discharge of petroleum products to surface waters is prohibited.
11. Activities shall not cause visible oil, grease, or foam in the work area or downstream.
12. Activities shall not cause turbidity to exceed 150 NTU as measured in surface waters 300 feet down-current from the project.
13. The discharge of domestic wastewater is prohibited.

B. Discharge Specifications:

1. The maximum daily return flow discharge rate shall not exceed 1.95 MGD.
2. The total amount of dredged material shall not exceed 10,000 cubic yards.
3. Neither the treatment nor the discharge shall cause a nuisance or condition of pollution as defined by the California Water Code, Section 13050.

4. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitation.
5. Objectionable odors originating at the DMD shall not be perceivable beyond the limits of the property owned by the Discharger.
6. As a means of discerning compliance with Discharge Specification No. 5, the dissolved oxygen content in the upper zone (1 foot) of all wastewater in the DMD pond shall not be less than 1.0 mg/l.
7. The Discharger shall maintain two feet of freeboard in the DMD at all times.
8. The Discharger shall operate all systems and equipment to maximize treatment of return water and optimize the quality of the discharge.

C. Groundwater Limitation:

The discharge, in combination with other site-derived sources, shall not cause underlying groundwater to contain waste constituents statistically greater than background water quality.

D. Effluent Limitations:

The point of compliance for effluent limitations is the location where the effluent discharge from the confined disposal facility occurs and upstream to entering the receiving water.

1. Effluent discharged to surface waters shall not exceed the following limits:

<u>Constituent</u>	<u>Units</u>	<u>Maximum Concentration</u> ¹
Barium	µg/L	100
Total Chromium	µg/L	50
Copper	µg/L	8.5 ²
Nickel	µg/L	48 ²
Chlorpyrifos	µg/L	0.014
Diazinon	µg/L	0.05
Oil and Grease	mg/L	5

¹ Concentrations shall be determined using methods specified in the Monitoring and Reporting Program. Metal concentrations are dissolved except chromium and nickel which are total recoverable.

² Maximum concentrations depend on hardness of receiving water. The number shown is based on a receiving water hardness of 90 mg/l CaCO₃, but will be recalculated based on the CTR and on receiving water hardness determined during predredge analysis, or reasonable worst-case value. The discharge shall not exceed the Hardness-Dependent Effluent Limits for Copper and Nickel shown respectively on Attachment D and E.

2. The discharge shall not exceed the pH-Dependent Effluent Limits for Ammonia shown on Attachment C.
3. The discharge shall not have a pH less than 6.5 nor greater than 8.5.
4. The effluent shall not contain any constituent at concentrations that could cause acutely toxic conditions to aquatic life nor adversely impact biologically sensitive or critical habitats.
5. Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the discharge at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer.
6. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay - - - - - 70%

Median for any three or more consecutive bioassays - - - - 90%

E. Dredge Material Limitations

After dewatering, the discharge shall not have an acid generation potential. For the purpose of determining compliance dredged material shall not have a pH less than 6.0 nor greater than 8.0.

F. Receiving Water Limitations

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

The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/l.
2. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.
3. Esthetically undesirable discoloration.
4. Fungi, slimes, or other objectionable growths.
5. The ambient pH to fall below 6.5, exceed 8.5, or the 30-day average to change by more than 0.5 units.
6. The ambient temperature to increase more than 5°F.

7. Deposition of material that causes nuisance or adversely affects beneficial uses.
8. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
9. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
10. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
11. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Board pursuant to the CWA and regulations adopted thereunder.
12. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
13. The fecal coliform concentration in any 30-day period to exceed a geometric mean of 200 MPN/100 ml or cause more than 10 percent of total samples to exceed 400 MPN/100 ml.

G. Provisions

All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared by registered professionals as described by Provision G. 5:

1. Pursuant to Section 13267 of the California Water Code, the Discharger may be required to submit other technical reports as directed by the Executive Officer.
2. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2003-0121, which is part of this Order, and any revision thereto as ordered by the Executive Officer.
3. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for, that describe the conduct of

investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal.

4. Within **60 days** of receiving sample data that shows that the dewatered dredge material has a pH value less than 6.0 standard unit, the Discharger must submit a Dredge Material pH Management Workplan. The workplan shall describe the improvements and/or corrective action(s) taken to stabilize and maintain the dredge material's pH value between 6.0 and 8.0 standard units.
5. Within **60 days** of staff approval of the Dredge Material pH Management Workplan, the Discharger shall submit a report that certifying that all the improvements and corrective actions specified in the workplan have been implemented. The report shall also evaluate the effectiveness of the workplan on controlling the dredge material pH condition.
6. The Discharger shall take all reasonable steps to prevent any discharge in violation of this Order. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of the Order.
7. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
8. The Discharger shall immediately notify the Regional Board by telephone whenever a violation or an adverse condition occurs as a result of the dredging and disposal operation or the discharge of effluent. Written confirmation shall follow within two (2) weeks. An "adverse condition" is defined as any action or incident that may result in a risk to public health and safety, condition of nuisance, violation of water quality standards or violation of other conditions of this Order.
9. The Discharger shall not alternate any material or change the character, location, or volume of the discharge as described in the RWD.
10. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action, or imposing civil monetary liability, or in revision or rescission of the Order. The Regional Board considers the Discharger to have continuing responsibility for correcting any problems which may arise in

the future as a result of the dredging activities and of the subsequent use of the dredge material disposal sites.

11. This Order does not relieve the Discharger from the responsibility to obtain other necessary local, State, and Federal permits to construct facilities necessary for compliance with this Order, nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.

12. A copy of this Order shall be kept as a reference for dredging operation personnel. Key operating personnel shall be familiar with their contents.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region on 11 July 2003.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0121

FOR
SPORTSMAN YACHT CLUB INC.
SPORTSMAN YACHT CLUB HARBOR
CONTRA COSTA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring dredging operations, Dredge Material Disposal facility, dredged materials, effluent and the receiving waters. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples should be representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to test pH, turbidity and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

DREDGE OPERATION MONITORING

Sampling shall be conducted any time dredging operations are performed, including site preparation and debris removal. Grab samples shall be taken at approximately 2/3 of the distance to the bottom. Water samples shall be taken from the following stations:

<u>Station</u>	<u>Description</u>
R-1	In an area undisturbed by the dredging operation, and not to exceed 300 feet up current from the dredge operation.
R-2	within 300 feet down current of the dredge suction head or clamshell.

Other monitoring points may be required at the dredge site if the predredge analysis shows contaminants of concern that have the potential to cause toxicity at the dredge site. Samples shall be collected and analyzed from Stations R-1 and R-2 as follows:

DREDGE OPERATION MONITORING TABLE

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Dissolved Oxygen ^{1, 2}	mg/l	Grab	Daily
pH ^{1, 2}	Standard units	Grab	Daily
Temperature	°F or °C	Measurement	Daily
Turbidity ^{1, 2}	NTU	Meter	Daily

1. Samples shall be collected at four-hour intervals after dredging operations have commenced and shall continue until all in-river construction work has ceased for the day.
2. If monitoring shows a violation of the Receiving Water Limitations, then the Discharger shall immediately collect a grab sample and analysis for acute bioassay. Acute Bioassays shall be conducted in accordance with EPA/600/4-90/027, or later amendment, with Board staff approval, using juvenile fathead minnow, *Pimephales promelas*, as the test species. Temperature and pH shall be recorded at the time of bioassay collection. Sampling for R-2 shall be performed down current and in the center of any visible turbidity plume from the dredging operations.

DREDGE MATERIAL DISPOSAL FACILITY MONITORING

Monitoring shall commence immediately after dredging materials are discharged into the Dredge Material Disposal (DMD) facility. Monitoring shall continue until the DMD is completely empty of water. The confined disposal facility shall be sampled for the parameters specified below:

DMD MONITORING TABLE

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Freeboard	0.1 feet	Measurement	Daily ¹
Odors	--	Observation	Daily ¹
Dissolved Oxygen ^{2,3}	mg/l	Grab	Weekly
pH	Standard units	Grab	Weekly
Levee condition ⁴	--	Observation	Weekly

- 1 Inspections for freeboard measurements and odors shall be performed daily during the normal business week (i.e. Monday through Friday).
- 2 Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours. Monitoring for dissolved oxygen may cease any time that freeboard measurements indicate that level of water in the confined disposal facility is less than 0.5 feet.
- 3 If odors are detected during the daily site inspection, then the Discharger shall conduct daily monitoring for dissolved oxygen until the odors are abated.
- 4 Containment levees shall be observed for signs of seepage or surfacing water along the exterior toe of the levees. If surfacing water is found, then a sample shall be collected and tested for pH and total dissolved solids.

After dewatering, the Discharger shall conduct sediment monitoring. The pH of the sediment in the DMD shall be monitored on a monthly basis after the initial placement for at least 12 consecutive months. At least two soil samples shall be collected from the DMD and tested for pH. This information shall be submitted in the monthly reports. If the pH monitoring data shows that the soil

pH is less than 6.0 standard units, then the Discharger shall continue to conduct the soil pH monitoring for an additional two years from the time the acidic condition was determined.

EFFLUENT MONITORING

Effluent samples shall be collected when effluent is discharged to the receiving waters and shall be representative of the volume and nature of the discharge. If no effluent is discharged, then monitoring, with the exception of flow, monitoring does not have to be performed. Effluent monitoring shall include the following:

EFFLUENT MONITORING TABLE

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency*</u>
Flow	mgd	Meter/Gauge	Daily
Turbidity	NTU	Meter	Daily
pH ^{1,2}	Standard units	Grab ¹	Daily
Temperature	°F or °C	Grab ¹	Daily
Electrical Conductivity (EC) at 25 °C	µmhos/cm	Grab ¹	Daily
Ammonia ²	mg/l	Grab ¹	Weekly
BOD ³	mg/l	Grab ¹	Weekly
Total Suspended Solids (TSS)	mg/l	Grab ¹	Daily
Settleable Solids (SS)	ml/l	Grab ¹	Daily
Oil and Grease	mg/l	Grab ¹	Monthly
Total Dissolved Solids (TDS)	mg/l	Grab ¹	Monthly
Acute Bioassay ⁴	% Survival	Grab ¹	Monthly
Hardness	mg/l	Grab ¹	Monthly
Aluminum ^{5,6}	µg/l	Grab ¹	Monthly
Arsenic	µg/l	Grab ¹	Monthly
Barium	µg/l	Grab ¹	Monthly
Boron	µg/l	Grab ¹	Monthly
Total Chromium ^{5,6}	µg/l	Grab ¹	Monthly
Copper	µg/l	Grab ¹	Monthly
Lead ^{5,6}	µg/l	Grab ¹	Monthly
Mercury	µg/l	Grab ¹	Monthly
Nickel ^{5,6}	µg/l	Grab ¹	Monthly
Zinc	µg/l	Grab ¹	Monthly
Chlorinated hydrocarbon pesticides ⁷	µg/l	Grab ¹	One time per project
Organophosphorous pesticides ⁷	µg/l	Grab ¹	One time per project

1 Grab samples shall not be collected at the same time each day.

2 pH and temperature data shall be collected on the same date and at the same time as the ammonia sample.

3 5-day, 20 °C biochemical oxygen demand (BOD)

- 4 Acute Bioassays shall be conducted in accordance with EPA/600/4-90/027, or later amendment, with Board staff approval, using juvenile fathead minnow, *Pimephales promelas*, as the test species. Temperature and pH shall be recorded at the time of bioassay collection.
- 5 Hardness, pH, and temperature data shall be collected at the same time and on the same date.
- 6 If any single sample exceeds the Effluent Limit, the Discharger shall conduct additional sampling for four consecutive days.
- 7 The Discharger has only to collect one sample per project provided the analytical results show that the concentration of pesticides in the sample is less than the method detection level. If the analytical results indicate that pesticides are present in the wastewater, then the Discharger shall continue to collect pesticide samples on a monthly basis.

RECEIVING WATER MONITORING

The Discharger shall conduct receiving water monitoring when discharging effluent to surface waters. If no effluent is discharged, then receiving water monitor does not need to be performed. All receiving water samples shall be grab samples. Receiving water monitoring stations are located as follows:

<u>Station</u>	<u>Description</u>
R-1	200 feet upstream from the point of discharge
R-2	200 feet downstream from the point of discharge

All receiving water monitoring results, log notations, and notes shall be reported monthly. Date and time of sample collection shall be recorded and reported. Receiving water monitoring shall include at least the following:

RECEIVING WATER MONITORING TABLE

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Dissolved Oxygen	mg/l	Grab	Daily ¹
Temperature	°F or °C	Measurement	Daily ¹
pH	Standard units	Grab	Daily ¹
Turbidity	NTU	Meter	Daily ¹
Electrical Conductivity (EC) at 25 °C	µmhos/cm	Grab	Daily ¹

1. Daily inspections shall be performed anytime that effluent is discharged to surface waters.

Furthermore, in conducting the receiving water sampling, a separate log shall be kept of the receiving water conditions. Notes on receiving water conditions shall be summarized in the monitoring report. Attention shall be given to the presence or absence of:

- | | |
|--|--|
| <ol style="list-style-type: none"> a. Floating or suspended matter b. Discoloration c. Bottom deposits d. Aquatic life | <ol style="list-style-type: none"> e. Visible films, sheens, or coatings f. Fungi, slimes, or objectionable growths g. Potential nuisance conditions h. Flow Direction |
|--|--|

i. Upstream Conditions

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, equalization basin, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Board.

A. Monthly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Results of dredging operations, effluent, DMD, receiving water and soil monitoring;
2. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
3. Copies of laboratory analytical report(s); and
4. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.
5. If soil monitoring indicates that the soil in the DMD is acidic, then the report shall include a discussion of the corrective action steps taken to neutralize and stabilize the acidic soil condition.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by:

THOMAS PINKOS, Executive Officer

MONITORING AND REPORTING PROGRAM NO. R5-2003-0121
SPORTSMAN YACHT CLUB INC.
SPORTSMAN YACHT CLUB HARBOR
CONTRA COSTA COUNTY

6

11 July 2003

(Date)

INFORMATION SHEET

ORDER NO. R5-2003-0121
WASTE DISCHARGE REQUIREMENTS
SPORTSMAN YACHT CLUB INC.
SPORTSMAN YACHT CLUB HARBOR
CONTRA COSTA COUNTY

Background

The Sportsman Yacht Club Marina is a two acre harbor situated just west of the Antioch Bridge (State Highway 160) on the south shore of the San Joaquin River at 3301 Wilbur Avenue in Contra Costa County.

The Sportsman Yacht Club Marina is an off-channel boat harbor and marina connected to the San Joaquin River by a narrow, shallow, L-shaped channel. The marina has become heavily silted during the passed ten years since it was previously dredged. The dredging project is needed to return the harbor to its original depth for boat navigation. The dredging activities will only be conducted within the marina and no dredging will occur in the San Joaquin River.

The dredging will be conducted until a nominal depth of six feet below mean lower low water is reached in the harbor. The dredging activities will remove approximately 10,000 cubic yards of sediment from the marina and discharge the spoils to a Dredge Material Disposal (DMD) pond situated on the southern portion of the site. After settling, the Discharger plans to drain the DMD and discharge the effluent to the marina.

CEQA Compliance

Minor maintenance dredge activities are exempt from provisions of California Environmental Quality Act in accordance with Title 14, California Code of Regulations, Section 15304(g).

Order Limitations

Limitations proposed in this Order are intended to protect beneficial uses of inland surface waters, and other water resources and are based on limitations specified in the Basin Plan.

Discharge Prohibition A.1

Discharge Prohibition A.1 prohibits the discharges from causing or contributing to acute toxicity in the receiving waters. The Basin Plan requires that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal or aquatic life. Water column effects occur when contaminants on the sediment particles are either dissolved or suspended in the water column. During the dredging operation, waste may be discharged from either the bucket or hydraulic cutter head. This discharge prohibition is based on the Basin Plan narrative toxicity objective. The Basin Plan states that “*all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.*” The Basin Plan requires that “*as a minimum, compliance with this objective...shall be evaluated with a 96-hour bioassay.*” This Order requires acute toxicity monitoring for effluent return flows to evaluate compliance with this water quality objective. In addition, supplemental bioassay monitoring is required if the dredge operation

monitoring for pH, dissolved oxygen and turbidity indicates that the dredge operation has exceeded specified limitations for any of the listed monitoring parameters. The point of compliance for Discharge Prohibition A.1 shall be at the point of discharge (i.e. dredging operation).

Discharge Prohibition A.12

The Basin Plan contains an objective for turbidity. Dredging operations have the potential to increase turbidity as material is suspended in the water column. The Basin Plan states, “*For Delta waters, the general objective for turbidity apply subject to the following: except for periods of storm runoff... in waters of the Central Delta and 150 NTU in other Delta waters. Exceptions to the Delta specific objective will be considered when dredging operations can cause an increase in turbidity. In this case, an allowable zone of dilution within which turbidity in excess of the limits can be tolerated will be defined for the operation and prescribed in a discharge permit.*” In order to allow a zone of dilution, the point of compliance with the turbidity limitation shall be 300 feet downstream of the dredging operation. This discharge prohibition is based on the Basin Plan turbidity objective.

Discharge Prohibition A.13

Discharge Prohibition A.13 prohibits discharge of domestic wastewater. This is necessary to prevent public contact with wastewater containing potentially pathogenic organisms.

Discharge Specifications B.1

After settling, the Discharger plans to drain the DMD and discharge the effluent to the marina. The effluent flow rate is based on pond capacity and the ability to drain the pond to the marina within a 24-hour period.

Groundwater Limitation C.1

State Water Resources Control Regional Board Resolution No. 68-16 requires the Regional Board to maintain high quality waters of the state in regulating discharges until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board’s policies.

Maintenance dredging operations regulated under this Order provide treatment and control of the discharge that incorporates:

1. Pre-dredge testing and site-specific studies to provide assurance that dredged sediments will not contain hazardous waste;
2. pH neutralization of potential acid generating sediments; and
3. Inspection and monitoring to ensure that wastes are properly handled and comply with discharge limitations.

Because of these measures, there is essentially no potential for groundwater degradation. Therefore, this Order does not permit groundwater degradation. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16. If there is evidence that degradation is occurring at

any regulated facility, the Executive Officer may revoke coverage for that facility. Additionally, the Regional Board may reopen this Order at any time to reconsider groundwater limitations and other requirements to comply with Resolution No. 68-16 as appropriate.

Effluent Limitations D.1

Sediments contain organic material and **Ammonia**. Dredging operations may result in the discharge of ammonia to the receiving stream. Furthermore, retention time in the confined disposal area may be insufficient to allow biological processes sufficient time to convert the ammonia to nitrate. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The RWD indicates that the discharge may contain ammonia concentrations of approximately 6.6 mg/l. U.S. EPA has developed Ambient Water Quality Criteria for ammonia, which is dependent on pH and the presence of salmonids. Because salmonids may be present in the Delta during dredging operations, an effluent limitation, based on the Ambient Water Quality Criteria for ammonia with salmonids present, has been included in this Order.

The Basin Plan contains a chemical constituent objective for **Barium** of 100 µg/l in the Sacramento-San Joaquin Delta. The Delta waterways have been found to periodically contain barium concentrations that exceed the chemical constituent objective. Dredging operations utilize surface water for sediment transport and therefore the discharge may contain concentrations of barium that also exceed the chemical constituent objective. The discharge has a reasonable potential to cause violation of the Basin Plan chemical constituent objective for dissolved barium. Therefore, a barium effluent limitation, based on the Basin Plan chemical constituents objective has been included in this Order.

The Basin Plan prohibits the discharge of toxic constituents in toxic concentrations. The Department of Health Service has adopted a primary maximum contaminant level for **Total Chromium** of 50 µg/l in drinking water. The San Joaquin River is designated for use as both domestic and municipal supply. Based on information contained in the RWD, the discharge may contain concentrations of total chromium as high as 60 µg/l. The discharge has a reasonable potential to cause violation of the Basin Plan for toxicity. Therefore, a total chromium effluent limitation, based on the Basin Plan toxicity objective, has been included in this Order.

The CTR contains criteria for protection of freshwater aquatic life that vary with hardness. Based on information submitted with the RWD, the discharge may contain concentrations of copper as high as 38 µg/l and a hardness of 90 mg/l as Ca CO₃. The respective CTR 4-day continuous criterion for copper is 8.5 µg/l. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR Standard for **Copper**. Therefore, an effluent limit for copper, based on the CTR and presented in total concentration, has been included in this Order.

Based on information contained in the RWD, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR Standard for **Nickel**. Nickel is a heavy metal and was detected in the elutriate samples as high as 54 µg/l. Nickel toxicity is hardness dependent. The CTR limit for nickel is 48 µg/l for the 4-day chronic limit at 90 mg/l hardness. An effluent limit for nickel, based on the CTR and presented in total concentration, has been included in this Order.

The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "...pH shall not be depressed below 6.5 nor raised above 8.5." Dredging operations have the reasonable potential to affect pH as previously anaerobic sediments are oxidized in the excavation process. The Delta waters are subject to tidal influence and seasonal water pumping that may affect flow direction. Furthermore, the flow rates in backwater sloughs and marinas may be stagnant at times. Therefore, no reliable dilution is available in the receiving stream, so this Order includes effluent limitations for pH at the Basin Plan objective values.

The Basin Plan prohibits toxic constituents to be present in surface waters in toxic concentrations. **Chlorpyrifos** can be toxic to aquatic organisms. Delta waters are CWA 303(d) listed for chlorpyrifos. The California Department of Fish and Game has published Water Quality Criterion for the Protection of Freshwater Aquatic Life for chlorpyrifos of 0.014 µg/l for the 4-day average. Dredging operations utilize surface water for sediment transport, and therefore the discharge may contain concentrations of chlorpyrifos that also exceed the narrative toxicity objective. A chlorpyrifos effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this Order.

The Basin Plan prohibits toxic constituents to be present in surface waters in toxic concentrations. **Diazinon** can be toxic to aquatic organisms. Delta waters are CWA 303(d) listed for diazinon. The California Department of Fish and Game has published a Water Quality Criterion for the Protection of Freshwater Aquatic Life for diazinon of 0.05 µg/l for the 4-day average. Dredging operations utilize surface water for sediment transport and therefore the discharge may contain concentrations of diazinon that also exceed the narrative toxicity objective. A diazinon effluent limitation, based on the Basin Plan narrative toxicity objective, has been included in this Order.

The Basin Plan contains a pesticide objective for OC pesticides. The Basin Plan states, "*Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by either the EPA or the Executive Officer.*" This Order contains an effluent limitation prohibiting the discharge of OC pesticides at concentrations detectable within the accuracy of analytical methods.

Dredge Material Reuse Limitations E.1

Dredging operations expose the sediment/materials to oxygenated water and aerobic conditions that oxidize the sulfide complexes to sulfate salts resulting in an increase in acidity. As the acidity increases, the pH lowers which generally makes various metals more soluble, bio-available, and toxic. In order to ensure dredged material does not have significant acid generating potential, the dredged material must have maintain a pH value of 6.0 to 8.0 standard units.

Receiving Water Limitation F.1

The Basin Plan contains an objective for dissolved oxygen in the Delta. The Basin Plan states "*Within the legal boundaries of the Delta, the dissolved oxygen concentration shall not be reduced below: Concentrations of dissolved oxygen to fall below 7.0 mg/l in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge...*" Dredging operations have the potential to cause oxygen depletion in surface waters. Buried sediments are typically anoxic environments. As these sediments are resuspended in the water column, they consume oxygen as both chemical and

biological processes oxidize the sediments. This receiving water limitation, based on the Basin Plan dissolved oxygen objective, has been included in this Order.

Receiving Water Limitation F.2

The Basin Plan contains objectives for floating material and oil/grease. Motorboats have the potential to discharge oil/grease waste that can accumulate in the sediments. Concentrations of oil/grease have typically been found in sediment samples from marinas areas, which may be attributed to boating activities. These receiving water limitations, based on the Basin Plan oil/grease and floating material objectives, have been included in this Order.

Receiving Water Limitation F.5

For all surface water bodies in the Sacramento River and San Joaquin River basins, the Basin Plan includes water quality objectives stating that “*The pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*” The Sacramento-San Joaquin Delta has the beneficial uses of both COLD and WARM (warm freshwater habitat); therefore, this Order includes receiving water limitations for both pH range and pH change. Reduced, anaerobic conditions found in the sediments favor sulfide generation that generally makes metals biologically unavailable. Dredging operations expose the sediment/materials to oxygenated water that oxidize the sulfide complexes to sulfate salts resulting in an increase in acidity.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in the Order.

Monitoring and Reporting Program

Section 13267 of the CWC authorizes the Regional Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment of civil administrative liability where appropriate.

The Monitoring and Reporting Program (MRP) requires monitoring for the dredging operation, DMD, and the dewatered sediment. The MRP also requires effluent and receiving water monitoring to verify compliance with the conditions of this Order and protection of water quality. In addition, soil monitoring is required to assure that the dredged material is not acid generating by testing soil pH in the DMD facility.