

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 97-049

UPDATED WASTE DISCHARGE REQUIREMENTS AND
RESCISSION OF ORDERS 81-65, 91-149, AND 91-183 FOR:

CHEVRON CHEMICAL COMPANY
POND SITE
RICHMOND MANUFACTURING FACILITY
CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter the Board), finds that:

SITE DESCRIPTION

1. Chevron Chemical Company, hereinafter called the discharger, owns and operates a facility in Richmond which formerly manufactured and distributed a variety of pesticides and fertilizers. The facility consists of two separate areas, a chemical processing area (Plant Site) at 940 Hensley Street on the southeast side of Castro Street, and an integrated system of surface impoundments on the northwest side of Castro Street. The second area, called the Pond Site, is the subject of this order. The discharger is currently in the process of phasing-out its agricultural chemical manufacturing business and will continue to operate a fuel additives blending and packaging facility only. The attached map shows the location of the facility within the San Francisco Bay Region (Figure 1).

Units within the Pond Site

2. **IWPS:** The Integrated Wastewater Pond System (IWPS) comprises approximately 74 acres of the facility (See Site Map - Figure 2). It was originally constructed in the early 1960's for the evaporation of dilute process wastewater generated by the chemical manufacture of the fungicide DIFOLATAN[®], equipment wash water from pesticide formulation units, and storm water runoff from the chemical processing areas. Prior to pond development, the area was a marsh dissected by many natural sloughs and manmade ditches. The ponds were initially formed by the construction of earthen dikes from soil excavated from the adjacent marsh. Settlement of the dikes has required periodic addition of fill and other maintenance.
 - a. **Current Use:** The ponds are presently used only for storage of storm water runoff from the Plant Site in compliance with NPDES Permit CA0005134 which prohibits direct discharge of storm water runoff from the Plant Site to adjacent surface waters except during periods of high intensity rainfall. Storm water that accumulates in the ponds either evaporates or is discharged to the City of Richmond Publicly Owned Treatment Works

(POTW) under an industrial waste discharge permit. During storm events, discharge to the POTW is restricted, so dynamic surge capacity and temporary holding are necessary.

In addition to the aforementioned storm water, the Discharger also manages other non-hazardous waste streams in the IWPS. These streams include treated and untreated groundwater extracted from the perimeter hydraulic control system and storm water runoff from the adjacent former Fertilizer Plant. These streams generally make up a small fraction of the 111.5 million gallon total volume of water that can be managed within the IWPS.

b. Containment Features: The IWPS has both natural and constructed containment features. These features include low permeability Bay Mud which underlies the site, a natural upward hydraulic gradient for vertical containment, and a subsurface barrier wall and hydraulic control trench (HCT) for lateral containment. The objective of the HCT and barrier wall is to create and maintain a groundwater depression along the perimeter of the site that prevents off-site migration of contaminants. The HCT consists of a 2-foot wide trench backfilled with clean sand that is keyed into the Bay Mud. Slotted drain pipes installed near the bottom of the trench collect and convey groundwater to sumps spaced at 500 foot intervals along the trench. Groundwater extracted from the sumps is either pumped directly to the IWPS (if analysis indicates treatment is not necessary), or to the onsite groundwater treatment unit. Effluent from this unit is discharged either to the IWPS or directly to the POTW in accordance with POTW permit requirements.

3. **SMU1:** Also located within the Pond Site is Soil Management Unit I (SMU1), a 3.8 acre Class II landfill which was constructed in 1991 and has a capacity of 65,000 cubic yards. The Discharger has used SMU1 for disposal of non-hazardous, contaminated soils generated by ongoing construction, maintenance, and environmental cleanup activities. Most of the wastes contained within the landfill are soil spoils generated by construction activities for the IWPS slurry wall and groundwater extraction trench system. These wastes consist of fill and native soils contaminated with various levels of pesticides, fertilizers, halogenated organics, and heavy metals. The landfill also contains fill and native soil from Chevron U.S.A.'s Richmond Refinery contaminated with petroleum hydrocarbons and various heavy metals. The unit is underlain by an LCRS and partial capped with a multi-layer vegetative cover. It is completely contained within the IWPS perimeter hydraulic control system. Before SMU1 was constructed, the location was used as a product/storm water surface impoundment for the Fertilizer Plant.

4. **CA:** The Consolidation Area (CA) is a 4.1-acre RCRA solid waste management unit soil that was closed in 1994 under Department of Toxic Substances Control (DTSC) oversight. The unit contains approximately 105,000 cubic yards of heavy metal- and pesticide-contaminated soils that were removed from the earthen evaporation pond in 1987 and 1988, before the lined pond system was constructed. This excavation was executed as part of the Discharger's California Toxic Pits Cleanup Act (TPCA) compliance activities. The unit does not have an LCRS, but it is capped with a RCRA multi-layer vegetative cover, and it lies within the perimeter hydraulic control

system. Before the area was backfilled and closed, it served as one of the process wastewater containment ponds for the Plant Site.

PURPOSE

- 5. This Order updates, consolidates, and rescinds three orders currently in effect for ongoing operation and maintenance, implementation of corrective actions, and ultimate closure of the Pond Site.

REGULATORY STATUS

- 6. Operation of the IWPS is currently regulated under RCRA interim status (delayed closure), Waste Discharge Requirements (WDR) Order No. 81-65, NPDES permit CA005134 (WDR Order No. 92-111) and Site Cleanup Requirements Order No. 91-183. SMU1 operates under WDR Order No. 91-149.

SITE HYDROGEOLOGY

- 7. Three water-bearing zones have been identified within 130 feet of ground surface. These zones have been defined based on stratigraphy, differences in major element chemistry and differences in piezometric head. The water-bearing zones are called, in order of increasing depth, the A-zone, the C-zone and the B-zone.

The A-zone generally occurs at depths shallower than about 20 feet. The water table is usually encountered 2 to 10 feet below ground surface. The developed portion of the Pond Site is underlain by a layer of fill which ranges between 3 and 10 feet in thickness. Because the pond system is west of the historic 1894 shoreline, the uppermost native soil unit is a soft layer of silty clay with organic matter known as Bay Mud. The Bay Mud pinches out east of Castro Street, but gradually thickens to more than 30 feet in a west direction under the Pond Site.

The C-zone extends between depths of about 10 and 90 feet below grade and consists of an upper and lower alluvial sequence separated by near-shore estuarine deposits. In general, the upper 20 to 30 feet of alluvial soils consist of silty clay with occasional localized sandy lenses. The C-zone is also considered non-potable because of its high salinity. Below the C-zone deposits, a 20-foot-thick layer of estuarine clay is present. This clay unit acts as an aquitard between the C-zone and the deeper B-zone.

The B-zone is encountered at depths ranging from 100 to 130 feet beneath the site. This thin water-bearing zone contains a higher proportion of alluvial sands and gravels compared to surrounding soils. The B-zone is typically 5 to 15 feet thick and is underlain by alluvial and estuarine clays. The B-zone is considered the finest water zone below the site. However, the B-zone groundwater quality degrades to west due to saltwater intrusion.

In general, groundwater gradients in the three water-bearing zones slope in a westerly direction toward San Pablo Bay. Operation of the hydraulic control trench system results in a groundwater depression in the A-zone at the site boundary. The permeability and transmissivity of all three zones are low, and none of the zones are capable of producing significant quantities of groundwater on a sustained yield basis. Groundwater levels measured in adjacent monitoring wells screened at different depths indicate an upward vertical gradient.

GROUNDWATER CHARACTERISTICS

Background Groundwater Quality

8. Analysis of groundwater samples for major cations and anions confirms that water quality varies laterally in all three water-bearing zones, degrading in a northwesterly direction due to saltwater intrusion. A comparison of the Pond Site groundwater quality monitoring data to state and federal drinking water standards known as Maximum Contaminant Levels (MCLs) is provided below. The shaded areas indicate which parameters exceed MCLs. In general, the quality of groundwater in the A- and C-zones is slightly brackish to saline and the quality of groundwater in the B-zone is moderately fresh to brackish.

Groundwater Quality in the Vicinity of the IWPS⁽¹⁾

| Parameter | MCLs | A-zone | C-zone | B-zone |
|----------------------|-----------------------------------|-----------------|-----------------|--------------|
| TDS ⁽²⁾ | 500 - recommended 1000 - upper | 1,800 to 57,100 | 5,100 to 77,700 | 360 to 2,600 |
| Specific Conductance | 900 - recommended 1600 - upper | 2,500 to 70,000 | 6,700 to 71,200 | 620 to 3,500 |
| pH | 6.5 to 8.5 | 4.0 to 7.6 | 6.4 to 7.2 | 7.1 to 7.7 |
| Chloride | 250 | 330 to 30,600 | 1,900 to 36,500 | 60 to 960 |
| Sulfate | 250 | 10 to 8,100 | 60 to 4,500 | ND to 40 |
| Manganese | 0.05 | ND to 290 | 4.3 to 67.2 | 0.2 to 3.5 |
| Nitrate | 45 as NO ₃ | 0.1 to 570 | ND to 0.3 | ND to 0.3 |

- (1) All units in mg/l except specific conductance (µmhos/cm), and pH (pH units). ND = not detected
- (2) State and Regional Water Board Resolutions No. 88-63 and No. 89-39, respectively, specify that all ground waters of the state are to be protected as potential sources of municipal or domestic supply, except under specific circumstances which include waters with TDS > 3000 mg/l.

Summary of Groundwater Contamination

9. The soils within and around the Pond Site contain elevated levels of heavy metals, pesticides and fertilizers. The soil contamination occurs in the fill materials designated as the A-zone which overlies Bay Mud. Constituents of Concern that have been detected in soils of the area are ammonia, nitrate, arsenic, lead, chlordane, lindane, DDD, DDE, DDT, trans-1,2-Dichloroethene (1,2-DCE), and Trichloroethene (TCE). These constituents have also impacted groundwater as shown in the table below. Other constituents that have been detected in groundwater in concentrations that exceed California Primary Drinking Water Standards include benzene, cadmium, carbon tetrachloride, chromium, 1,2-dichloroethane, lindane, silvex, silver, and tetrachloroethene.

Groundwater monitoring data for the C-zone gathered from 1986 to 1992 indicate that a few pesticides, herbicides, other organics, and metals were detected in some wells; however, detections of these constituents were sporadic, and exhibited a wide variation over time.

Constituents in Groundwater at the Pond Site

| Contaminant | Historical Maximum Concentration | Maximum 1996 Concentration in A-zone Compliance Wells | Maximum 1996 Concentration in C-zone Compliance Wells | Maximum 1996 Concentration in Castro Creek Monitoring Points |
|--------------|----------------------------------|---|---|--|
| Arsenic | 2.37 mg/l | 0.05 mg/l | ND at 0.002 mg/l | 0.19 mg/l |
| Lead | 3.0 mg/l | 0.10 mg/l | ND at 0.08 mg/l | ND at 0.08 mg/l |
| Ammonia as N | 4,480 mg/l | 20.30 mg/l | 4.16 mg/l | 1.71 mg/l |
| Chlordane | 12.0 µg/l | ND at 0.06 to 0.3 µg/l | ND at 0.06 to 0.24 µg/l | 0.25 µg/l |
| TCE | 680 µg/l | 0.96 µg/l | ND at 0.4 µg/l | 52.4 µg/l |

ND = Not Detected

Monitoring Program

10. The combined IWPS, SMU1 and CA groundwater monitoring program currently practiced by the discharger and approved by RWQCB staff in 1992 is consistent with RCRA and with Titles 22 and 23 of the California Code of Regulations. It is also intended to satisfy the post-closure groundwater monitoring requirement for the Consolidation Area as required under Title 22. The point of compliance for all three units is the vertical plane along the northern and northwestern boundary of the pond system. At present there are three types of monitoring being conducted under one comprehensive program as follows:

- a. Corrective Action Monitoring of the A-zone evaluates the effectiveness of the groundwater extraction/barrier wall system in creating a hydraulic barrier to the offsite migration of contaminated A-zone water beneath the IWPS. Primary corrective action monitoring consists of measuring piezometric water levels through a system of paired piezometers and sumps at 11 locations along the point of compliance. Secondary Corrective Action Monitoring includes chemical monitoring of the groundwater at six well locations to further document the effectiveness of corrective action on A-zone groundwater.
 - b. Detection Monitoring of the C-zone was established to provide an early indication of a release from any of the three regulated units into the C-zone. Detection monitoring consists of chemical monitoring of the groundwater in one upgradient and three downgradient C-zone wells.
 - c. Surface Water Monitoring is conducted quarterly at three locations in Castro Creek. The monitoring points were selected on the basis of their position relative to both creek flow directions and nearby A-zone corrective action monitoring wells. One sampling location is located upstream of the IWPS, and two are located downstream opposite A-zone groundwater monitoring wells.
11. Justification for not monitoring the B-zone: If the effectiveness of the hydraulic control system is consistently demonstrated, then the only possible pathway for constituents currently within the site to impact water in Castro Creek or surrounding wetlands is by migration through the Bay Mud aquitard and into the C-zone. The C-zone is monitored because it is the shallowest water-bearing zone beneath the Bay Mud. The next water-bearing zone, the B-zone, is separated from the C-zone by a 20 foot thick estuarine clay aquitard. Groundwater elevation measurements have shown an upward vertical gradient of approximately five feet between the B and C zones which would further inhibit downward migration of water from the C to the B zones. No significant concentrations of constituents were detected in downgradient B-zone wells in six years of monitoring (1986-1992). Because the C-zone consists mainly of low-permeability soils with a few discontinuous sand lenses and has much greater horizontal than vertical permeability, constituents of concern which would migrate downwards from the A-zone would be expected to move laterally through the upper permeable beds of the C-zone at a much greater rate than they would move downwards. Monitoring in the C-zone would provide a much earlier indication of a release than would monitoring in the B-zone, therefore, the B-zone is not included in the monitoring program.
12. Concentration Limits: The discharger has determined Water Quality Protection Standards (WQPS) Concentration Limits (CLs) for the list of constituents of concern and monitoring parameters established in the Part B RCRA Application. Due to the heterogeneous hydrogeology of the site, it is difficult to detect if and when a release has occurred by comparing constituent concentrations in upgradient wells with those in

downgradient wells. To remedy this situation, an intra-well tracking of constituent concentrations over time is conducted. For those constituents that have not historically been reported above the laboratory detection limits, the concentration limits are set as the Practical Quantitation Limit (PQL) or Historic Reporting Limit (HRL) for the laboratory test method for that constituent, whichever is higher. For those constituents that have historically been reported above the HRL, the concentration limit is evaluated through a statistical comparison with historical data using either the prediction interval method or the non-parametric prediction limit method.

CORRECTIVE ACTIONS

13. A closure plan for the Pond Site was submitted to the US EPA, DTSC, and the RWQCB on March 3, 1988. A revised plan was submitted in November 1990 and was subsequently approved by RWQCB staff. A completion certification report for elements required by SCR 91-183 was submitted to the RWQCB in October 1994. Other elements were completed under different regulatory programs and completion reports were submitted as required. The Corrective Action Program included:

- Constructing low-permeability subsurface barrier walls keyed into Bay Mud and completely encircling the site;
- Installing a hydraulic control trench (groundwater extraction) system inside the barrier walls;
- Removing liquid hazardous wastes from the evaporation ponds;
- Removing and consolidation pond bottom soils;
- Lining the ponds to minimize surface water infiltration;
- Reconfiguring the former evaporation ponds into storm water retention ponds.

The Corrective Action Program elements are briefly described below. The location of the barrier wall and groundwater extraction system and other features of the Corrective Action Program are shown on Figure 2.

14. **Barrier Walls:** The entire Pond Site is surrounded by subsurface barrier walls and is underlain by a 3- to 20-foot-thick layer of Bay Mud which separates the A-zone from the deeper C-zone. Between 1980 and 1983, a barrier wall made of Aspemix, a mixture of asphalt emulsion, cement, sand, and water, was constructed around all but two small sections of the southern dikes where clay barriers had previously been installed in 1973 and 1974. In 1991, soil-bentonite slurry barrier wall was installed adjacent to Castro Creek. It extends from the northwest corner of the site to the southeast corner, tying into the existing Aspemix wall at each end. The wall follows Castro Creek and is located as close to the creek as possible, taking geotechnical and construction practicality into

account. The wall, a slurry mixture of fine-grained imported soil and bentonite, is nominally 3 feet wide and is keyed into the Bay Mud underlying the site.

15. **Hydraulic Control Trench System:** The hydraulic control trench system was completed in late 1993. The objective of its operation is to create and maintain an effective groundwater depression along the perimeter of the site that prevents off-site migration of contaminants. In this system, a trench, keyed into the Bay Mud, surrounds the Pond Site within the barrier wall system. Installed in the trench are slotted drain pipes which slope into sumps. Groundwater is extracted from the sumps and is treated (if necessary), and discharged to the POTW.
16. **Liquid Hazardous Waste and Contaminated Soil Removal/Consolidation:** Pond bottom sediments containing free liquids and approximately 105,000 cubic yards of contaminated soil were removed from the ponds in 1987 and 1988 as part of TPCA compliance activities. The dried, stabilized sediments and soil were placed in the Consolidation Area (CA), a former process wastewater containment pond which is currently a RCRA solid waste management unit. In 1994, the CA was formally closed under the direction of the DTSC.
17. **Pond Lining:** In order to continue compliance with TPCA requirements and provide storm water management, the discharger has installed a liner and underdrain system for the IWPS according to the November 1990 Pond Closure Plan. The pond bottoms were first dried and graded, then an underdrain system and liners were installed on the bottoms and sides of the ponds. As part of the underdrain system, each of the ponds has an independent subdrainage network to prevent groundwater from rising above the bottom of the pond. The network consists of a layer of drain rock over a geotextile material placed directly on the pond bottoms. Slotted PVC pipes embedded in the drain rock layer collect groundwater and convey it to manholes. Submersible pumps in the manholes send the groundwater to a common header leading to the groundwater treatment plant. To prevent impounded storm water from coming into contact with pond bottom soils, the ponds are lined with 60-mil HDPE liners installed directly over a geotextile material placed on the subdrainage network.

18. **Pond Reconfiguration:** The 11 previous RCRA/TPCA ponds have been reconfigured into eight storm water management ponds as follows (see Figure 2):

| RCRA/TPCA Pond | Storm water Pond | Year |
|----------------|------------------|------|
| West Pond | West Pond | 1991 |
| Pond 1 West | Pond 1A | 1992 |
| Pesticide Pond | Pond 1A | 1992 |
| BA Pond | Pond 1B | 1992 |
| Pond 1 East | Pond 1C | 1992 |
| Spill Pond | Pond 1C | 1992 |
| Semiworks West | Pond 4A | 1992 |
| Semiworks East | Pond 4B | 1992 |
| Pond 2 | Pond 2 | 1993 |
| Pond 3AA | Pond 2 | 1993 |
| Pond 3A | Pond 3 | 1993 |

FINAL CLOSURE

IWPS

19. Closure of the ponds will occur when they are no longer needed for storm water containment. The discharger estimates that continued use of the ponds for this purpose will be necessary as long as the Plant Site is in operation due to historical contamination of soils at the facility and the Richmond POTW's low acceptance criteria for metals. In June 1992, the discharger submitted an amended RCRA Part B Permit Application for continued management of storm water and other non-hazardous wastewater streams in the IWPS according to the delay-of-closure rule as codified in 40 CFR 265.113(d) and (e). Before final closure activities can begin, the NPDES permit will have to be revised to allow for direct discharge of facility storm water into Castro Creek. The discharger will then decommission the ponds by backfilling them with clean soil and installing a low permeability cap over the entire area. An optional feature included in the 1990 Closure Plan is a proposal that a portion of the pond system be "clean closed" and converted into a salt water marsh. To accomplish this, the contaminated soil within this proposed marsh area will be removed and utilized as part of the fill material for the other pond areas. Once the contaminated soil has been removed, clean material will be placed into this area and vegetation will be established so that the area will become an integral part of the existing nearby tidal creek. Subsurface groundwater barriers surrounding the closure area will continue to be maintained, isolating the pond closure area from the new marsh.

SMU1

20. According to the discharger, the landfill is not currently receiving waste due to a lack of available contaminated soil meeting acceptance criteria for this landfill. There are approximately 5,000 to 6,000 cubic yards of capacity left. The discharger has agreed to complete final closure activities by the end of 1997, using soil left over from construction of the Richmond Parkway to fill the unused portion of the landfill.

BASIN PLAN

21. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on July 20, 1995, and November 13, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwaters.

BENEFICIAL USES

22. Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels.

The potential beneficial uses of groundwater underlying and adjacent to the site include:

- (i) Limited domestic water supply (B-zone only)
 - (ii) Limited industrial process and service water supply (B-zone only)
 - (iii) Limited agricultural water supply (B-zone only)
 - (iv) Groundwater replenishment to surface waters (Castro Creek)
23. Over ten years of groundwater monitoring indicate the A- and C-zone contaminants are not present in the B-zone, the first freshwater zone beneath the site. Groundwater underlying or downgradient of the site is not used as a potable source of water. The shallow groundwater (A- and C-zones) at the site does not qualify for municipal or domestic use because the maximum TDS of the groundwater (57,100 mg/l, A-zone; 77,700 mg/l, C-zone) is significantly higher than the maximum acceptable level of 3,000 mg/l for beneficial use in a public water supply system.

24. Castro Creek is located within 100 feet west and south of the Pond Site. Downstream of the Pond Site, Castro Creek joins Wildcat Creek, and the combined creeks flow into Castro Cove, an embayment of San Pablo Bay. The existing and potential combined beneficial uses of Castro Creek, Castro Cove, and San Pablo Bay include:
- (i) Industrial service supply
 - (ii) Water contact recreation
 - (iii) Non-contact water recreation
 - (iv) Wildlife habitat
 - (v) Ocean commercial and sport fishing
 - (vi) Fish migration and spawning
 - (vii) Navigation
 - (viii) Estuarine habitat
 - (ix) Shellfish harvesting
 - (x) Preservation of rare and endangered species

CEQA

25. This action is categorically exempt from the provisions of the California Environmental Quality Act pursuant to Section 15301, Title 14, of the California Code of Regulations.

NOTICE AND MEETING

26. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge, and has provided them with an opportunity to submit their written comments.

The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED that the Chevron Chemical Company, their agents, successors and assigns shall meet the applicable provisions contained in Title 23, Division 3, Chapter 15, of the California Code of Regulations and Division 7 of the California Water Code, and shall comply with the following:

A. PROHIBITIONS

1. The storage, handling, treatment or disposal of waste, including polluted soil or groundwater, shall not create a condition of pollution, contamination or nuisance, as

defined by Section 13050 of the California Water Code (CWC) [H & SC Section 5411, CWC Section 13263].

2. The storage of liquid hazardous waste or hazardous wastes containing free liquids in the IWPS is prohibited. The facility shall continue compliance with TPCA Cease Discharge Requirements.

2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.

3. The discharge of hazardous waste or liquid waste to SMU1, as defined in CCR Title 23, Chapter 15, is prohibited.

4. Wastes shall not be placed in or allowed to contact ponded water from any source whatsoever.

5. The discharger shall not cause the following conditions to exist in waters of the State at any place outside the IWPS hydraulic control trench:
 - a. Surface Waters
 - Floating, suspended, or deposited macroscopic particulate matter or foam.
 - Bottom deposits or aquatic growth.
 - Turbidity, apparent color, or water levels beyond natural background levels.
 - Visible, floating, suspended or deposited oil or other products of petroleum origin.
 - Toxic or other deleterious substances in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.
 - b. Groundwater
 - Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

6. Leachate generated from the wastes and any ponded water or extracted groundwater containing leachate or in contact with the wastes shall not be discharged outside of the barrier wall/extraction trench system to waters of the State or the United States.

7. Surface water collected from within the limits of the IWPS shall not be discharged to waters of the State except as permitted by the NPDES permit described in the Findings.

B. SPECIFICATIONS

1. All reports submitted pursuant to this Order shall be prepared under the supervision of and signed by a registered civil engineer, registered geologist, or certified engineering geologist.
2. The site shall be protected from any washout or erosion of wastes or covering material and from inundation which could occur as a result of a 100 year, 24 hour precipitation event.
3. The discharger shall maintain all devices or designed features, installed in accordance with Orders 91-149 and 91-183 such that they continue to operate as intended without interruption except as a result of failures which could not have been reasonably foreseen or prevented by the discharger.
4. The discharger shall conduct monitoring activities according to the Self-Monitoring and Reporting Program attached to this Order and as may be amended by the Executive Officer to verify the effectiveness of groundwater treatment, containment, and/or closure systems.
5. At any time, the discharger may file a written request (including supporting documentation) with the Executive Officer, proposing modifications to the attached Self-Monitoring and Reporting Program. If the proposed modifications are acceptable, the Executive Officer may issue a letter of approval which incorporates the proposed revisions into the Self-Monitoring and Reporting Program.
6. The discharger shall operate Pond Site so as to prevent a statistically significant difference to exist between water quality of the background water and water passing the point of compliance as provided in 23CCR, Chapter 15, Article 5, Section 2550.5.
7. The concentrations of indicator parameters or waste constituents in waters passing through the point of compliance, as defined in 23CCR, Chapter 15, Article 5, Section 2550.2, shall not exceed the concentration limits of the Self-Monitoring and Reporting Program.
8. In the event of a release of a constituent of concern beyond the point of compliance, the discharger shall perform an Evaluation Monitoring Program according to 23CCR, Chapter 15, Article 5, Section 2550.9 and, if determined necessary by Board staff, a Corrective Action Program according to Section 2550.10.

9. Final Closure of the IWPS shall be performed in accordance with 23CCR, Chapter 15, Article 8 and the Pond Closure Plan dated November 1990 and any subsequent amendments to the Closure Plan as approved by the Executive Officer.
10. Final Closure of SMU1 shall be performed in accordance with 23CCR, Chapter 15, Article 8 and the Revised SMU1 Closure Plan dated June 1993.
11. The discharger shall notify the Board at least 90 days prior to beginning any final closure activities for the IWPS or SMU1. This notice shall include a statement that all closure activities will conform to the most recently approved closure plan and that the plan provides for site closure in compliance with all applicable regulations
12. The discharger shall comply with all applicable provisions of Chapter 15 that are not specifically referred to in this Order.

C. PROVISIONS

1. The discharger shall submit groundwater monitoring reports semi-annually according to the Self-Monitoring and Reporting Program that accompanies this Order. The reporting period for each semi-annual monitoring report is six months: 1st and 2nd quarters = January 1 to June 30; and 3rd and 4th quarters = July 1 to December 31. The reporting period for the annual summary report extends from January 1 of the previous year to December 31 of that year. The annual report can be combined with the discharger's summer/fall semi-annual report. The semi-annual self-monitoring reports shall be filed no later than 60 days after the end of the reporting period.

ANNUAL SUMMARY REPORT DUE DATE EACH YEAR: March 1

SEMI-ANNUAL REPORT DUE DATE EACH YEAR: August 31

2. The discharger shall submit a **SMU1 Closure Certification Report** which documents, both in narrative form and with as-built drawings, that the landfill has been closed according to the requirements of this Order and Chapter 15. The discharger shall certify under penalty of perjury that all closure activities were performed in accordance with the most recently approved closure plan and in accordance with all applicable regulations.

REPORT DUE DATE: December 31, 1997

3. **Duty to Comply:** The discharger must comply with all conditions of these waste discharge requirements. Violations may result in enforcement actions, including Regional Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Regional Board [CWC Section 13261, 13263, 13265, 13268, 13300, 13301, 13304, 13340, 13350].

4. **Availability:** A copy of these waste discharge requirements shall be maintained at the discharge facility and be available at all times to operating personnel [CWC Section 13263].
5. **Change in Ownership:** The discharger must notify the Executive Officer, in writing at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new discharger. The notice must include a written agreement between the existing and new discharger containing a specific date for the transfer of this order's responsibility and coverage between the current discharger and the new discharger. This agreement shall include an acknowledgment that the existing discharger is liable for violations up to the transfer date and that the new discharger is liable from the transfer date on [CWC Sections 13267 and 13263].
6. **Revision:** These waste discharge requirements are subject to review and revision by the Regional Board [CCR Section 13263].
7. **Termination:** Where the discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the Regional Board, it shall promptly submit such facts or information [CWC Sections 13260 and 13267].
8. **Vested Rights:** This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect the discharger from his liability under Federal, State or local laws, nor do they create a vested right for the discharger to continue the waste discharge [CWC Section 13263(g)].
9. **Severability:** Provisions of these waste discharge requirements are severable. If any provision of these requirements are found invalid, the remainder of these requirements shall not be affected [CWC 9213].
10. **Operation and Maintenance:** The discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this order [CWC Section 13263(f)].
11. **Releases:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the discharger shall report such discharge to the Regional Board by calling (510) 286-1255 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified. This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

12. **Petroleum Releases:** Except for a discharge which is in compliance with these waste discharge requirements, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Article 3.5 (commencing with Section 8574.1) of Chapter 7 of Division 1 of Title 2 of the Government Code. This provision does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to Section 311 of the Clean Water Act or the discharge is in violation of a prohibition in the applicable Water Quality Control Plan. [CWC Section 13272]

Entry and Inspection: The discharger shall allow the Regional Board, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

- (a) Enter upon the discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this order;
 - (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this order;
 - (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
 - (d) Sample or monitor at reasonable times, for the purposes of assuring compliance with this order or as otherwise authorized by the California Water Code, any substances or parameters at any location. [CWC Section 13267]
13. **Monitoring Devices:** All monitoring instruments and devices used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurements devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the

devices. Annually, the discharger shall submit to the Executive Officer a written statement signed by a registered professional engineer certifying that all flow measurement devices have been calibrated and will reliably achieve the accuracy required.

14. **Analytical Methods:** Unless otherwise permitted by the Regional Board Executive officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. The Regional Board Executive Officer may allow use of an uncertified laboratory under exceptional circumstances, such as when the closest laboratory to the monitoring location is outside the State boundaries and therefore not subject to certification. All analyses shall be required to be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" (40 CFR Part 136) promulgated by the U.S. Environmental Protection Agency [CCR Title 23, Section 2230].
15. **Treatment:** In an enforcement action, it shall not be a defense for the discharger that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced, or is lost [CWC Section 13263(f)].
16. **Discharges to Navigable Waters:** Any person discharging or proposing to discharge to navigable waters from a point source (except for discharge of dredged or fill material subject to Section 404 of the Clean Water Act and discharge subject to a general NPDES permit) must file an NPDES permit application with the Regional Board [CCR Title 2 Section 22357].
17. **Endangerment of Health or the Environment:** The discharger shall report any noncompliance which may endanger health or the environment. Any such information shall be provided orally to the Executive officer within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The following occurrences must be reported to the Executive Officer within 24 hours;
 - (a) Any bypass from any portion of the treatment facility.
 - (b) Any discharge of treated or untreated wastewater resulting from sewer line breaks, obstruction, surcharge or any other circumstances.

- (c) Any treatment plant upset which causes the effluent limitation of this Order to be exceeded [CWC Sections 13263 and 13267].

18. **Maintenance of Records:** The discharger shall retain records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive officer.

Records of monitoring information shall include:

- (a) The date, exact place, and time of sampling or measurements;
 - (b) The individuals who performed the sampling or measurements;
 - (c) The date(s) analyses were performed.
 - (d) The individuals who performed the analyses;
 - (e) The analytical techniques or method used; and
 - (f) The results of such analyses.
19. (a) All application reports or information to be submitted to the Executive officer shall be signed and certified as follows:
- (1) For a corporation -- by a principal executive officer or at least the level of vice president.
 - (2) For a partnership or sole proprietorship -- by a general partner or the proprietor, respectively.
 - (3) For a municipality, state, federal, or other public agency -- by either a principal executive officer or ranking elected official.
- (b) A duly authorized representative of a person designated in paragraph (a) of this provision may sign documents if:
- (1) The authorization is made in writing by a person described in paragraph (a) of this provision.
 - (2) The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity; and
 - (3) The written authorization is submitted to the executive officer.

Any person signing a document under this Section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. [CWC Sections 13263, 13267, and 13268]

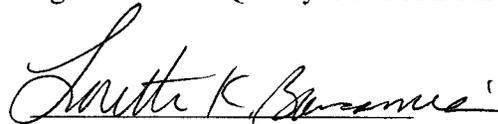
20. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:

- a. RWQCB - San Francisco Bay Region
- b. Cal/EPA Department of Toxic Substances Control

The Executive Officer may modify this distribution list as needed.

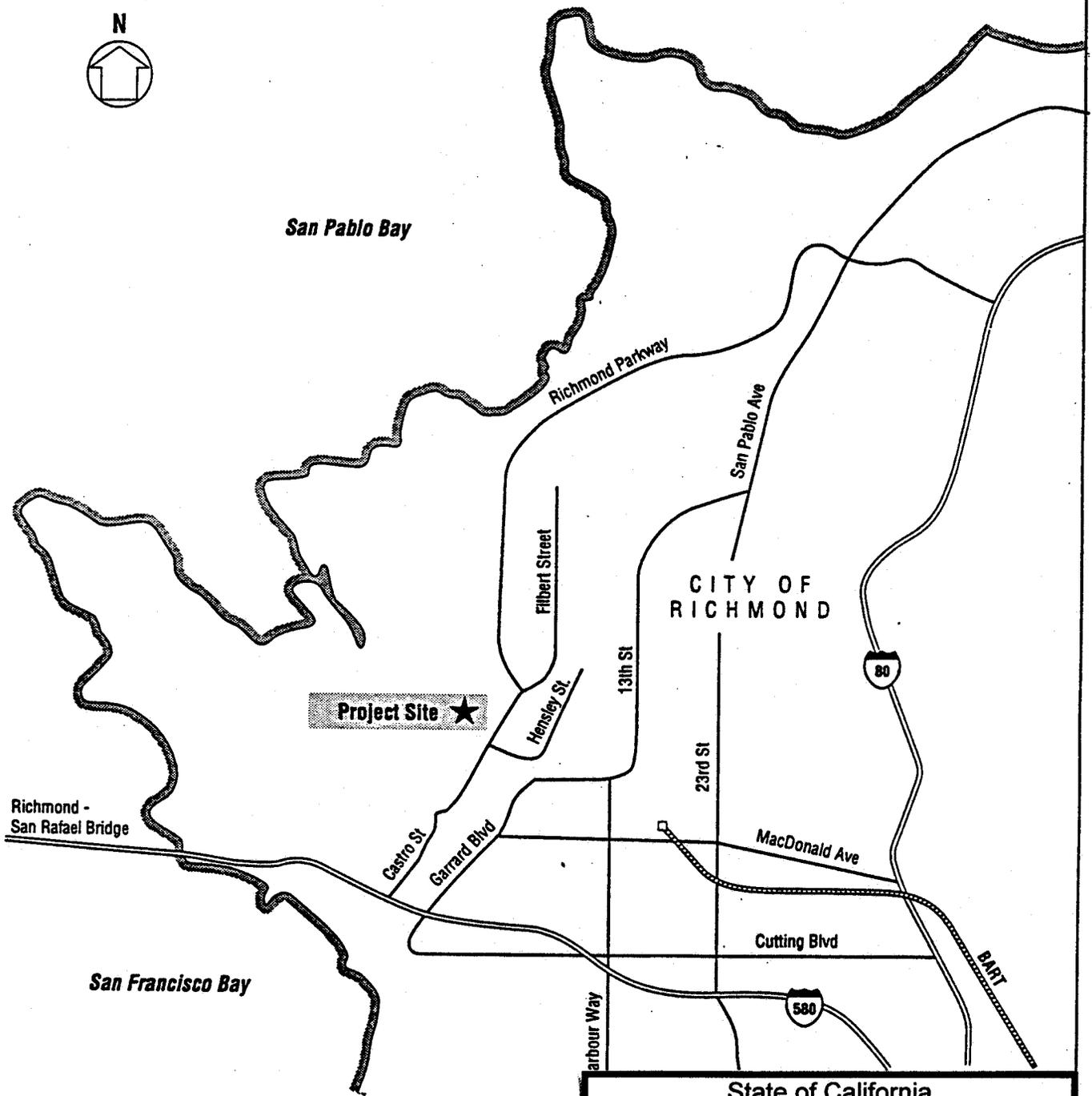
21. This Order supersedes WDRs 81-65 and 91-149 and SCR 91-183. Orders 81-65, 91-149, and 91-183 are hereby rescinded.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 16, 1997.



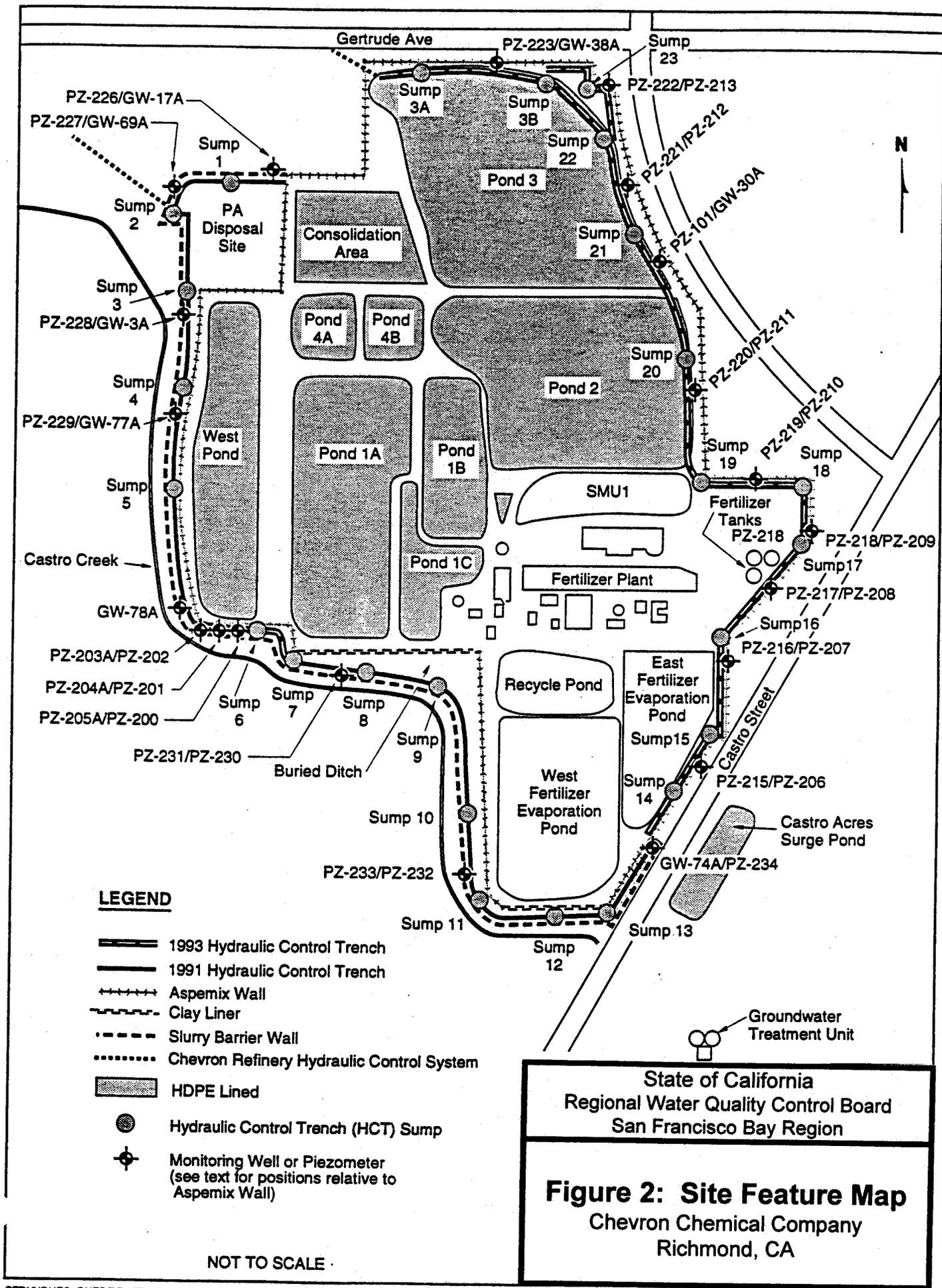
Loretta K. Barsamian
Executive Officer

Attachments: Figure 1 - Site Location Map
Figure 2 - Site Feature Map
A. Self-Monitoring Program



State of California
Regional Water Quality Control Board
San Francisco Bay Region

Figure 1: Site Location Map
Chevron Chemical Company
Richmond, CA



LEGEND

- 1993 Hydraulic Control Trench
- 1991 Hydraulic Control Trench
- Aspemix Wall
- Clay Liner
- Slurry Barrier Wall
- Chevron Refinery Hydraulic Control System
- HDPE Lined
- Hydraulic Control Trench (HCT) Sump
- Monitoring Well or Piezometer (see text for positions relative to Aspemix Wall)

NOT TO SCALE

State of California
 Regional Water Quality Control Board
 San Francisco Bay Region

Figure 2: Site Feature Map
 Chevron Chemical Company
 Richmond, CA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING AND REPORTING PROGRAM

FOR

CHEVRON CHEMICAL COMPANY
INTEGRATED WASTEWATER POND SYSTEM AND
CLASS II SOLID WASTE DISPOSAL SITE
RICHMOND MANUFACTURING FACILITY

CONTRA COSTA COUNTY

ORDER NO. 97-049

CONSISTS OF

PART A

AND

PART B

PART A

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16. This Discharge Monitoring Program is issued in accordance with Provision 7 of Regional Board Order No. 97-049.

The principal purposes of a discharge monitoring program are: (1) to document compliance with waste discharge requirements and prohibitions established by the Board, (2) to facilitate self-policing by the waste dischargers in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of standards of performance, and toxicity standards, (4) to assist the dischargers in complying with the requirements of Article 5, Chapter 15 as revised July 1, 1991.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the most recent version of EPA Standard Methods and in accordance with an approved sampling and analysis plan.

Water and waste analysis shall be performed by a laboratory approved for these analyses by the State of California. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. DEFINITION OF TERMS

1. A grab sample is a discrete sample collected at any time.
2. Receiving waters refers to any surface or groundwater which actually or potentially receives surface or groundwater which pass over, through, or under waste materials or contaminated soils. In this case the groundwater beneath and adjacent to the Pond Site, the surface runoff from the site, adjacent wetlands, Castro Creek, and San Pablo Bay are considered receiving waters.
3. Facility boundary refers to the alignment of the hydraulic control trench/barrier wall system for the Pond Site as shown on Figure 2 of Order No. 97-049.
4. Standard observations refer to:

- a. Receiving Waters
 - i. Floating and suspended materials of waste origin: presence or absence, source, and size of affected area.
 - ii. Discoloration and turbidity: description of color, source, and size of affected area.
 - iii. Evidence of odors, presence or absence, characterization, source, and distance of travel from source.

- b. Perimeter of the facility boundary.
 - i. Evidence of liquid leaving or entering the waste management unit, estimated size of affected area and flow rate. (Show affected area on map)
 - ii. Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
 - iii. Evidence of erosion and/or daylighted waste.

- c. The waste management units consisting of SMU1 and the Consolidation Area.
 - i. Evidence of ponded water at any point on the waste management facility.
 - ii. Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
 - iii. Evidence of erosion and/or daylighted waste.

D. SAMPLING, ANALYSIS, AND OBSERVATIONS

The dischargers is required to perform sampling, analyses, and observations in the following media:

- 1. Groundwater per Section 2550.7(b)(1)(D) and
- 2. Surface water per Section 2550.7(c)

and per the non-statistical portions of the general requirements specified in Section 2550.7(e) of Article 5, Chapter 15.

E. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the dischargers or laboratory, and shall be retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample:

- 1. Identity of sample and sample station number.

2. Date and time of sampling.
3. Date and time that analyses are started and completed, and name of the personnel performing the analyses.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Calculation of results.
6. Results of analyses, and detection limits for each analysis.

F. REPORTS TO BE FILED WITH THE BOARD

1. The discharger shall submit two Semi-Annual Self-Monitoring and Reporting Program Reports, one for the winter/spring (wet) season, and one for the summer/fall (dry) season. The discharger shall also submit an Annual Self-Monitoring and Reporting Program Summary Report covering the previous monitoring year. The annual summary report can be combined with the summer/fall report. The reporting period means the duration separating the submittal of the monitoring report from the time the next iteration of that report is scheduled for submittal. Unless otherwise specified, the reporting period for each semi-annual report is six months: 1st and 2nd quarters = January 1 to June 30; and 3rd and 4th quarters = July 1 to December 31. The due date for any given report will be 60 days after the end of its reporting period. The semi-annual reports shall include, but are not limited to the following:

a. Letter of Transmittal

A letter transmitting the essential points in each report should accompany each report. Such a letter shall include a discussion of **any requirement** violations found during the last report period, and actions taken or planned for correcting the violations. If the Dischargers have previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last report period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

- b. Each semi-annual monitoring report shall include a compliance evaluation summary. The summary shall contain:**

method, equipment and analytical detection limits; the recovery rates; an explanation for any recovery rate that is less than the recovery acceptance limits specified in the USEPA method procedures or the laboratory's acceptance limits, if they are more stringent than those in the USEPA method procedures; the results of equipment and method blanks; the results of spiked and surrogate samples; the frequency of quality control analysis; and the name and qualifications of the person(s) performing the analyses.

- f. An evaluation of the effectiveness of the leachate extraction system or control facilities, which includes an evaluation of leachate buildup within the disposal units and sump areas, a summary of leachate volumes removed from the units, and a discussion of the leachate disposal/treatment methods utilized.
- g. A summary and certification of completion of all standard observations for the Pond Site, the perimeter of the Pond Site, and the receiving waters.
- h. The quantity and types of waste disposed of during each quarter of the reporting period, and the locations of the disposal operations. Locations of the waste placement shall be depicted on a map showing the area, if any, in which filling has been completed during the previous calendar year.
- i. Tabular and graphical summaries of the monitoring data obtained during the previous year; the report should be accompanied by a 3¹/₂" computer data disk, MS-DOS ASCII format, tabulating the years data.
- j. The Annual Monitoring Report shall be submitted to the Board covering the previous monitoring year. The Report shall include, but is not limited to, the following:
 - i. A graphical presentation of the analytical data [§2550.7(e)(14) of Article 5, Chapter 15] for monitoring locations that have shown detectable concentrations during two consecutive monitoring events, or greater than ten percent detection frequency for any organic compound. Graphical representation must be provided for monitoring locations with metals and general chemistry analytical parameters that have an increasing trend for three consecutive monitoring events;
 - ii. A tabular summary of all the monitoring data obtained during the previous year;
 - iii. A comprehensive discussion of the compliance record, and the corrective actions taken or planned which may be needed to bring the dischargers into full compliance with the waste discharge requirements;
 - iv. A map showing the area, if any, in which filling has been completed

during the previous calendar year;

- v. A written summary of the groundwater analyses indicating any change in the quality of the groundwater; and
- vi. An evaluation of the effectiveness of the leachate monitoring/ control facilities, which includes an evaluation of leachate buildup within the disposal units, a summary of leachate volumes removed from the units, and a discussion of the leachate disposal methods utilized.

2. **Contingency Reporting**

- a. The discharger shall report by telephone concerning **any seepage** from the surface of the disposal area immediately after it is discovered. A written report shall be filed with the Board within seven days, containing at least the following information:
 - i. A map showing the location(s) of seepage;
 - ii. An estimate of the flow rate;
 - iii. A description of the nature of the discharge (e.g., all pertinent observations and analyses); and
 - iv. Corrective measures underway or proposed.
- b. Following the determination that groundwater analytical results for a compliance monitoring location exceed the WQPS concentration limits (CLs), the discharger shall evaluate QA/QC samples to determine if cross-contamination may have occurred. The discharger shall follow the procedures below for any monitoring locations still exceeding the CLs:
 - i. The discharger shall immediately re-sample at the compliance point where the CL was exceeded and re-analyze.
 - ii. If re-sampling and analysis confirm the exceedance of a CL, the discharger shall document this in the text of the next Semi-Annual Monitoring Report and notify the Board in writing within 21 days of re-sampling. In this letter, the discharger shall evaluate whether any re-sampling or additional corrective measures need to be implemented.

3. **WELL LOGS**

A boring log and a monitoring well construction log shall be submitted for each sampling well established for this monitoring program, as well as a report of inspection or certification that each well has been constructed in accordance with the construction standards of the Department of Water Resources. These shall be submitted within 45 days after the completion of well installation activities.

PART B: MONITORING AND OBSERVATION SCHEDULE

1. ON-SITE OBSERVATIONS

| STATION | DESCRIPTION | OBSERVATIONS | FREQUENCY |
|-------------------------------|--|--|--|
| V-1 thru V-'n' | Located on the waste disposal area as delineated by a 500 foot grid network. | Standard observations for the waste management unit. | Weekly observations, report semi-annually. |
| P-1 thru P-'n' (perimeter) | Located at equidistant intervals not exceeding 1000 feet around the perimeter of the facility. | Standard observations for the perimeter. | Weekly observation, report semi-annually. |

A map showing the visual and perimeter compliance points (V and P stations) shall be submitted by the discharger along with the semi-annual monitoring reports.

2. SEEPAGE MONITORING

Seepage monitoring stations include stations S-1 thru S-'n' and any point at which seepage is found occurring from the disposal area. The waste management unit perimeters of SMU1 and the Consolidation Area shall be monitored according to the following; with results reported quarterly.

| STATION | DESCRIPTION | OBSERVATIONS | FREQUENCY |
|----------------|---|--|--|
| S-1 thru S-'n' | At any point(s) at which seepage is found occurring from the disposal area. | Standard observation for the perimeter and standard analysis other "i" (perform analysis once per seep). | Daily until remedial action is taken and seepage ceases. |

3. A-ZONE HYDRAULIC GRADIENT MONITORING

The discharger will take monthly water level measurements from a network of paired piezometers and sumps along the length of the hydraulic control trench (HCT)/barrier wall system to evaluate its effectiveness in maintaining a groundwater depression along the perimeter of the Pond Site which prevents off-site migration of constituents of

concern. The piezometer/HCT sump pairs to be monitored are shown on Figure 1 and listed in Table 1 below.

Table 1: Hydraulic Control Monitoring Points for the Pond Site

| <u>Piezometers/Wells Outside Barrier Wall</u> | <u>HCT Sumps Inside Barrier Wall</u> |
|---|--------------------------------------|
| GW-17A | HCT Sump 1 |
| GW-69A | HCT Sump 2 |
| GW-3A | HCT Sump 3 |
| GW-77A | HCT Sump 5 |
| PZ-230 | HCT Sump 8 |
| PZ-232 | HCT Sump 11 |
| PZ-206 | HCT Sump 14 |
| PZ-208 | HCT Sump 17 |
| PZ-211 | HCT Sump 20 |
| PZ-212 | HCT Sump 22 |
| GW-38A | Pond Sump 3A |

4. CHEMICAL CONSTITUENT MONITORING

The discharger shall sample the monitoring points shown on Figure 1 and listed in Table 2 on a quarterly basis for the Monitoring Parameters shown in boldface type in Table 3. The discharger shall sample the monitoring points for the longer Constituents of Concern list every five years beginning in 1998. All monitoring activities, including analytical and QA/QC procedures will be conducted in accordance with the Groundwater Quality Monitoring program, Integrated Wastewater Pond System (IWPS) and Soil Management Unit 1, Chevron Chemical Company, Richmond, California, dated April 30, 1992, the revised version of this program dated July 8, 1993, and the most recent version of the Sampling and Analysis Plan.

Table 2: Chemical Monitoring Points for the Pond Site

| <u>A-ZONE WELLS</u> | <u>C-ZONE WELLS</u> | <u>CASTRO CREEK</u> |
|-----------------------|-----------------------|---------------------|
| GW-61A-2 (upgradient) | GW-61C-2 (upgradient) | CW-9 (upstream) |
| GW-31A | GW-38C | CW-7 |
| GW-38A | GW-3C-1 | CW-6 |
| GW-3A | GW-63C | |
| GW-77A | | |
| GW-78A | | |

Table 3: Monitoring Parameters* and Constituents of Concern for the Pond Site

| | |
|---|---|
| <u>Field Measurements</u> | <u>Pesticides</u> |
| Static Water Level (prior to purging) | Chlordane |
| pH | DDT |
| Specific Conductivity | Dieldrin |
| Temperature | Lindane |
| | Malathion |
| <u>Metals</u> | Orthene |
| Arsenic | Toxaphene |
| Chromium | Trithion |
| Iron | |
| Lead | <u>Herbicides</u> |
| Manganese | 2,4,5 TP (Silvex) |
| Nickel | 2,4 D |
| Zinc | Paraquat |
| Sodium | |
| | <u>Other Organic Compounds</u> |
| <u>Water Quality Indicators</u> | Phthalic Anhydride (PA) |
| Ammonia | Tetrahydrophthalic Anhydride (THPA) |
| Nitrate | Tetrahydrophthalimide (THPI) |
| Total Dissolved Solids (TDS) | |
| Chloride | <u>Fuel Hydrocarbons</u> |
| Sulfate | Total Petroleum Hydrocarbons as Gasoline (TPH-G) |
| Phenols (total) | Total Petroleum Hydrocarbons as Diesel (TPH-D) |
| Total Organic Carbon (TOC) | Total Petroleum Hydrocarbons as Kerosene (TPH-K) |
| Total Organic Halogen (TOX) | Total Oil and Grease |
| | |
| <u>Volatile Organic Compounds</u> | <u>Polynuclear Aromatic Hydrocarbons</u> |
| Benzene | Naphthalene |
| Toluene | Fluorine |
| Xylenes | Phenanthrene |
| Trichloroethene (TCE) | Fluoranthene |
| Tetrachloroethene | |
| cis/trans-1,2-Dichloroethene (c/t-1,2-DCE) | |
| 1,2-Dichloroethane (1,2-DCA) | |

* Monitoring Parameters are shown in bold face type. Constituents of Concern are in normal type.

5. DETERMINATION OF WOPS CONCENTRATION LIMITS (CLs)

Due to the heterogeneous hydrogeology of the site, it is difficult to detect if and when a release has occurred by comparing constituent concentrations in upgradient wells with those in downgradient wells. To remedy this situation, an intra-well tracking of constituent concentrations over time is conducted. For those constituents that have not

historically been reported above the laboratory detection limits, the CLs are set as the Practical Quantitation Limit (PQL) or Historic Reporting Limit (HRL) for the laboratory test method for that constituent, whichever is higher. For those constituents that have historically been reported above the HRL, the CLs are evaluated through a statistical comparison with historical data using either the prediction interval method or the non-parametric prediction limit method.

The discharger shall compare the monitoring results for each quarter to the CLs shown in Table 4 to indicate whether a release from one of the regulated units in the Pond Site could have occurred.

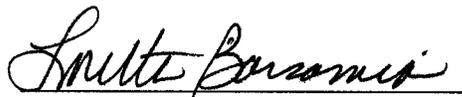
Table 4: WQPS Concentration Limits for the Pond Site Groundwater Monitoring Program (units = mg/l)

| Chemical Constituent (Monitoring Parameters are in bold type) | PQL | GW-3A | GW-31A | GW-38A | GW-77A | GW-78A | GW-3C-1 | GW-38C | GW-63C |
|---|--------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1,2-Dichloroethane | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.016 | 0.002 | 0.002 | 0.002 |
| 2,4,5-TP | 0.0001 | 0.0009 | 0.0005 | 0.0005 | 0.0026 | 0.001 | 0.0003 | 0.0005 | 0.0002 |
| 2,4-D | 0.001 | 0.001 | 0.001 | 0.005 | 0.004 | 0.01 | 0.001 | 0.001 | 0.001 |
| Ammonia | 0.2 | 17.9 | 50.2 | 32.4 | 302 | 135 | 6.58 | 6.94 | 12.4 |
| Arsenic | 0.002 | 0.076 | 1.52 | 0.065 | 0.023 | 0.092 | 0.018 | 0.015 | 0.008 |
| Benzene | 0.0005 | 0.003 | 0.012 | 0.012 | 0.003 | 0.012 | 0.003 | 0.003 | 0.003 |
| Chlordane | 0.0006 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| Chromium | 0.02 | 0.036 | 3 | 0.25 | 0.04 | 0.02 | 0.178 | 0.046 | 0.34 |
| DDT | 0.0001 | 0.0025 | 0.0002 | 0.0002 | 0.0005 | 0.0002 | 0.0002 | 0.001 | 0.0008 |
| Dieldrin | 0.0001 | 0.0025 | 0.0001 | 0.0001 | 0.0005 | 0.0004 | 0.0001 | 0.0001 | 0.0008 |
| Fluoranthene | 0.005 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Fluorene | 0.002 | 0.005 | 0.005 | 0.005 | 0.005 | 0.025 | 0.005 | 0.005 | 0.005 |
| Lead | 0.1 | 0.32 | 1.48 | 0.288 | 0.153 | 0.15 | 0.196 | 0.11 | 0.23 |
| Lindane | 0.0001 | 0.0025 | 0.0001 | 0.0001 | 0.0005 | 0.0004 | 0.0001 | 0.0001 | 0.0001 |
| Malathion | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 |
| Naphthalene | 0.002 | 0.005 | 0.005 | 0.005 | 0.005 | 0.01 | 0.005 | 0.005 | 0.005 |
| Nickel | 0.057 | 0.644 | 1.2 | 0.057 | 1 | 1.77 | 0.524 | 0.5 | 0.397 |
| Nitrate | 0.2 | 756 | 10 | 10.8 | 240 | 303 | 24.7 | 1.4 | 24.4 |
| Orthene | 0.06 | 0.06 | 0.06 | 0.06 | 0.12 | 0.12 | 0.06 | 0.06 | 0.06 |
| Phthalic Anhydride | 1 | 1 | 50 | 1 | 1 | 1 | 1 | 1 | 1 |
| Paraquat | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.061 | 0.05 | 0.05 | 0.35 |
| Phenanthrene | 0.002 | 0.005 | 0.005 | 0.005 | 0.005 | 0.025 | 0.005 | 0.005 | 0.005 |
| t-1,2-Dichloroethene | 0.0005 | 0.0022 | 0.276 | 0.021 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Tetrachloroethene | 0.0008 | 0.0008 | 0.0008 | 0.0008 | 0.0008 | 0.0066 | 0.0008 | 0.0008 | 0.0008 |
| THPA | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| THPI | 1 | 1 | 50 | 1 | 1 | 1 | 1 | 1 | 1 |
| TOG | 3.0 | 3.00 | 3.2 | 133.00 | 3.0 | 5.50 | 11.10 | 3.0 | 3.0 |
| Toluene | 0.0024 | 0.003 | 0.003 | 0.003 | 0.0024 | 0.012 | 0.003 | 0.003 | 0.003 |
| Toxaphene | 0.002 | 0.008 | 0.002 | 0.002 | 0.01 | 0.008 | 0.002 | 0.002 | 0.002 |
| TPH as Diesel | 0.75 | 1.40 | 1.10 | 1.56 | 1.20 | 1.70 | 1.30 | 1.10 | 1.40 |
| TPH as Gasoline | 0.20 | 0.48 | 0.62 | 1.23 | 0.38 | 0.50 | 0.50 | 0.20 | 0.38 |
| TPH as Kerosene | 0.75 | 1.5 | 3.00 | 1.50 | 1.50 | 0.97 | 1.50 | 1.50 | 1.50 |
| Trichloroethene | 0.0004 | 0.001 | 0.004 | 0.003 | 0.001 | 0.003 | 0.027 | 0.002 | 0.001 |
| Trithion | 0.01 | 0.01 | 0.01 | 0.01 | 0.04 | 0.04 | 0.01 | 0.01 | 0.01 |
| Xylene (total) | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.025 | 0.005 | 0.005 | 0.005 |
| Zinc | 0.024 | 0.269 | 2.74 | 0.715 | 0.419 | 24.8 | 0.488 | 0.235 | 0.991 |

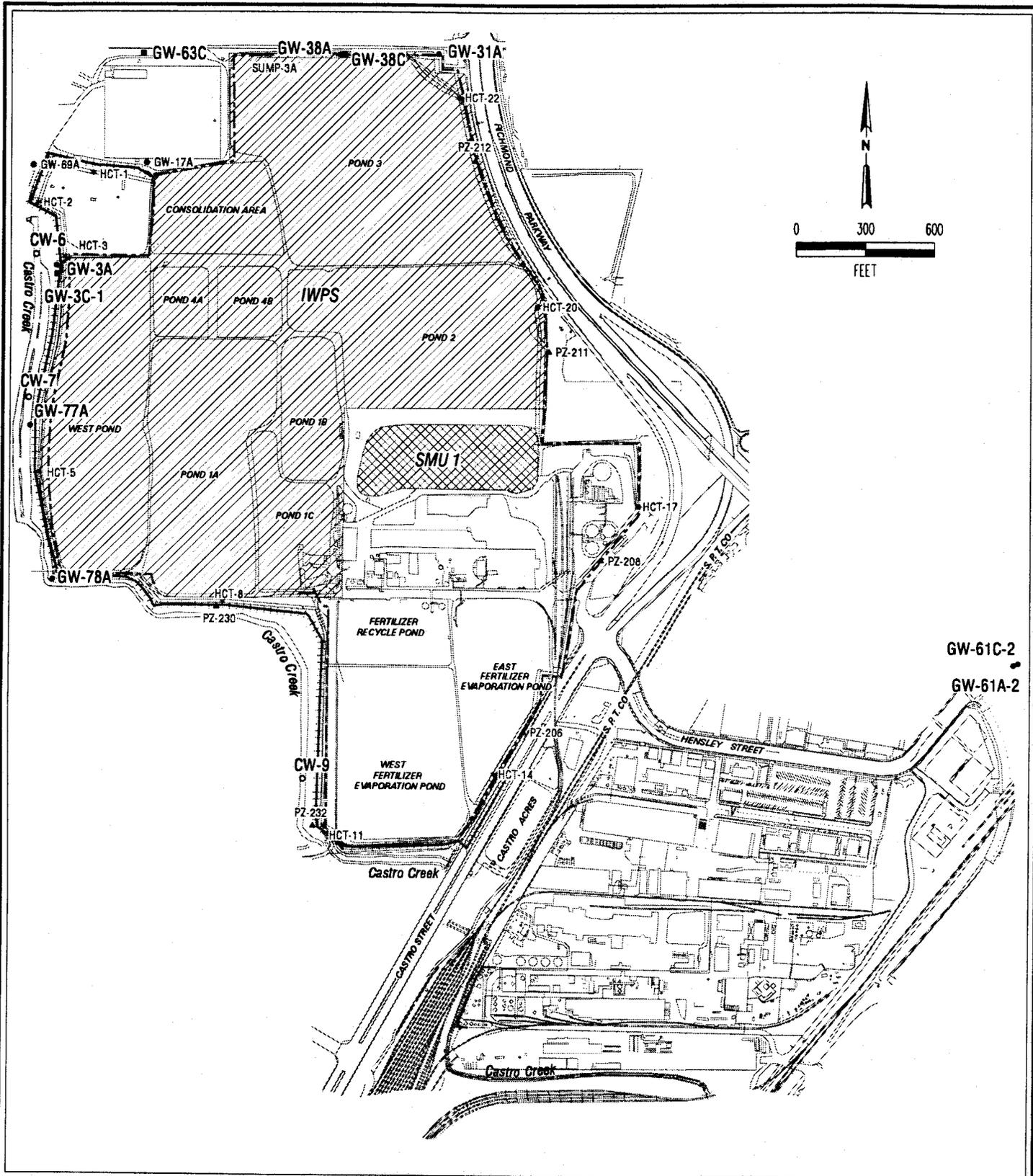
I, Loretta K. Barsamian, Executive Officer, hereby certify that the foregoing Self-Monitoring and Reporting Program:

1. Has been developed in accordance with the procedures set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Board's Order No. 97-049.
2. Is effective on the date shown below.
3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.

Date Ordered: April 16, 1997


Loretta K. Barsamian
Executive Officer

Attachment: Figure 1 - Monitoring Well Location Map



LEGEND

- ▨ SMU 1
- ▨ IWPS
- A-Zone Monitoring Well
- C-Zone Monitoring Well
- Surface Water Monitoring Well
- ▲ Water Level Piezometer
- HCT Sump

Figure 1
Monitoring Wells Location Map
Integrated Wastewater Pond System (IWPS)
and Soil Management Unit 1 (SMU 1)
Chevron Site - Richmond, CA