CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

TENTATIVE ORDER
UPDATED WASTE DISCHARGE REQUIREMENTS AND RESCISSION OF ORDER NO. R2-2002-0007 FOR:

THE DOW CHEMICAL COMPANY
PITTSBURG FACILITY
CONTRA COSTA COUNTY

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

SITE DESCRIPTION & LOCATION

1. The Dow Chemical Company (Dow or Discharger) owns and operates a chemical manufacturing facility at 901 Loveridge Road in Pittsburg, California (Figure 1) (hereafter referred to as the site or facility). The site is bounded by the New York Slough on the north, the Pittsburg-Antioch Highway on the south, Loveridge Road on the west, and parklands and other commercial properties on the east. Residential areas exist further to the south beyond the Pittsburg-Antioch Highway. The Dow facility occupies 330 acres of the approximately 993 acres owned by Dow, which includes a 251-acre wetland preserve located on the east side of the site. In addition to active chemical manufacturing facilities, the site contains an active Class III solid waste landfill, used historically for the disposal of waste generated at the site by Dow, as well as a number of closed solid waste disposal units.

2. Dow currently manufactures a variety of agricultural chemicals, fumigants, fungicides, and hydrochloric acid at their Pittsburg facility. Historically, Dow used the site to manufacture chlorine, sodium hydroxide, hydrogen, and chlorinated solvents, including carbon tetrachloride and tetrachloroethene (PCE). In addition to chemical manufacturing, Dow conducts chemical development research at its Pittsburg facility. Dow leases portions of the facility to other manufacturers including the Cynera Company, M.G. Generon, and K2 Pure Solutions, which manufactures chlorine. None of these manufacturers contribute wastes to the active landfill.

3. Dow has no current plans to close its Pittsburg chemical plant and has proposed a Modernization Program consisting of building a new production plant at the site. Dow has proposed closing the Northeast Landfill; Provision 8 of this Order requires submittal of a Closure Plan for the Northeast Landfill.

PURPOSE OF ORDER UPDATE

4. The purpose of this Order is to rescind and update outdated Waste Discharge Requirements (WDRs) that apply to the operation, closure, post-closure maintenance, and monitoring of Solid Waste Management Units (SWMUs or WMUs) at the site. The Dow site contains 25 closed

WMUs and one active WMU (the Northeast Landfill). The provisions of these WDRS will ensure that Dow contains and captures any constituents of concern (COC) from these WMUs to prevent their migration and to ensure the protection of human health and the environment.

5. This Order rescinds WDR Order No. R2-2002-0007, and updates the status and requirements for 25 closed SWMUs summarized in Table 3 below (Finding 27). This WDR Order and the attached Self-Monitoring Program incorporates post-closure maintenance and monitoring requirements for the closed SWMUs, and requires a closure plan for the Northeast Landfill.

6. This WDR Order does not affect Site Cleanup Requirements Order No. R2-2002-0014, which requires cleanup of groundwater contamination that is not directly associated with the SWMUs covered under WDRs.

REGULATORY HISTORY

7. In 1986, the U.S. Environmental Protection Agency (USEPA) issued a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) report that identified 25 SWMUs at the Dow facility. In 1989, the USEPA issued a 3008(h) Administrative Order for the Dow facility. The RCRA Order required Dow to 1) determine the nature and extent of any releases of hazardous wastes or COCs at the facility, and 2) evaluate corrective action alternatives necessary to mitigate the migration of hazardous wastes or COCs.

8. In 1987, the Regional Water Board adopted WDR Order No. 87-064 requiring Dow to characterize each SWMU for water quality impacts and to evaluate alternatives for remediation of contamination associated with these SWMUs, as necessary.

9. In 1996, the California Department of Toxics Substance Control (DTSC) issued a Hazardous Waste Facility Permit (EPA ID No. CAD 076 528 678) for the facility, which contained a Corrective Action Schedule of Compliance. In response to DTSC's permit, the USEPA issued written notice in August 1997 that it had terminated the 3008(h) Administrative Order and that the requirements of its Order had been incorporated into the DTSC permit. At that same time, the Regional Water Board assumed the role of lead agency for corrective action at the facility pursuant to Section 25204.6 of the California Health and Safety Code (CHSC). Section 25204.6 of the CHSC allows the Regional Water Board to implement and enforce the corrective action requirements of Article 6, Chapter 14, Division 4.5, title 22 of the California Code of Regulations (22CCR).

10. In 1997, the Regional Water Board adopted WDR Order No. 97-123 requiring Dow to extract and treat groundwater impacted with volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) to reduce contaminant mass and mitigate impacts in specific areas. Order No. 97-123 established interim minimum groundwater extraction rates to take advantage of Dow's existing groundwater treatment capacity until a final remedy could be implemented. Order No. 97-123 also established injection standards for the treated groundwater should Dow select injection as the preferred disposal method for treated groundwater. The Order established interim extraction requirements in anticipation of a larger, site-wide corrective action remedy based on hydraulic containment of contaminated groundwater.

11. In 1998, the Regional Water Board adopted WDR Order No. 98-059, which rescinded Order No. 87-064 and required corrective actions for the SWMUs and for VOCs in groundwater. Order No. 98-059 accepted Dow's 1997 proposal for site-wide corrective action of VOC-impacted groundwater using hydraulic containment. However, prior to implementation, Dow determined that hydraulic containment would not be economically feasible due primarily to site hydrogeology. As a result, Dow investigated the use of engineered in-situ bioremediation (EISB) as the site-wide corrective action remedy and submitted a revised corrective action plan in 1999.

12. In 2002, the Regional Water Board adopted WDR Order No. R2-2002-0007, which rescinded Order Nos. 97-123 and 98-059 and updated the site status and requirements for the SWMUs at the site. Order No. R2-2002-0007 required Dow to:

    a) implement a self-monitoring program;
    b) demonstrate hydraulic containment and maintain a 5-foot separation from groundwater at the Class I Former Solar Evaporation Ponds (the Monofill) and the Class II Central Landfill;
    c) evaluate the nature and extent of constituents of concern;
    d) demonstrate and maintain financial assurances for the closure of SWMUs and site cleanup;
    e) submit a Report of Waste Discharge (as applicable), and Notices of Intent under the general stormwater permit for construction activities (as applicable).

13. In 2002, the Regional Water Board also adopted Site Cleanup Requirements (SCR) Order No. R2-2002-0014. The SCR Order required remediation and monitoring of VOCs and SVOCs in groundwater at the site from spills and releases that are not clearly associated with the SWMUs covered under the WDRs. The SCR Order conditionally approved the use of the Engineered In-Situ Bioremediation System (EISB) as the primary remedy for cleanup of existing groundwater impacts from VOC contamination. The SCR also established requirements for evaluating the effectiveness of the EISB system.

14. In April 2013, the Executive Officer approved the use of Tier 2 standards, which are screening levels for 20 different Constituents of Concerns in site groundwater. The Tier 2 standards are based on the Water Board's *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* (ESL). The Tier 2 standards are intended to provide additional protection of ecological exposure pathways, as human health exposure pathways are already adequately addressed by administrative controls.

15. Dow's wastewater is processed onsite before being reused or conveyed and treated at the Delta Diablo sanitation facility to the east of the Dow property. Site stormwater runoff from within the manufacturing areas is collected and also conveyed to the Delta Diablo facility for treatment. Rain that falls on Dow property outside of the manufacturing blocks is collected and conveyed to Dow's existing stormwater detention basin. The collected stormwater is tested and treated as required by the Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order No. 2014-0057-DWQ before it is released into New York Slough.

GEOLOGY, SEISMICITY AND SEISMIC HAZARDS

16. Geologic structures in the seismically active San Francisco Bay region are controlled by the major northwest-trending San Andreas Fault System. Dow is located in the Diablo Range, near the eastern fringe of the San Andreas Fault System. Major Holocene-active faults located near the site include (from east to west and from closest to farthest): the Greenville fault; the Concord-Green Valley fault; the Calaveras fault (northern segment); and the Hayward fault (northern segment). Although most of the relative motion on these faults is right-lateral strike-slip movement, there is a component of shortening or compression normal to these, which is accommodated primarily by buried (blind) thrust faults such as the Mt. Diablo thrust fault.

17. The project vicinity has experienced strong shaking from earthquakes during historic times. The most significant of these included the 1906 San Francisco earthquake and strong events on the Hayward fault in in 1836 and 1868. The largest peak ground acceleration (PGA) at the site is estimated to be between about 0.33g and 0.44g and was associated with magnitude 6.0 earthquake that occurred in 1889 on the Greenville fault.

18. Deterministic evaluations indicate the seismic risk at the Landfill is controlled by the Mt. Diablo Thrust fault, the Concord-Green Valley fault, and the San Andreas fault. For most engineering purposes, ground motions from a Maximum Credible Earthquake (MCE) on the Mt. Diablo Thrust fault control structural design. The MCE on this fault has a moment magnitude of 6.7 and an estimated site PGA of 0.34g to 0.36g.

HYDROGEOLOGY

19. The Dow facility is located in the Pittsburg Plain Groundwater Basin, which is bounded by the hills south of the facility, the western portion of the Sacramento-San Joaquin River delta in the north, Bay Point in the west, and the City of Antioch in the east. The basin is filled with unconsolidated fluvial and alluvial sediments deposited in the Sacramento-San Joaquin River delta and in alluvial fans formed by streams draining the hills south of the facility. Groundwater at the site is first encountered at depths between 2 to 13 feet below ground surface (bgs).

20. The sediment that comprises the shallow subsurface beneath the site consists of a low-permeability silty clay in the upper 40 feet (designated as the water-table interval). This silty clay unit is underlain by a saturated sand unit that extends from approximately 40 to 135 feet bgs. In the northern portion of the site, a layer of low permeability material consisting mostly of clay is also present between approximately 85 to 110 feet bgs. This lower clay layer extends southward from the northern boundary of the facility (New York Slough) and pinches out approximately 200 feet south of 2nd Street. Where present, the lower clay layer divides the saturated sand unit into two intervals designated as the mid-depth interval (40-85 feet bgs) and the deep interval (110-135 feet bgs). As the lower clay layer thickens towards the northern boundary of the facility (toward the Slough), the mid-depth interval of the saturated sand unit generally becomes thinner and finer grained and pinches out in various locations near the Slough bank. Regionally, a clay layer exists below the deep interval of the saturated sand unit from approximately 130 to as much as 800 feet bgs. Table 1 summarizes the water-bearing intervals at the Dow site.

Table 1: Transmissive Groundwater Zones Beneath the Dow Facility

Transmissive Zone	Typical Depths (feet bgs)
Water Table Interval	5 to 40
Mid-Depth Interval	40 to 85
Deep Interval	110 to 135

GROUNDWATER CONTAMINATION

21. Groundwater at various locations in the interior of the site and near the perimeter adjacent to New York Slough and Bundesen Bay (Figure 2) is known to contain organic contaminants (primarily VOCs and SVOCs). This contamination is the result of historical leaks and spills throughout the facility during the course of operations since the 1920s and is not clearly associated with the SWMUs regulated under this Order. Cleanup of this groundwater contamination is required under SCR Order No. R2-2002-0014.

22. Various metals (most notably nickel, arsenic, and manganese) are present at elevated concentrations in groundwater, typically in areas with VOCs, SVOCs, or mercury.

23. Former Outfall Pond: Mercury and methyl mercury are present in groundwater in the northern portion of the site. The source of mercury in groundwater was Dow's former chlor-alkali plant, which is located at the southwestern corner of the Former Outfall Pond (FOP, location shown in Figure 3). The FOP is a SWMU that was closed in 2000 in compliance with WDR Order No. 98-059. Closure consisted of placement of an engineered cover over both the FOP and the adjacent ten-acre eastern area. Order R2-2002-0007 required that the final cover be graded and maintained to promote runoff and to prevent ponding and infiltration of stormwater. Subsequent investigations have shown that settlement has occurred over several acres of the cover, with total settlement ranging from one to six feet since the cover was constructed. This settlement has allowed storm water to pond on the surface and for underlying groundwater to seep up through the cover. Although Order No. R2-2002-0007 required re-grading and placement of additional soil where the cover has settled, Dow has concluded that adding additional soil to the cover would increase subsidence.

    In 2003, Water Board staff approved an alternative inspection and maintenance program for the FOP cover that included sampling ponded water on the FOP cover and periodically pumping this water to New York Slough, provided it meets NPDES discharge limits. Provision 5 of this Order strengthens this requirement by requiring the submission of ponded water analytical results, and requiring pumping of accumulated water whenever more than 6 inches accumulates on the FOP cover. Dow was also required to conduct annual settlement surveys of the FOP cover. Between 2003 and 2017 the rate of settlement of the FOP cover slowed significantly, and in March 2017, Water Board staff agreed to allow Dow to reduce the frequency of settlement surveys to once every 5 years. The next FOP settlement survey will be conducted in 2020.

Since 2001, Dow has performed several additional investigations to evaluate hydrogeologic conditions and mercury impacts to groundwater, primarily in the western portion of the FOP. While mercury concentrations attenuate from the presumed source area (the former chlor-alkali plant) toward the facility boundary along New York Slough, Provision 6 of this Order requires additional corrective actions if mercury migration from the FOP cannot be prevented. Table 2 summarizes the maximum reported mercury and methyl mercury concentrations in groundwater in each transmissive zone of the FOP.

Table 2: Mercury Concentrations in Groundwater at the Former Outfall Pond

	Maximum Concentrations During Most Recent Characterization (2016) (ug/l)		
	Water Table	**Mid-Depth (40-85 ft. BGS)**	**Deep (110-135 ft. BGS)**
Mercury	341	0.47	Not detected
Methyl Mercury	0.812	0.183	Not detected

24. In December 2012, the Regional Water Board approved a corrective action plan to reduce the potential for mercury migration in groundwater beneath the capped area west of the FOP. The proposed remedy is to influence or reverse the hydraulic gradient of groundwater beneath the capped area through phytoremediation, by planting approximately 200 trees on a portion of the capped area to uptake and transpire the shallow groundwater. Dow monitors the groundwater elevations and gradient by use of 21 wells/piezometers and submits annual reports on the system status. Provision 4 of this Order requires an annual evaluation of the effectiveness of the corrective action.

SURFACE WATER IMPACTS

25. Since 2002, VOCs have been detected in grab samples collected from Bundesen Bay. Additional grab samples from a groundwater seep at the southwestern corner of Bundesen Bay contained significant VOC concentrations. The discharge of VOC-contaminated groundwater from the Dow facility into Bundesen Bay was inferred to be the source of VOC impacts in Bundesen Bay water. In 2005, Dow implemented an interim corrective action (groundwater extraction) to control the groundwater seeps to Bundesen Bay. A total of 10 groundwater extraction wells were installed at the southwestern corner of Bundesen Bay in 2005 to achieve hydraulic control and eliminate the seepage and discharge of groundwater impacted by VOCs. In September 2013, Water Board staff concurred with a proposal to stop groundwater extraction from four of these wells that had shown no elevated VOC concentrations for several consecutive sampling events. The remaining six wells were shut down in May 2014 following an upgradient source control effort to treat the impacted groundwater. Surface water sampling, conducted quarterly, indicates that VOC detections in surface water have decreased to consistently below reporting limits and/or screening levels based on Regional Water Board Tier 2 or Environmental Screening Levels (ESLs).

SOLID WASTE MANAGEMENT UNITS (SWMUs)

26. As noted in Finding 6, WDR Order No. 87-064 required Dow to characterize the 25 SWMUs identified at the site and, if necessary, evaluate alternatives for remediation. Dow summarized its investigations and closure activities for the SWMUs in December 1988 in a twelve-volume *Remedial Feasibility Investigation and Corrective Action Program* report. Dow's March 1995 *Corrective Measures Study Report* presented various alternatives for closing SWMUs and for monitoring and maintenance of closed SWMUs.

27. Table 3 summarizes the 25 identified SWMUs at the site and the status of each. The requirements in WDR Order No. 98-059 and Order R2-2002-0007 requiring the completion of final covers for these WMUs have been satisfied. This Order requires continued maintenance and monitoring the closed WMUs.

Table 3: SWMUs at the Dow Pittsburg Facility

SWMU Description	Action Required	Status/Comments
Aboveground Storage Tanks (6, 15, 21, 102, 156, 408, 506-A,506-B)	None	All tanks were closed and removed between 1986 and 1988.
Storm Sewer System	Maintenance/ Retrofitting as Needed	The storm sewer system was revamped in the early to mid-1990s. Stormwater from the roadways and the western half of the site is routed to a retention pond. The storm sewer in the central and eastern side of the site is maintained hydraulically full to prevent infiltration of groundwater contaminants into sewer system.
Former Solar Evaporation Ponds (Class I - Monofill)	Post-Closure Maintenance in accordance with the SMP	The six surface impoundments were closed between 1988 and 1990 pursuant to *Closure Plan - Class 1 Surface Impoundments* as amended, dated November 1, 1988, approved jointly by DTSC and RWQCB. On December 13, 2007 DTSC issued approval of the Post-Closure Permit for the Monofill. On August 2, 2011, the Regional Water Board approved the shutdown of the groundwater extraction for the Monofill and removal of the requirement for maintenance of the five-foot separation between landfill waste and the groundwater table following acceptance of a revised Groundwater Monitoring Program. The Monofill cover is effectively containing waste as required. It is periodically inspected, and Dow plans to repave the cover when necessary. On September 9, 2011, Dow submitted a revised plan for groundwater monitoring; the requirements of this plan are incorporated into the revised SMP.

Central Landfill (Class II)	Post-Closure Maintenance in accordance with the SMP	The Central Landfill was closed simultaneously with closure of adjacent Solar Evaporation Ponds (shares hydraulic containment system). Closure was performed pursuant to *Final Closure of the Central Landfill at the Dow Pittsburg Facility*, dated October 20, 1997. The cover effectively contains waste as required.
Northeastern Landfill (Class III)	Active; operational Maintenance and Monitoring	Dow submitted a report titled *Preliminary Closure Plan and Post-closure Maintenance Plan for the Northeast Landfill* in March 1999 in compliance with WDR Order No. 98-059. The Northeast Landfill is not yet closed but is inactive. Provision 7 of this Order requires Dow to submit a plan for its final closure.
Hexachlorobenzene Disposal Trench (Class I)	Post-Closure Maintenance & Monitoring in accordance with the SMP	A final cover was installed in July 1998 in compliance with WDR Order No. 98-059, as documented in *Hexachlorobenzene Trench, Documentation of Final Cover* (December 21, 1998). The cover is inspected throughout the year and no problems have been found.
Inactive Hazardous Waste Disposal Area – chemical research disposal trench (Class I)	None	This SWMU was closed in 1960's. The area is covered with asphalt, and portions are covered by a concrete-diked tank farm and associated buildings.
Former Municipal Landfills (Northwestern and North Central)	None	Contain mostly general municipal waste and rubber debris. These landfills were closed prior to Dow's purchase in the 1960s.
Former Brine Process Ponds	None	Sediment was removed and the ponds were backfilled with clean soil. Closure, consisting of a concrete slab constructed over the backfilled ponds, was completed in 1988–1989.
Former Latex Coagulation Ponds and Latex Firewater Reservoir	None	Sludge and visibly contaminated soil excavated and ponds backfilled with clean soil. Closure was completed in May 1989.
Sym-tet Fire Water Receiving Impoundment	None	Contaminated soil and sludge were removed, the area was backfilled and covered with road base, pursuant to *Closure Report Sym-tet Fire Water Impounding Basin* (September 30, 1987).
Former Outfall Pond (FOP)	Post-Closure Maintenance & Monitoring in accordance with the SMP	The FOP was closed and capped in Oct. 2000 in compliance with WDR Order No. 98-059 as documented in *Former Outfall Pond Cap Construction Project Closure Report*, (December 2000). Dow has performed additional investigations and evaluations of mercury in the shallow groundwater. On August 2, 2011, the Water Board issued conditional approval for Dow to conduct post-closure maintenance and monitoring activities at the FOP in accordance

		with a *Request for Revision of Post-Closure Maintenance Plan* (April 25, 2003). Monitoring requirements for the FOP are incorporated into the attached SMP.
Shock Pond	None	Stormwater detention pond replaced with concrete holding basin, which also serves to retain storm water. The basin was installed in the early to mid-1990's
Former Drum Storage Area	None	Closed in October 1987. There has been no evidence of spills or releases.
E-002 Pond	None	This pond was used for clarification of river water. No hazardous wastes were discharged into this pond.
Inactive Ethyl Corporation Property (900/1000 Block)	Groundwater Monitoring in accordance with the SMP	Ethyl Corp. stored chemicals used to manufacture tetraethyl lead in this area prior to Dow's purchase of the property in 1982. Approx. 70% of this WMU is covered with asphalt pavement. Groundwater extraction wells installed to contain an isolated low-level VOC plume were operated from April 1992 to February 1995. A Work Plan for Groundwater Investigation was submitted to the Board in August 2002, but was not implemented. Current groundwater concentrations of contaminants are low to non-detect.
Pioneer Rubber Plant	None	Closed.
Rail Car Washing Area	None	Closed. No evidence of releases.

Class III Northeast Landfill

28. The Northeast Landfill is the only SWMU at the Dow facility that has not been closed. Over the past 3-4 years disposal of materials into the Landfill has been limited and sporadic, and no waste has been disposed in the past year. The Northeast Landfill is bounded by New York Slough to the north, Third Street to the south, J Street to the west, and the Kirker Creek Remnant Channel to the east (Figure 4). The landfill is unlined and occupies approximately 15 acres, and was used as a disposal site primarily from the 1930's to 1970s. Materials disposed in the landfill include inert wastes such as concrete rubble, brick, wood, miscellaneous construction debris, excavation dirt, asphalt paving, brine mud, garbage and other miscellaneous refuse. Dredge bottoms from the Antioch Harbor were reportedly placed in the landfill in the 1970s.

29. In March 1999, Dow submitted a preliminary closure and post-closure maintenance plan for the Northeast Landfill in compliance with WDR Order No. 98-059. Dow installed a French drain extraction system around the perimeter of the landfill. In February 2015, the Regional Water Board classified the Northeast Landfill as a Class III non-hazardous landfill. Dow estimates 40,000 cubic yards of remaining capacity remains in the landfill but Dow is considering final closure of the landfill so that this portion of the site can be used for another purpose. Provision 8 of this Order requires Dow to submit a closure plan for this landfill.

Former Outfall Pond: Engineered alternative to prescriptive standard

30. Dow implemented an alternative inspection and maintenance program for the cover of the FOP, as described in its April 25, 2003 letter, *Update of Former Outfall Cover Maintenance Activities and Request for Modification of Post-Closure Maintenance Plan, Dow Facility, Pittsburg, California*. Water Board staff consider this program to be an approved alternative to the requirement in CCR title 27 section 21090, subdivision (b)(1)(A) that the final cover of a surface impoundment closed as a landfill be maintained to prevent ponding and shall have a slope of at least 3 percent. Maintenance and inspection requirements from the April 25, 2003 letter are incorporated into the attached SMP.

    Staff concur that maintenance of a title 27-compliant prescriptive cap is infeasible, given that the placement of additional cover material to achieve this would only exacerbate its settlement. The pumping and testing of any water that ponds and accumulates on the FOP cover would prevent further infiltration into, and leaching and migration of contaminants from, the FOP. Groundwater monitoring has not indicated an increase in contaminant migration from the FOP; therefore Water Board staff has concluded that the engineered alternative is providing equivalent protection against water quality impairment. Provision 4 of this Order requires Dow to continue to demonstrate that its actions are controlling the migration of mercury from the Former Outfall Pond

Monofill and Central Landfill: Engineered alternative to prescriptive standard

31. Dow has implemented a groundwater monitoring program for the Class I Former Solar Evaporation Ponds (Monofill) and the Class II Central Landfill, as described in Dow's technical memorandum *Hydraulic Evaluation for Maintaining 5-foot Separation between Waste and Groundwater in the Monofill and Central Landfill Area* (December 20, 2010). Water Board staff consider this an approved alternative to the requirement in CCR title 27 Section 20240(c) to operate an existing landfill in a manner that ensures that waste will be a minimum of 5 feet above the highest anticipated elevation of the underlying groundwater. The Water Board approved the proposed shutdown of the groundwater extraction for the Monofill contingent on requirements outlined in an August 2, 2011 letter, *Water Board Staff Conditional Approval, Proposed Shutdown of Groundwater Extraction for the Monofill, Dow Chemical Company Pittsburg Facility, December 2010*. Monitoring, maintenance, and inspection requirements for the Monofill and Central Landfill have been incorporated into the attached SMP.

    Staff concur that continuing groundwater extraction to achieve the prescriptive groundwater separation is infeasible, as continued pumping has consistently failed to achieve the necessary five-foot separation. Ongoing monitoring of the monofill and nearby groundwater has shown that groundwater does not rise to a level that would saturate the wastes contained in the Monofill, and groundwater monitoring has not detected any additional release of contaminants from the Monofill. Therefore, Staff has concluded the engineered alternative provides equivalent protection against water quality impairment. Provision 2 of this Order requires Dow to maintain hydraulic containment of groundwater beneath the Class I Former Solar Evaporation Ponds (Monofill) and the Class II Central Landfill such that groundwater does not come in contact with the wastes contained in these WMUs.

BASIN PLAN AND RESOLUTIONS

32. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Regional Water Board and approved by the State Water Resources Control Board (State Water Board), Office of Administrative Law, and U.S. EPA, where required.

ANTIDEGRADATION POLICY

33. The Code of Federal Regulations, title 40, part 131.12, requires that State water quality standards include an anti-degradation policy consistent with the federal policy. The State Water Board established California's anti-degradation policy through State Water Board Resolution 68-16, which is deemed to incorporate the federal anti-degradation policy where the federal policy applies. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal anti-degradation policies. This Order is consistent with both the State and federal anti-degradation policies.

BENEFICIAL USES OF SURFACE WATER AND GROUNDWATER

34. The Basin Plan considers all groundwater to be suitable, or potentially suitable, for municipal or domestic water supply (MUN) and that, in making any exceptions, the Regional Water Board will consider the criteria referenced in Regional Water Board Resolution No. 89-39, "Sources of Drinking Water," where:

    (a) The total dissolved solids exceed 3,000 mg/l (5,000 µS/cm, electrical conductivity), and it is not reasonably expected by the Regional Water Board that the groundwater could supply a public water system, or

    (b) There is contamination, either by natural processes or human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using best management practices or best economically achievable treatment practices, or

    (c) The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

35. Groundwater beneath the Dow site north of the Atchison Topeka and Santa Fe Railway line in all three identified water bearing zones has TDS/electrical conductivity that is significantly higher than the 3,000 mg/l (5,000 µS/cm) levels considered as maximums for suitability for municipal or domestic water supply. It is not reasonable to expect that the groundwater could supply a public water system because significant pumping of the aquifer is likely to result in saltwater intrusion that would further degrade water quality. There is evidence that past pumping of the aquifer in the early 1900s resulted in increased salinity. Therefore, the groundwater beneath the Site meets the Resolution No. 89-39 criteria cited in Finding 34.

36. The Site resides within the boundaries of the Pittsburg Plain Groundwater Basin, as defined in the Basin Plan. The existing and potential beneficial uses identified for groundwater in this basin, according to the Basin Plan, include:

    - Municipal and Domestic Supply (MUN)
    - Industrial Process Supply (PROC)
    - Industrial Service Supply (IND)
    - Agricultural Supply (AGR)

37. The northern portion of the Dow facility is bounded by New York Slough, which is located within the San Francisco Bay/Delta system between Suisun Bay to the west and the confluence of the Sacramento and San Joaquin Rivers to the east. Contra Costa Water District maintains a drinking water intake at Mallard Slough, four miles west of the Dow facility. The Mallard Slough intake is used to augment the main supply primarily during winter and spring months when the salinity is low. The existing and potential beneficial uses identified for surface water in New York Slough and contiguous water bodies, according to the Basin Plan, include:

    - Ocean, Commercial, and Sport Fishing (COMM)
    - Preservation of Rare and Endangered Species (RARE)
    - Water Contact Recreation (REC1)
    - Non-Water Contact Recreation (REC2)
    - Fish Migration (MIGR)
    - Fish Spawning (SPWN)
    - Wildlife Habitat (WILD)
    - Estuarine Habitat (EST)
    - Marine Habitat (MAR)
    - Navigation (NAV)
    - Industrial Process Supply (PROC)
    - Industrial Service Supply (IND)
    - Groundwater Recharge (GWR)
    - Agricultural Supply (AGR)
    - Municipal and Domestic Supply (MUN)

CALIFORNIA ENVIRONMENTAL QUALITY ACT

38. This action is an order to enforce the laws and regulations administered by the Regional Water Board. This action is categorically exempt from the provisions of the California Environmental Quality Act pursuant to title 40 of the California Code of Regulations, section 15301 (existing facility).

SAFE DRINKING WATER POLICY

39. It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary

purposes. While there is no realistic potential for groundwater beneath Dow's WMUs to be used for drinking water purposes, this Order promotes that policy by requiring measures to prevent further groundwater contamination from the site's WMUs.

NOTIFICATION AND PUBLIC MEETING

40. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to update waste discharge requirements and has provided them with an opportunity to submit their written views and recommendations.

41. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the proposed waste discharge requirements for the Site.

IT IS HEREBY ORDERED pursuant to the authority in sections 13263 and 13267 of the California Water Code (CWC) and titles 27 and 23 of the California Code of Regulations (CCR) that the Discharger, its agents, successors, and assigns shall meet the applicable provisions of the relevant authorities and shall comply with the following:

A. PROHIBITIONS

1. The treatment, storage, and discharge of groundwater shall not create a condition of pollution or nuisance as defined in CWC section 13050, subdivisions (*l*) and (m), nor degrade the quality of the groundwater in the aquifers to which it is injected.

2. Untreated or inadequately treated groundwater shall not create a condition of pollution or nuisance, nor degrade the quality of waters of the State or of the United States.

3. The relocation of wastes to or from waste management units (WMUs) shall not create a condition of pollution or nuisance. Any relocated waste shall not be placed in or allowed to contact ponded water from any source whatsoever. Wastes shall not be relocated to any location where they can be discharged into waters of the State or of the United States.

4. Leachate and ponded water containing leachate or in contact with waste shall not be discharged to waters of the State or of the United States unless specifically authorized under an NPDES permit.

5. The creation of any new WMU, or relocation of wastes from any WMU, is prohibited without prior Regional Water Board staff written concurrence.

6. Excavation within or reconfiguration of any existing WMU is prohibited without prior concurrence of Regional Water Board staff. Minor excavation or reconfiguration activities such as for installation of signs or minor routine maintenance and repair do not require prior Regional Water Board staff concurrence.

7. Activities associated with subsurface investigations and cleanup that will cause significant adverse migration of pollutants are prohibited.

8. The Discharger, or any future owner of the site, shall not cause the following conditions to exist in waters of the State or of the United States at any place outside existing waste management units:
   a. Surface Waters:

      (1) Floating, suspended, or deposited macroscopic particulate matter or foam;
      (2) Bottom deposits or aquatic growth;
      (3) Adversely altered temperature, turbidity, or apparent color beyond natural background levels;
      (4) Visible, floating, suspended, or deposited oil or other products of petroleum origin; or
      (5) Toxic or other deleterious substances to be present in concentrations or quantities that may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or that render any of these unfit for human consumption either at levels created in the receiving waters, or as a result of biological concentrations.
      (6) Discharges of VOCs to surface waters in excess of applicable Environmental Screening Levels (ESLs).

   b. Groundwater:

      (1) Further degradation of groundwater quality and/or substantial worsening of existing groundwater impacts; and
      (2) Subsurface migration of pollutants associated with the Discharger's operations to waters of the State is prohibited.

9. Discing of landfill covers is prohibited without prior concurrence of Regional Water Board staff. The Discharger shall utilize alternate methods of controlling vegetative growth, which do not affect the integrity of the landfill cap.

B. SPECIFICATIONS

Reporting Specifications

1. All reports submitted pursuant to this Order shall be prepared under the supervision of and signed by a California registered civil engineer, registered geologist, or certified engineering geologist.

2. At any time, the Discharger may file a written request (including supporting documentation) with the Regional Water Board's Executive Officer, proposing modifications to the attached SMP. If the proposed modifications are acceptable, the Executive Officer may issue a letter of approval that incorporates the proposed revisions into the SMP.

WMU Specifications

3. The Discharger shall protect WMUs from any washout or erosion of wastes or covering material and from inundation that could occur during a 100-year flood event. Final cover systems for WMUs shall be graded and maintained to promote lateral runoff and prevent

ponding and infiltration of water. For the Former Outfall Pond (FOP), Dow has concluded that adding additional soil to the cover would cause increased subsidence. For the FOP alone, Water Board staff approved an alternative inspection and maintenance program that included sampling ponded water on the cover, and discharging this water to New York Slough if it met NPDES discharge limits. The periodic removal of water serves to lower buildup of hydraulic head above the wastes in the FOP, which increase the possibility of infiltration and further leaching of contaminants. The groundwater monitoring conducted in the vicinity of the FOP also serves to determine if there is additional infiltration and leaching of contaminants, and if so, Provision 6 of this Order requires additional corrective actions at the FOP.

4. The Discharger shall notify the Regional Water Board immediately of any failure that threatens the integrity of any containment and/or control facilities, structures, or devices. The Discharger shall promptly correct any such failure after receiving approval of the method and schedule from the Executive Officer.

5. The Discharger shall maintain the WMUs to prevent a statistically significant increase in water quality parameters at Points of Compliance (POC).

6. The Discharger shall maintain the WMUs to prevent discharges, such that the units do not constitute a pollution source.

7. The Discharger shall have continuing responsibility for correcting any problems that arise in the future as a result of waste discharge or related operations or site use.

8. The Discharger shall comply with all applicable provisions of CCR title 27 that apply to the closure and post-closure of WMUs and the design and maintenance of surface impoundments, including those that are not specifically referenced in this Order.

9. If the Executive Officer determines the existence of an imminent threat to the beneficial uses of surface or subsurface waters of the State, the Discharger may be required to perform additional investigation, install additional groundwater monitoring wells and/or undertake corrective action measures.

10. The Discharger shall install, maintain in good working order, and operate efficiently any monitoring system necessary to assure compliance with this Order.

11. If the Executive Officer determines, on the basis of groundwater monitoring information, that water quality at or beyond the POC wells becomes degraded, the Discharger will be required to submit and implement a site specific groundwater corrective action proposal.

12. The Discharger shall monitor and maintain all closed WMUs according to a detailed operating, maintenance, and contingency plan that will include (at a minimum) a) procedures for routine inspections; b) implementation of contingency measures if problems with the containment structures are discovered; and c) notification of agencies. The plan must be submitted for Regional Water Board staff review per Provision 16 of this Order.

Monitoring Specifications

13. The Discharger shall conduct monitoring activities according to the SMP attached to this Order, and as may be amended by the Executive Office pursuant to this Order.

14. Any additional monitoring wells installed at the site shall be constructed in a manner that maintains the integrity of the drill hole, prevents cross-contamination of saturated zones, and produces representative groundwater samples from discrete zones within the groundwater zone each well is intended to monitor.

15. All borings for monitoring wells shall be continuously cored. The drill holes shall be logged during drilling under the direct supervision of a California professional geologist whose signature appears on the corresponding well log. Logs of monitoring wells shall be filed with the State Department of Water Resources. All information related to well construction shall be submitted to the Regional Water Board upon well completion.

16. The groundwater sampling and analysis program shall ensure that groundwater quality data are representative of the groundwater in the area that is monitored.

17. Soil Contamination - The Discharger shall notify the Board of any soil contamination not previously identified in subsurface investigations that is discovered during any subsurface investigation or excavation work conducted on the site that may potentially adversely affect water quality.

C. PROVISIONS

1. **Self-Monitoring Program**: The Discharger shall comply with the updated Self-Monitoring Program (SMP) as attached to this Order (Part A and Part B). The attached SMP is designed to collect information necessary to evaluate the integrity of active and closed WMUs. The attached SMP is also designed to detect any discharges from waste management units and the significance and stability of any discharge. The attached SMP may be amended at the discretion of the Executive Officer, as necessary to better evaluate site conditions, discharges and compliance with these WDRs.

   COMPLIANCE DATE: Effective Immediately

2. **Demonstration of Continued Hydraulic Containment of Wastes in the Monofill and Central Landfill**: The Discharger shall submit technical reports annually, which demonstrate, to the satisfaction of the Executive Officer, the continued maintenance of sufficient hydraulic containment of groundwater beneath the Class I Former Solar Evaporation Ponds (Monofill) and the Class II Central Landfill such that groundwater does not come in contact with their contained wastes.

   COMPLIANCE DATE: March 1 of each year

3. **Resumption of Groundwater Extraction at the Monofill and Central Landfills:** Should the annual report required in Provision 2 fail to demonstrate the isolation of wastes in the Monofill and Central Landfill from groundwater, or should there be a trend of COC values exceeding Tier 2 values in the vicinity of the Monofill and Central Landfills, the Discharger shall submit a proposal acceptable to the Executive Officer for the resumption of groundwater extraction at these two landfills.

   COMPLIANCE DATE: Within 3 months of a determination that wastes are not isolated or identification of a trend of VOCs exceeding Tier 2 values

4. **Demonstration of Efficacy of Former Outfall Pond Corrective Actions:** The Discharger shall continue to submit annual reports summarizing the status of the Engineered Phytoremediation System for the FOP Cover, and demonstrate, to the satisfaction of the Executive Officer, that this system is sufficient to mitigate the migration of mercury in the groundwater from the Former Outfall Pond.

   COMPLIANCE DATE: March 1 of each year

5. **Submission of Water Analytical Results for the Former Outfall Pond:** The Discharger shall sample and submit the results of the testing of water accumulated on the FOP cover for mercury whenever more than 6 inches has accumulated. If the results are at or below NPDES discharge limits for mercury, the accumulated water is to be pumped off immediately; if they exceed discharge limits for mercury, the water is to be removed from the site as soon as possible.

   COMPLIANCE DATE: Submit results within one month after sampling.

6. **Additional Corrective Actions for the Former Outfall Pond**: Should the Discharger be unable to demonstrate that mercury migration is prevented by alternative engineered actions at the FOP, the Discharger shall submit a proposal, acceptable to the Executive Officer, for additional corrective actions at the Former Outfall Pond sufficient to mitigate the migration of mercury in the groundwater from the Former Outfall Pond.

   COMPLIANCE DATE: 3 months after determination of mercury migration from the FOP

7. **Periodic Reevaluation of the Optimization of the SMP wells:** The Discharger shall re-evaluate the wells included in the SMP program on a biennial basis to determine whether changes in the monitoring frequency and constituents monitored are needed. The Discharger shall submit a summary of proposed changes to the SMP to the Regional Water Board for approval prior to implementing any changes in monitoring.

   COMPLIANCE DATE: March 1, 2019, and every two years thereafter.

8. **Closure of the Northeast Landfill:** The Discharger shall submit a plan acceptable to the Executive Officer for the final closure of the Northeast Landfill.

   COMPLIANCE DATE: August 15, 2018

9. **Constituents of Concern (COCs)**: The Discharger shall submit a technical report, acceptable to the Executive Officer, that presents a complete list of COCs for each SWMU monitored pursuant to the SMP attached to this Order, or as may be modified by the Executive Officer. COCs must be determined based on the character of the wastes and leachate in each SWMU.

   COMPLIANCE DATE: March 1, 2018, then every five years thereafter

10. **Long-Term Flood Protection Report**: The Discharger shall submit a report, acceptable to the Executive Officer, for long-term flood and/or sea level rise protection at the site. The report shall include a consideration of feasible options for achieving protection from the 100-year flood to account for rising sea levels and increased flood frequency and intensity. The report shall consider the methods developed by the San Francisco Bay Conservation and Development Commission to predict and protect against future flooding. The report shall be updated and submitted every five years throughout the operational life of the site with the most recently available and credible information at the time of the update.

    COMPLIANCE DATE: July 1, 2018, and every 5 years thereafter

11. **Earthquake Inspection**: The Discharger shall submit a detailed Post Earthquake Inspection Report acceptable to the Executive Officer in the event of any earthquake generating ground shaking of Magnitude 7 or greater at or within 30 miles of the Pond Site. The report shall describe the containment features, groundwater monitoring, and control facilities potentially impacted by the static and seismic deformations of any WMU or surface impoundment. Damage to any WMU or surface impoundment, which may impact State waters, must be reported immediately to the Executive Officer.

    COMPLIANCE DATE: Verbally as soon as the data becomes available and in writing within two weeks of a triggering seismic event. Any damage that may cause impacts to waters of the State must be reported immediately upon discovery to the Spill Hotline at 1-800-852-7550 and by sending an email to Rb2SpillReports@waterboards.ca.gov.

12. **Financial Assurance**: The Discharger shall submit to the Board evidence of an irrevocable post-closure fund, acceptable to the Executive Officer, to ensure monitoring, maintenance, and any necessary remediation actions. Every five years, for the duration of the post-closure monitoring period, the Discharger shall submit a report that includes an outline of the financial assurance mechanism and verification that the fund has been created and continues to exist and be maintained. The fund value shall be supported by calculations, to be included with this submittal, providing cost estimates for all post-closure monitoring, maintenance, repair, and replacement of WMU or landfill containment, cover, and monitoring systems. Additionally, cost estimates must be provided for corrective action for known releases that may be required for all WMUs at the site. The fund value shall be based on the sum of these

estimates. The cost estimates and funding shall be updated to reflect changes to monitoring systems as they occur. The post-closure maintenance period shall extend as long as the wastes within the WMU pose a threat to water quality.

COMPLIANCE DATE: July 1, 2018, and every five years thereafter

13. **Report of Waste Discharge:** The Discharger shall submit a technical report, acceptable to the Executive Officer, describing any proposed material change in the character, location, or volume of a discharge, or in the event of a proposed change in site use or development. A material change includes, but is not limited to, the following:

    a. Addition of a major industrial waste discharge to discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste
    b. Significant change in disposal method, e.g., change from a land disposal to a direct discharge to water, or change in the method of treatment that would significantly alter the characteristics of the waste
    c. Significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems
    d. Increase in flow beyond that specified in the waste discharge requirements.
    e. Increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements

    The technical report shall describe the project, identify key changes to the design that may impact waste management units, and specify components of the design necessary to maintain integrity of waste management unit covers and prevent water quality impacts. No material changes to the site shall be made without prior approval by the Executive Officer.

    COMPLIANCE DATE: 120 days prior to any material change

14. **Stormwater Control Plans:** For each proposed on-site development activity of greater than 5 acres in size, the Discharger shall submit a Notice of Intent to the State Water Resources Control Board, submit a Storm Water Pollution Prevention Plan acceptable to the Executive Officer, and implement Best Management Practices (BMPs) for the control of stormwater, in accordance with requirements specified in the State Water Resources Control Board General Permit for Storm Water Discharges Associated with Construction Activities (NPDES Permit No. CAS000002).

    COMPLIANCE DATE: 30 days prior to construction

15. **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 measurement 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.

COMPLIANCE DATE: March 1 of each year.

16. **Waste Management Unit Operations, Maintenance, and Contingency Plan:** The Discharger shall submit a plan for the procedures for routine inspections, and implementation of contingency measures if problems with the containment structures are found within the site's WMUs.

    COMPLIANCE DATE: March 1, 2018

17. **Availability**: A copy of these WDRs shall be maintained by the Discharger and shall be made available by the Discharger to all employees or contractors performing work (maintenance, monitoring, repair, construction, etc.) at the WMUs.

18. **Revision**: This Order is subject to Regional Water Board review and updating, as necessary, to comply with changing State or federal laws, regulations, policies, or guidelines; changes in the Basin Plan; or changes in discharge characteristics. The Board will review this Order periodically and may revise its requirements when necessary.

19. **Submittal Revisions**: 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 Board, it shall promptly submit such facts or information.

20. **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 liability under federal, State or local laws, nor do they create a vested right for the Discharger to continue the waste discharge.

21. **Operation and Maintenance**: The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that 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.

22. **Reporting of Hazardous Substance Release**: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it probably will be discharged in or on any waters of the State, the Discharger shall:

    a. Report such discharge immediately, and in accordance with CWC section 13271, to the following:

i. The Regional Water Board by calling (510) 622-2300 during regular office hours (Monday through Friday, 8 a.m. – 5 p.m.); and
ii. The California Office of Emergency Services (OES) at (800) 852-7550.

b. A written report shall be filed with the Regional Water Board within five working days. The report shall describe:
   i. The nature of the waste or pollutant.
   ii. The estimated quantity involved.
   iii. The duration of the incident.
   iv. The cause of the release.
   v. The estimated size of the affected area, and nature of the effect.
   vi. The corrective actions taken or planned, and a schedule of those measures.
   vii. The persons/agencies notified.
   viii. Site map illustrating location and approximate size of impacted area;
   ix. Photographs of the impacted area before and after remediation; and
   x. A report detailing the remediation method chosen and its efficacy and illustrating that the release contingency plan was effective, or else proposing modifications to the contingency plan to increase its effectiveness.

This reporting is in addition to reporting to OES that is required pursuant to the Health and Safety Code. The Discharger shall report all reportable quantities or any discharge of less than a reportable quantity that is in violation of a prohibition of the Basin Plan.

23. **Endangerment of Health or the Environment**: The Discharger shall report any noncompliance that 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.

24. **Entry and Inspection**: The Discharger shall allow the Regional Water 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.

25. **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 Water Board.

26. **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.

27. **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. San Francisco Bay Regional Water Quality Control Board
    b. Cal/EPA Department of Toxic Substances Control

    The Executive Officer may modify this distribution list as needed

28. **Reporting Requirements:**

    a) Hardcopies:

        i) Technical reports/plans, submitted by the Discharger, in compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be submitted to the Regional Water Board on the schedule specified herein. Hard copies of these reports/plans shall consist of a letter report that includes the following:

            a. Identification of any obstacles that may threaten compliance with the schedule;

            b. In the event of non-compliance with any Prohibition, Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order;

            c. In the self-monitoring reports, an evaluation of the current groundwater monitoring system and a proposal for modifications as appropriate; and

            d. A signed transmittal letter and professional certification by a California licensed civil engineer or a professional geologist.

        ii) All application reports or information to be submitted to the Executive Officer shall be signed and certified as follows:

a. For a corporation – by a principle executive officer or the level of vice-president or an appropriate delegate.

b. For a partnership or sole proprietorship – by a general partner or the proprietor, respectively.

c. For a municipality, State, federal, or other public agency – by either a principal executive officer or ranking elected official.

b) Electronic Submittals:

i. The State Water Board has adopted regulations requiring electronic report and data submittal to Geotracker [http://www.geotracker.swrcb.ca.gov/].

ii. The Discharger is responsible for submitting the following via the internet:

a. Groundwater analytical data;

b. Surveyed locations of monitoring wells;

c. Boring logs describing monitoring well construction;

d. Portable data format (PDF) copies of all reports identified in 1 and 2 above (the document, in its entirety [signature pages, text, figures, tables, etc.] must be saved to a single PDF file); and

e. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order related to stormwater and compliance with the State Water Board' General Permit No. CAS000001 for the Discharge of Storm Water Associated with Industrial Activities.

iii) Upon request, monitoring results shall also be provided electronically in Microsoft Excel® to allow for ease of review of site data, and to facilitate data computations and/or plotting that Water Board staff may undertake during the review process. Data tables submitted in electronic spreadsheet format will not be included in the case of file review and should therefore be submitted on CD and included with the hard copy of the report. Electronic tables shall include the following information:

a. Well designations;

b. Well location coordinates (latitude and longitude);

c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, screen interval elevation, and a characterization of geology of subsurface the well is located in);

d. Groundwater depths and elevations (water levels);

e. Current analytical results by constituent of concern (including detection limits for each constituent);

f. Historical analytical results (including the past five years, unless otherwise requested); and

g. Measurement dates.

29. **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 five 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 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.

30. **Analytical Methods**: Unless otherwise permitted by the Regional Water Board Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. The 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" promulgated by the U.S. Environmental Protection Agency.

31. **Duty to Comply**: The Discharger shall comply immediately, or as prescribed by the time schedule below, with all Prohibitions, Specifications and Provisions of this Order. All required submittals must be acceptable to the Executive Officer. The Discharger must also comply with all conditions of these waste discharge requirements. Violations may result in enforcement actions, including Regional Water 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 Water Board.

32. **Requests for Technical Reports**: All technical and monitoring reports required by this Order are requested pursuant to CWC section 13267. The burden, including costs, of these reports bears a reasonable relationship to the need for the reports and benefits to be obtained, specifically ensuring the protection of human health and the environment. Failure to submit reports in accordance with schedules established by this Order or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Dischargers to enforcement action pursuant to CWC section 13268.

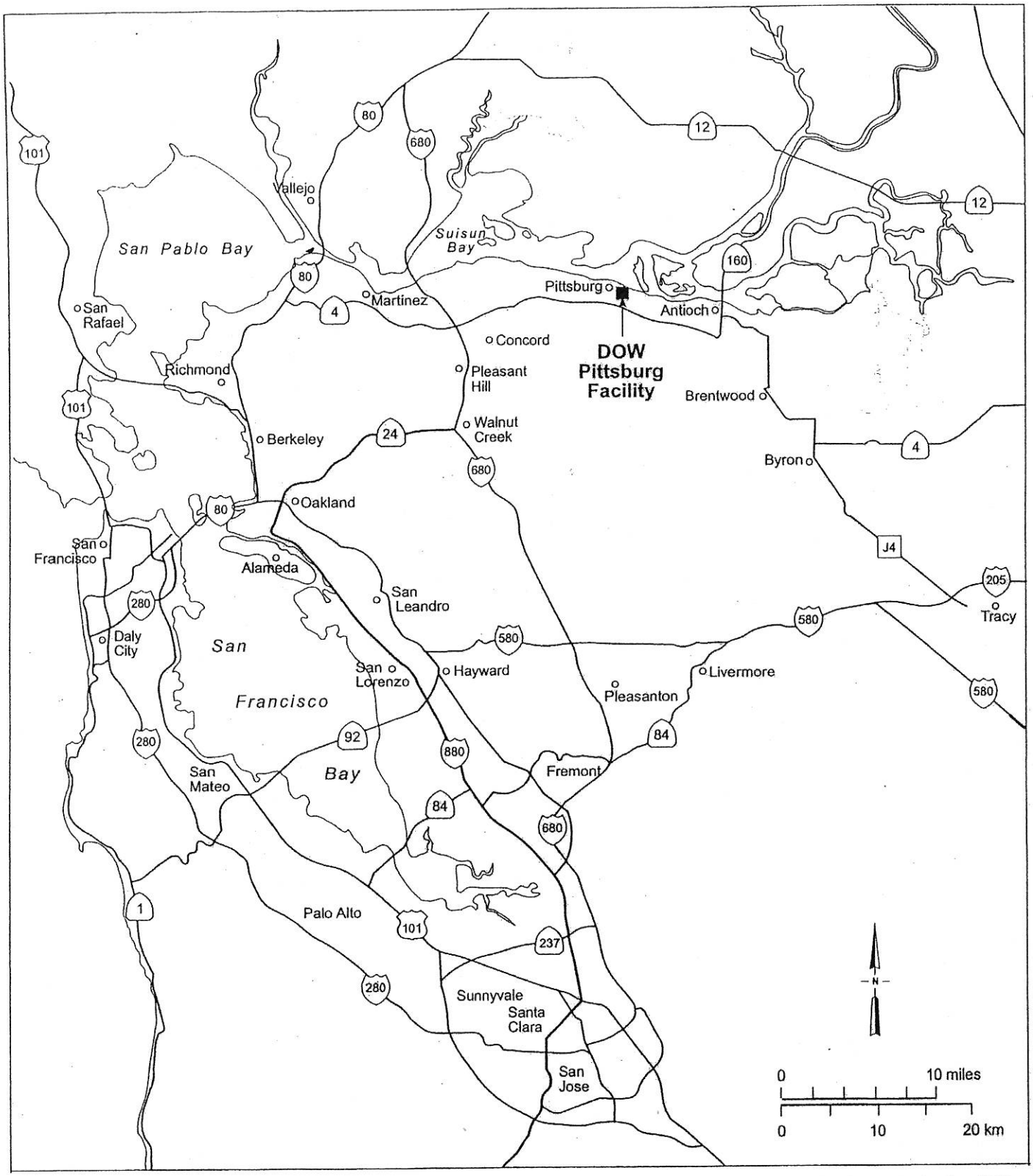
33. This Order supersedes and rescinds Order No. R2-2002-0007.

I, Bruce H. Wolfe, 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

_____

Bruce H. Wolfe
Executive Officer

Attachments:
Figure 1 - Site Location Map
Figure 2 - VOC Migration Pathways
Figure 3 - Former Outfall Pond Area
Figure 4 - Solid Waste Management Units
Self-Monitoring Program (Part A and Part B)



Map Source: AAA, Bay and Mountain Section, 1997

Figure (1) Site Location Map

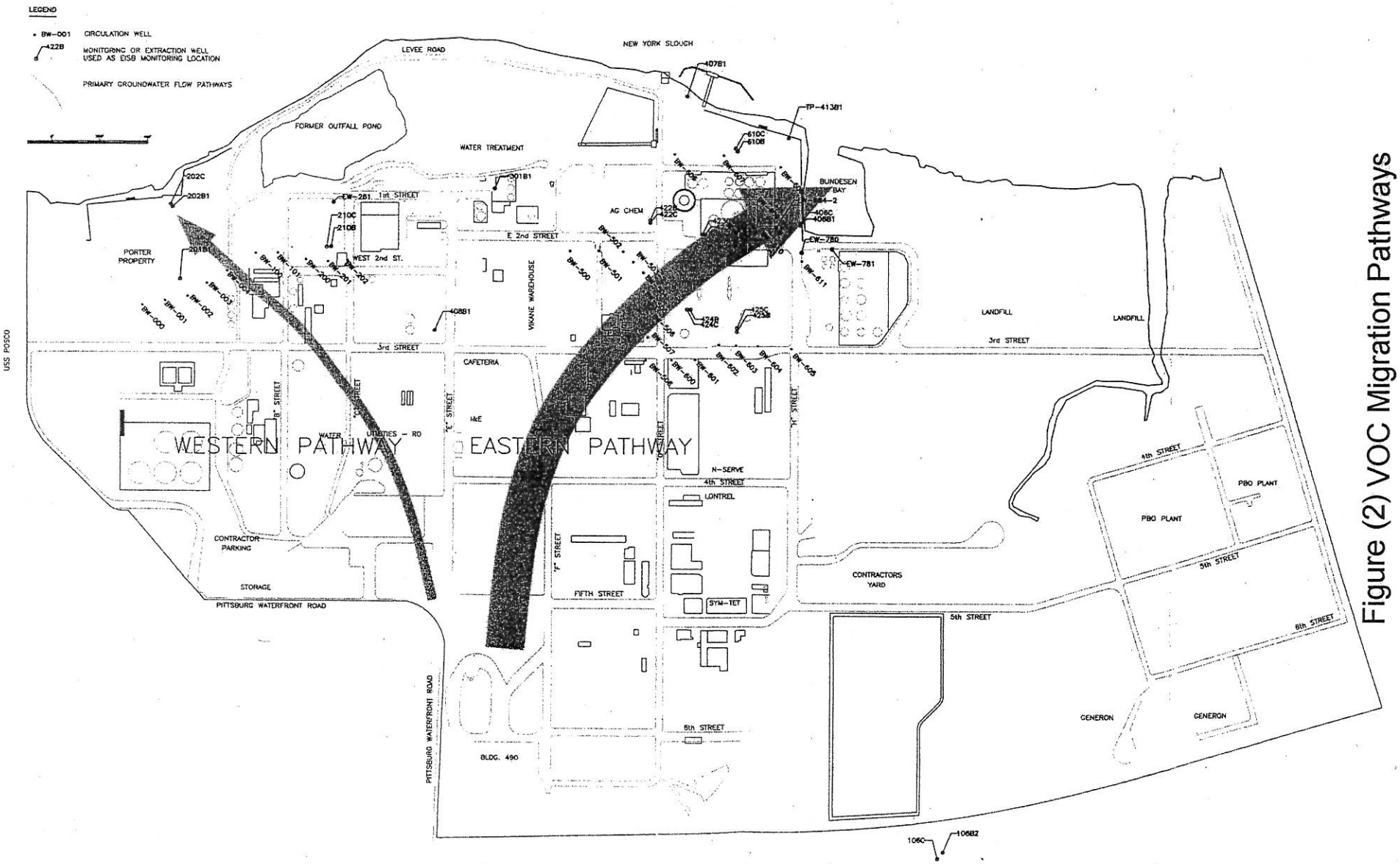


Figure (2) VOC Migration Pathways

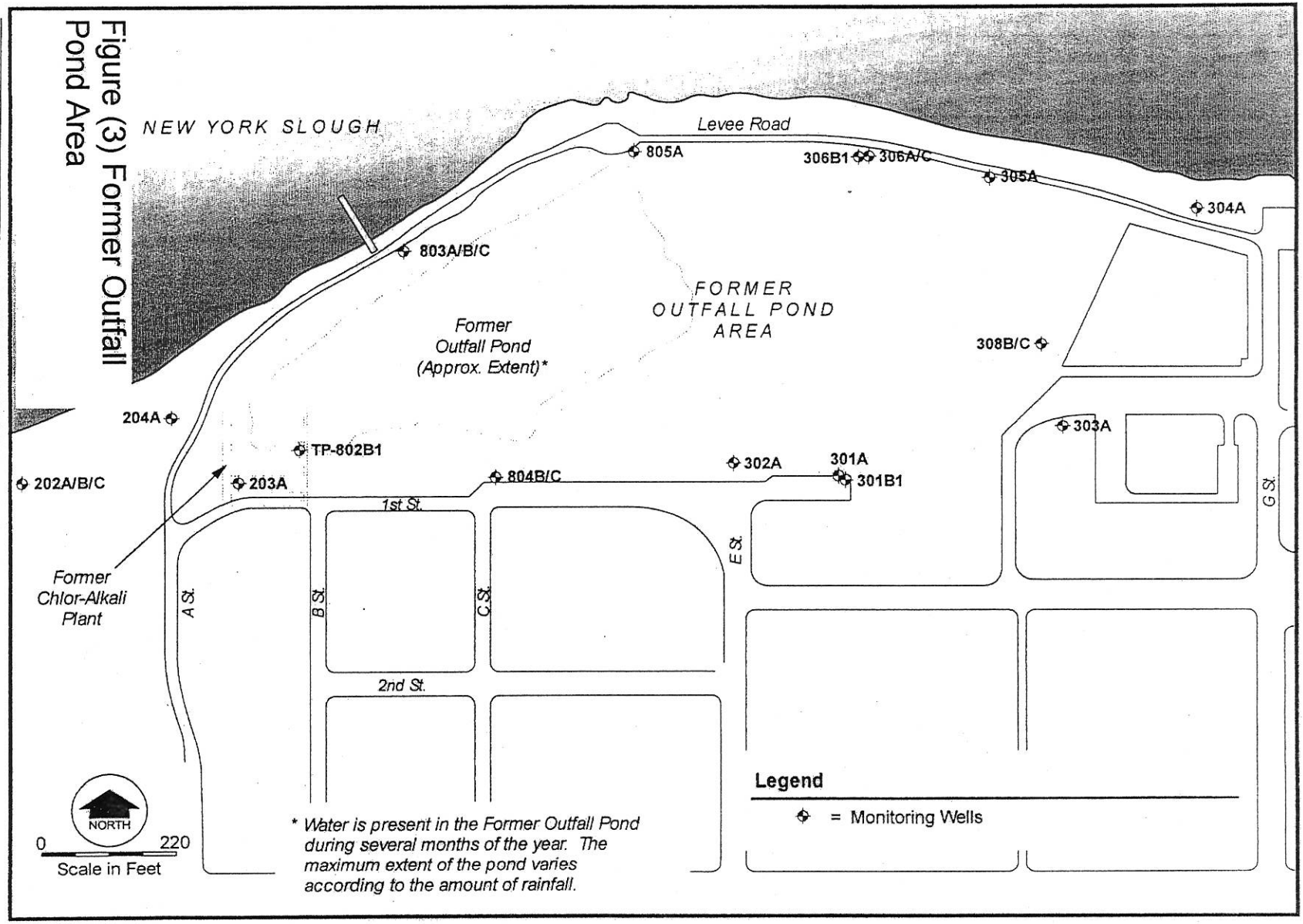


Figure (3) Former Outfall Pond Area
NEW YORK SLOUGH
Levee Road
805A
306B1
306A/C
305A
304A
803A/B/C
FORMER OUTFALL POND AREA
Former Outfall Pond (Approx. Extent)*
308B/C
204A
303A
TP-802B1
202A/B/C
203A
804B/C
302A
301A
301B1
1st St.
G St.
E St.
Former Chlor-Alkali Plant
A St.
B St.
C St.
2nd St.
NORTH
0
220
Scale in Feet
* Water is present in the Former Outfall Pond during several months of the year. The maximum extent of the pond varies according to the amount of rainfall.
Legend
= Monitoring Wells

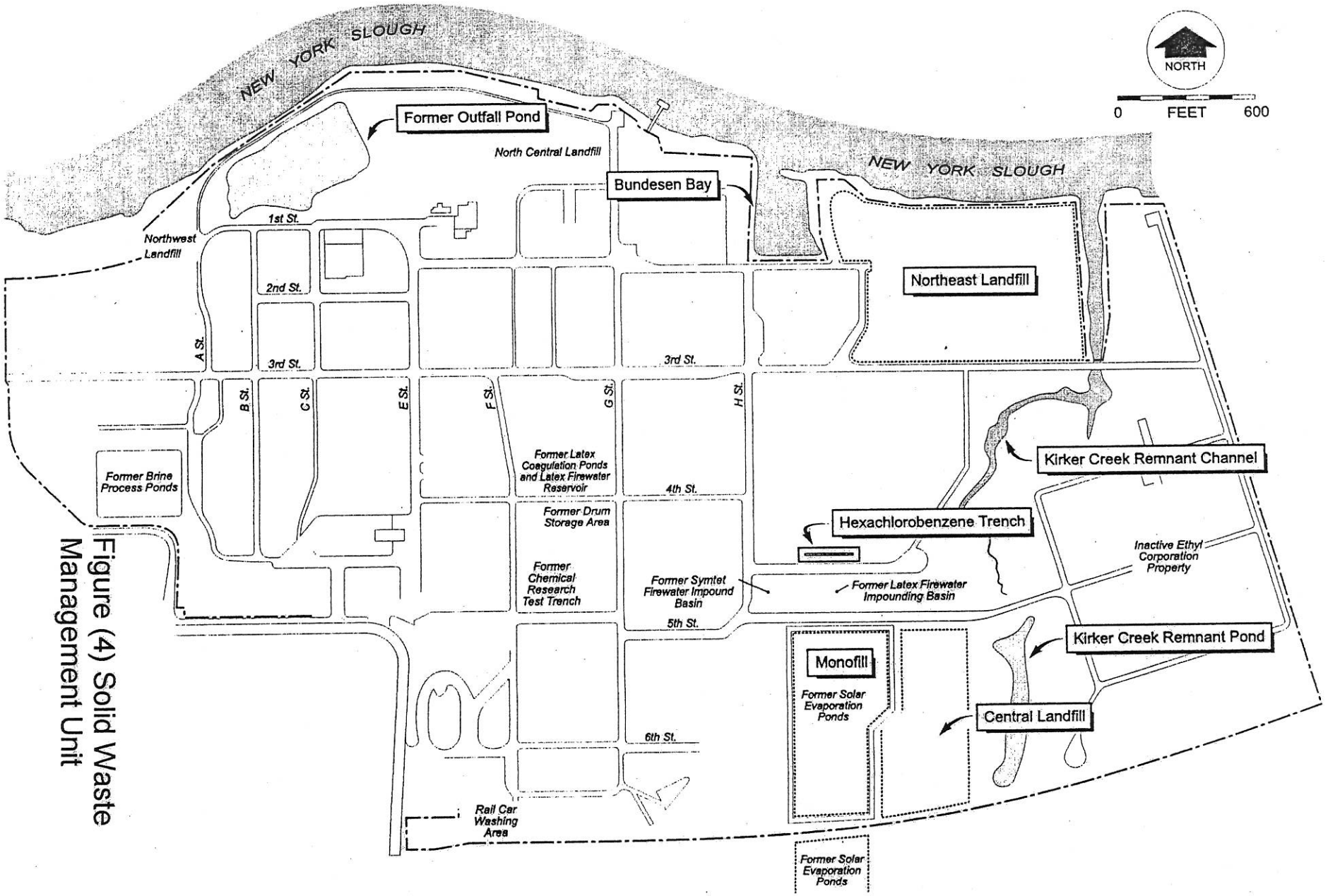


Figure (4) Solid Waste Management Unit

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

DOW CHEMICAL COMPANY

PITTSBURG FACILITY

CONTRA COSTA COUNTY

TENTATIVE ORDER

CONSISTS OF

PART A

AND

PART B

PART A

This Self-Monitoring Program (SMP) specifies monitoring and reporting requirements, including:

(a) General monitoring requirements for landfills and waste management units (Part A);
(b) Self-monitoring report content and format (Part A);
(c) Self-monitoring report submittal frequency and schedule (Part B);
(d) Monitoring locations and frequency (Part B); and
(e) Monitoring parameters and analytes (Part B).

A. AUTHORITY AND PURPOSE

For discharges of waste to land, water quality monitoring is required pursuant to CCR, Division 2, Title 27, Subdivision 1, Chapter 3, Subchapter 3, sections 20380 through 20435. The principal purposes of an SMP are: (1) to document compliance with WDRs and prohibitions established by the Regional Water Board, (2) to facilitate self-policing by the Discharger in the prevention and abatement of pollution arising from the waste discharge, (3) to develop or assist in the development of effluent standards of performance and toxicity standards, and (4) to assist the Discharger in complying with the requirements of Title 27.

B. MONITORING REQUIREMENTS

Monitoring refers to the observation, inspection, measurement, and/or sampling of environmental media, waste management units (WMUs), containment and control facilities, and waste disposed in each WMU. The following defines the types of monitoring that may be required.

Monitoring of Environmental Media

The Regional Water Board may require monitoring of groundwater, surface water, vadose zone, stormwater, leachate, landfill gas, and any other environmental media that may pose a threat to water quality or provide an indication of a water quality threat at the site.

Sample collection, storage, and analyses shall be performed according to the most recent version of U.S. EPA-approved methods or in accordance with a sampling and analysis plan (SAP) approved by Regional Water Board staff. Analytical testing of environmental media required by this SMP shall be performed by a State-approved laboratory for the required analyses. The director of the laboratory whose name appears on the certification shall be responsible for supervising all analytical work in his/her laboratory and shall have signing authority for all reports or may designate signing of all such work submitted to the Regional Water Board.

All monitoring instruments and devices used to conduct monitoring in accordance with this SMP shall be maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once every two years.

Receiving waters refer to any surface water that actually or potentially receives surface or groundwater that pass over, through, or under waste materials or impacted soils. In this case, the groundwater beneath and adjacent to landfill areas and the surface runoff from the site are considered receiving waters.

Standard Observations

Standard observations refer to observations within the limits of each WMU, at their perimeter, and of the receiving waters beyond their limits. Standard observations include:

1. WMUs:
    a. Evidence of ponded water at any point on the WMU;
    b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source; and
    c. Evidence of erosion and/or daylighted waste.

2. Perimeter of WMUs:
    a. Evidence of liquid leaving or entering the WMU, estimated size of affected area, and flow rate (show affected area on map);
    b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source; and
    c. Evidence of erosion and/or daylighted waste.

3. Receiving Waters:
    a. Floating and suspended materials of waste origin, including their presence or absence, source, and size of affected area;
    b. Discoloration and turbidity: description of color, source, and size of affected area;
    c. Evidence of odors, presence or absence, characterization, source, and distance of travel from source;
    d. Evidence of beneficial use, such as presence of water associated with wildlife;
    e. Estimated flow rate; and
    f. Weather conditions, such as estimated wind direction and velocity, total precipitation.

Facilities Inspections

Facilities inspections refer to the inspection of all containment and control structures and devices associated with the Landfill. Containment and control facilities may include the following:

1. Intermediate and final covers;
2. Stormwater management system (SWMS) elements such as perimeter drainage and diversion channels, ditches and downchutes, and detention and sedimentation ponds or collection tanks;
3. Ponded water; and
4. Leachate collection and recovery system (LCRS) elements such as leachate storage tanks, pumps and control equipment.

Quality Assurance/Quality Control (QA/QC) Sample Monitoring

The Discharger shall collect duplicate, field blank, equipment blank (if appropriate) and trip blank samples for each semiannual monitoring event at the following frequencies:

1. Duplicate sample – one sample per 20 regular samples;
2. Field blank – one per day during each semiannual monitoring event;
3. Equipment blank – one sample per 10 monitoring stations; and
4. Trip blank – one sample per each semiannual monitoring event.

Waste Monitoring

Waste monitoring shall consist of recording on a monthly basis the following:

1. The total volume and weight of waste disposed at the site during the month;
2. Remaining landfill capacity/waste volume in place; and
3. Locations and dimensions of the fill areas on a map.

C. REPORTING REQUIREMENTS

Reporting responsibilities of waste dischargers are specified in CWC sections 13225(a), 13267(b), 13383, and 13387(b) and this Regional Water Board's Resolution No.73-16 and Order No. 93-113. At a minimum, each Self-Monitoring Report (SMR) shall include the following information:

1. Transmittal Letter: A cover letter transmitting the essential points of the monitoring report shall be included with each monitoring report. The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall also certify the completion of all monitoring requirements. The letter shall be signed by the Discharger's principal executive officer or his/her duly authorized representative and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

2. Graphic Presentation: The following maps, figures, and graphs (if applicable) shall be included in each SMR to visually present data collected pursuant to this SMP:

    a. Plan-view maps showing all monitoring and sampling locations, WMUs, containment and control structures, treatment facilities, surface water bodies, and site/property boundaries;
    b. Groundwater level/piezometric surface contour maps for each groundwater-bearing zone of interest showing inferred groundwater gradients and flow directions under/around each WMU, based upon the past and present water level elevations and pertinent visual observations; and
    c. Any other maps, figures, photographs, cross-sections, graphs, and charts necessary to visually demonstrate the appropriateness and effectiveness of sampling, monitoring, characterization, investigation, or remediation activities relative to the goals of this SMP.

3. Tabular Presentation: The following data (if applicable) shall be presented in tabular form and included in each SMR to show a chronological history and allow quick and easy reference:

    a. Well designation;
    b. Well location coordinates (latitude and longitude);
    c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation);
    d. Groundwater depths;
    e. Groundwater elevations;
    f. Current analytical results (including analytical method and detection limits for each constituent);
    g. Historical analytical results (including at least the past five years in the annual report unless otherwise requested); and

h. Measurement dates.

4. Compliance Evaluation Summary and Discussion:

   a. A summary and certification of completion of all environmental media monitoring, standard observations, and facilities inspections;
   b. The quantity and types of wastes disposed of during the reporting period, and the locations of the disposal operations, if applicable;
   c. A description of the waste stream including the percentage of each waste type (e.g., residential, commercial, industrial, construction/demolition), if applicable;
   d. The signature of the laboratory director or his/her designee indicating that he/she has supervised all analytical work in his/her laboratory; and
   e. A discussion of the field and laboratory results that includes the following information:

      (1) Data interpretations;
      (2) Conclusions;
      (3) Recommendations;
      (4) Newly implemented or planned investigations and remedial measures;
      (5) Data anomalies;
      (6) Variations from protocols;
      (7) Condition of wells; and
      (8) Effectiveness of leachate monitoring and control facilities.

5. Appendices: The following information shall be provided as appendices in electronic format only unless requested otherwise by Regional Water Board staff and unless the information is already contained in a SAP approved by Regional Water Board staff:

   a. New boring and well logs;
   b. Method and time of water level measurements;
   c. Purging methods and results including the type of pump used, pump placement in the well, pumping rate, equipment and methods used to monitor field pH, temperature, and electrical conductivity, calibration of the field equipment, pH temperature, conductivity, and turbidity measurements, and method of disposing of the purge water;
   d. Sampling procedures, field, equipment, and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the date and time of sampling, the name of the person actually taking the samples, and any other relevant observations; and
   e. Documentation of laboratory results, analytical methods, detection limits and reporting limits, and Quality Assurance/Quality Control (QA/QC) procedures for the required sampling.

D. CONTINGENCY REPORTING

1. The Discharger shall report any significant discharge from the disposal area immediately after it is discovered to the Regional Water Board by calling the Spill Hotline at 1-800-852-7550 and by sending an email to Rb2SpillReports@waterboards.ca.gov. The Discharger shall submit a written report with the Regional Water Board within five days of discovery of any discharge. The written report shall contain, at a minimum, the following information:

   a. A map showing the location(s) of discharge;
   b. Approximate flow rate;

c. Nature of effects (e.g., all pertinent observations and analyses); and
d. Corrective measures underway or proposed.

2. The Discharger shall submit a written report to the Regional Water Board within seven days of determining that a statistically significant difference occurred between a SMP sample set and an approved Water Quality Protection Standard (WQPS). The written report shall indicate which WQPS(s) have been exceeded. If appropriate, the Discharger shall resample at the compliance point(s) where this difference has been found within 30 days.

3. If re-sampling and analysis confirms the earlier finding of a statistically significant difference between SMP results and WQPS(s), the Discharger shall, upon determination by the Executive Officer, submit to the Regional Water Board an amended Report of Waste Discharge as specified in Section 20420 of Title 27 for establishment of an Evaluation Monitoring Program meeting the requirements of Section 20425 of Title 27.

E. REPORTING REQUIREMENTS

The Discharger shall submit SMRs to Regional Water Board staff in accordance with the schedules indicated in Part B of this SMP. Reports due at the same time may be combined into one report for convenience, as long as monitoring activities and results pertaining to each monitoring period are clearly distinguishable. Reports shall be submitted in accordance with Provision 3 in these WDRs.

F. MAINTENANCE OF WRITTEN RECORDS

The Discharger shall maintain information required pursuant to this SMP for at least five years. The five-year period of retention shall be extended during the course of any unresolved litigation regarding a discharge or when requested by the Regional Water Board.

PART B

DESCRIPTION OF OBSERVATION STATIONS AND SCHEDULE OF OBSERVATIONS

A. SURFACE, GROUND WATER, AND LEACHATE MONITORING

The Discharger shall sample surface water, groundwater, leachate, surface springs, and the underdrains as detailed in Table A.

B. STANDARD OBSERVATIONS AND FACILITIES INSPECTIONS

Standard Observations shall be made for the Monofill, Central Landfill, Hexachlororbenzene Trench, Former outfall Pond and the Northeast Landfill. Observations shall be made at the locations and frequency described in…

C. WASTE MONITORING

The pH and total volume of brine mud disposed of in the Northeast Landfill shall be recorded per load and per month.

D. REPORT DUE DATES

Reports shall be due on the following schedule:

ANNUAL REPORT: March 1 of each year

SEMI-ANNUAL EXCEPTIONS REPORT: August 31 of each year

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring 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. .

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.

Bruce H. Wolfe
Executive Officer

Date Ordered:

Attachment: Table A: Monitoring Points, Parameters, and Frequency

TABLE A				
Well	**Monitored Interval**	**Sampling Frequency**	**Rationale**	**Parameters**
Central Landfill				
114A	Water Table	Semi-Annual	Detection Monitoring	VOCs
114B1	Upper Sand	Biennial	Downgradient of Central Landfill	VOCs
Monofill				
115A	Water Table	Semi-Annual	Downgradient of Monofill	VOCs
115B1	Upper Sand	Semi-Annual	Downgradient of Monofill	VOCs
115C	Lower Sand	Semi-Annual	Downgradient of Monofill	VOCs
116A	Water Table	Semi-Annual	Downgradient of Monofill	VOCs
116B1	Upper Sand	Semi-Annual	Downgradient of Monofill	VOCs
117A	Water Table	Semi-Annual	Downgradient of Monofill	VOCs
118A	Water Table	Semi-Annual	Downgradient of Monofill	VOCs
503C	Lower Sand	Annual	Downgradient of Monofill	VOCs
611C	Lower Sand	Semi-Annual	Downgradient of Monofill	VOCs
Former Outfall Pond (FOP)				
204A	Water Table	Semi-Annual	Downgradient of FOP	HG/Me-HG
306A	Water Table	Semi-Annual	Detection Monitoring	HG/Me-HG
306B1	Upper Sand	Annual	Downgradient of FOP	HG/Me-HG
306C	Lower Sand	Annual	Downgradient of FOP	HG/Me-HG
803A	Water Table	Semi-Annual	Downgradient of FOP	HG/Me-HG
805A	Water Table	Semi-Annual	Downgradient of FOP	HG/Me-HG
PZ-102A	Water Table	Semi-Annual	Downgradient of FOP	HG/Me-HG
PZ-104A	Water Table	Semi-Annual	Detection Monitoring	HG/Me-HG
Kirker Creek				
503A	Water Table	Biennial	Adjacent to Kirker Creek	VOCs/SVOCs
503B	Upper Sand	Semi-Annual	Adjacent to Kirker Creek	VOCs/SVOCs
Northeast Landfill				
601A	Water Table	Semi-Annual	Detection Monitoring	VOCs
601B1	Upper Sand	Biennial	Downgradient of Landfill	VOCs
601C	Lower Sand	Biennial	Downgradient of Landfill	VOCs
603A	Water Table	Biennial	Downgradient of LF, perimeter	VOCs
603B1	Upper Sand	Biennial	Downgradient of Landfill	VOCs

TABLE A					
Well	**Monitored Interval**	**Sampling Frequency**	**Rationale**		**Parameters**
Hexachlorobenzene Trench					
509A	Water Table	Semi-Annual	Detection Monitoring		SVOCs
509B	Water Table	Semi-Annual	Downgradient of Trench, closure		SVOCs
900/1000 Block					
901A	Water Table	Semi-Annual	Detection Monitoring		VOCs
901B1	Upper Sand	Annual	Downgradient of Block		VOCs
903B1	Upper Sand	Biennial	Downgradient of Block		VOCs
904B1	Upper Sand	Biennial	Downgradient of Block		VOCs
Leachate Monitoring					
		Semi-Annual			VOCs/SVOCs
Standard Observations					
		Weekly (Nov. – April) Monthly (May – October)			
Seepage Monitoring					
		Daily until halted			
Waste Monitoring – Northeast Landfill					
		pH per load, monthly for volume			