CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. R2-2017-0011

UPDATED WASTE DISCHARGE REQUIREMENTS and
RESCISSION OF ORDER No. R2-2008-0075 for:

ECO SERVICES OPERATIONS CORP.
MARTINEZ PLANT
100 MOCOCO ROAD
MARTINEZ, CONTRA COSTA COUNTY

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

OWNERSHIP AND LOCATION

1. Eco Services Operations Corp. (hereinafter called the Discharger), a subsidiary of PQ Corporation, presently owns and operates the Martinez Facility, a sulfuric acid regeneration facility (hereinafter called the Facility).

2. The Facility occupies 114 acres located at 100 Mococo Road in Martinez, immediately southeast of the Benicia Bridge, which crosses the Carquinez Strait (Figure 1). Approximately 10 acres of the Facility immediately adjacent to the Strait is owned by the State of California and administered by the State Lands Commission.

PURPOSE OF ORDER UPDATE

3. The Water Board issues Waste Discharge Requirements (WDRs) to regulate discharges to land pursuant to California Code of Regulations (CCR) title 27 (Title 27) and section 13263 of the California Water Code (CWC). This Order:

   a. Rescinds and supersedes outdated WDRs (Order No. R2-2008-0075);

   b. Updates Facility ownership information to reflect recent changes;

   c. Updates the Facility's Self-Monitoring Program to streamline the program and allow for better detection of releases from Waste Management Units, including surface impoundments and buried mining waste;

   d. Requires notification of Water Board staff for projects that might impact subsurface mining waste on State Lands property that is leased by the Discharger;

   e. Requires monitoring and maintenance of subsurface mining waste isolated in wetlands adjacent to the Facility during remedial efforts; and

   f. Requires a Long Term Flood Protection Plan to address sea level rise and associated hazards at this Bay margin site.

FACILITY DESCRIPTION AND HISTORY

4. From 1899 to 1968, Mountain Copper Company owned and/or operated a copper smelter at the site. Large piles of mineral processing and beneficiation wastes (primarily copper smelting slag and cinders from the roasting of pyrite ores) accumulated on site. The size and weight of these piles caused them to subside into the underlying soft Bay Mud.

5. In 1968, Stauffer Chemical Company assumed ownership of the Facility and began construction of the current acid regeneration plant, where sulfuric acid is produced. Stauffer undertook the removal of the accumulated cinder/slag piles until 1976, when groundwater contamination was discovered. Today, the remnants of the piles are present as underground "cinder/slag bodies" that extend down to 40 feet below grade. Water (precipitation and/or groundwater) that comes into contact with the mining wastes generates an acidic leachate contaminated by metals, including copper and zinc.

6. In 1972, Stauffer Chemical Company installed a leachate extraction and storage system designed to prevent cinder/slag body leachate from entering nearby Carquinez Strait and wetlands. The system included a series of sumps to lower the leachate levels in the cinder/slag bodies and two solar evaporation surface impoundments to contain the leachate onsite. In 1985, the Water Board requested a hydrogeologic investigation for the entire site, pursuant to the Toxic Pits Cleanup Act of 1984, and subsequently ordered the two surface impoundments closed. Closure was accomplished in 1995-96. In 1989, the next Facility owner, Rhone-Poulenc, modified the onsite treatment facility, the Process Effluent Purification (PEP) Plant, to treat leachate within the cinder/slag body as well as process water and stormwater runoff. The PEP Plant treatment process removes metal constituents (primarily zinc and iron) using sodium hydroxide precipitation.

   The slag and cinder wastes (mining waste) that comprise the underground cinder/slag bodies are classified as mineral processing and beneficiation wastes. The California Department of Toxic Substances Control (DTSC) agreed in 1994 that the underground cinder/slag bodies are exempt from regulation as hazardous waste management units. The Water Board has classified the cinder/slag bodies as Class B mining waste under Title 27 (in accordance with CWC section 13173(a)), because the wastes can contain soluble pollutants that could degrade waters of the State.

7. The subsurface mining waste is owned by the Discharger, though its extent is not limited to the Discharger's property. These WDRs apply to all such waste, including mining waste isolated during remedial efforts in wetlands adjacent to the Facility (described in Finding 21), which is on lands managed by the State Lands Commission and that is leased by the Discharger (Figure 2). Institutional constraints to prevent or minimize exposure to soil or groundwater contamination from this waste were required by Site Cleanup Requirement Order No. 01-094 (also described in Finding 21). A deed restriction was recorded on the Discharger's property for this purpose in 2011. The covenant restricts development and land use, requires the Discharger to notify the Water Board of projects on its property that could disturb the waste, and grants the Water Board the authority to require revisions to the project to protect mining waste and associated infrastructure. To address the property the Discharger leases from State Lands, these WDRs prohibit the disturbance of subsurface mining waste (Prohibitions 1

through 5) and require the Discharger to notify the Water Board of projects that could impact that waste (Provision 12).

8. Sulfuric acid is regenerated at the Facility, primarily for use in petroleum refining. The process produces wastewater that is highly acidic and contains dissolved metals and metalloids (such as lead, nickel, copper, and selenium). This wastewater is classified as a Designated Waste under Title 27, section 20210 (which references the CWC section 13173 definition), because it is a non-hazardous waste that could impact beneficial uses or cause an exceedance of Water Quality Objectives. Wastewater is treated by neutralizing the acidity, which causes the metals to precipitate out of solution. Several surface impoundments (see description of Waste Management Units below) are used to treat and store the wastewater during the treatment process. The treated wastewater is then discharged to the Bay under National Pollution Discharge Elimination System (NPDES) Permit CA0006165 (Order No. R2-2015-0052).

9. The Facility has undergone several changes in ownership and names, as follows:
   a. On May 4, 2016, the Discharger purchased the Facility from Eco Services Operations LLC, assuming the rights and responsibilities associated with the environmental permits for the Facility.
   b. On December 1, 2014, Solvay USA Inc. sold its Eco Services' business unit to an equity firm, CCMP, and operated under the company name of Eco Services Operations LLC.
   c. In October 2013, Rhodia Inc. changed its name to Solvay USA Inc.
   d. In January 1998, Rhodia Inc., a spinoff of Rhone-Poulenc Inc., took ownership of the Facility, assuming the rights and responsibilities associated with the environmental permits for the Facility.
   e. Rhone-Poulenc Inc. owned and operated the Facility from 1988 to 1997.
   f. Stauffer Chemical Company owned and operated the Facility from 1968 to 1988.
   g. From 1899 to 1903, Mountain Copper Company (MOCOCO) constructed and, from 1903 to 1966, operated a copper refinery and a fertilizer plant at the site. MOCOCO owned the property until 1968.

Geologic Setting

10. The Facility is located within California's Coast Range geomorphic province. The majority of the Facility is located on an adjoining northeast trending bedrock outcrop known as Bull Head's Point. Two distinct bedrock units exist throughout the site. The oldest formation is the Cretaceous Panoche Formation, consisting of claystones, siltstones, and minor sandstones. The younger bedrock unit is the Paleocene Martinez Formation, consisting of claystone, siltstone, and minor sandstones.

    Topographic lows at the Facility are filled with unconsolidated Quaternary sediments consisting of Bay Mud, peat, and less common sand lenses. The Bay Mud is predominantly soft, dark colored, clay-rich sediment that has low hydraulic conductivity. The peats are predominantly located in the southern half of the site and are dark colored and soft. Sand lenses

deposited by Peyton Slough (which runs adjacent to the Facility) and the Sacramento and San Joaquin rivers through Carquinez Strait are found in the northern half of the site. The sand deposits are fine to medium-grained, olive-grey colored, and occur in beds from one inch to three feet in thickness. The developed portions of the low-lying areas were filled or otherwise covered with mining wastes composed of cinders and slag, which were classified as Class B mining waste. Cinders and slag previously piled at the site sank into the Bay Mud and remain buried. The eastern and northeastern portions of the site are wetlands bordered on the east by more wetlands and on the north by the Carquinez Strait.

Seismicity

11. The Facility is located in the vicinity of three seismically active zones, known as the Franklin, South Hampton, and Green Valley-Concord faults. The active San Andreas Fault is located approximately 33 miles west of the site. It has been estimated that the maximum peak bedrock acceleration of 0.59g will occur from a Richter magnitude 7.0 maximum credible earthquake along the Green Valley-Concord Fault located about two miles from the site.

    The Alquist-Priolo Act fault-rupture hazard zone map published by the Division of Mines and Geology in 1977 shows no recent faulting within one mile of the site. However, according to Rhone-Poulenc's 1990 Report of Waste Discharge for the site, three small inactive, pre-Quaternary thrust faults are located at the site. None of the inactive faults pass within 200 feet of a waste management unit.

Hydrogeology and Hydrology

12. The Facility is located in the Peyton Slough Groundwater Basin. Groundwater within this basin is primarily stored in recent and older alluvium. Groundwater also occurs in the consolidated Cretaceous and Tertiary bedrock that surrounds and underlies the groundwater basins.

    Most of the Facility is located just above sea level, with the first-encountered groundwater zero to twelve feet below the ground surface in low-lying areas. Groundwater flow beneath the Facility is predominantly controlled by topography. According to the City of Martinez Water Utilities Department, there are no drinking water wells located within a one-mile radius of the site. The shallowest saturated zone beneath the site is most pronounced in the southern portion of the site and is comprised of fill, Bay Mud, and peats. The potentiometric surface near the Facility's surface impoundments and elsewhere generally slopes toward the Carquinez Strait and the Peyton Slough wetlands.

    Groundwater is hydraulically contained within the North and South Cinder/Slag Bodies through the use of a series of sumps, described in more detail in Finding 13. Near the Carquinez Strait waterfront, the groundwater flow direction is toward sump S-24 of the leachate collection and recovery system (LCRS); east of the waterfront area, groundwater flow is toward sump S-28 of the LCRS. The groundwater flow direction near the South Cinder/Slag Body is toward sumps S-25 and S-29 of the LCRS.

13. Groundwater at the Facility continues to be impacted by subsurface mining waste, excavation of which has been deemed unsafe and costly (both economically and environmentally).

Hydraulic containment and groundwater extraction is therefore achieved with a series of groundwater sumps (as described above). The pumps are set to maintain the water table below the natural subsurface elevation of Bay Mud, which acts as a hydraulic barrier to groundwater migration into the wetlands and the Carquinez Strait from the North and South Cinder/Slag Bodies (see Figure 2). Operation and maintenance of the sump system to ensure hydraulic containment is required by Provision 6.

14. The Facility's surface impoundments are located adjacent to wetlands, with Peyton Slough to the east and the Carquinez Strait to the north. The unimpeded flow of groundwater (in the absence of groundwater extraction performed for hydraulic control) would be from the Facility and Bulls Head Point, radiating out towards the wetlands and the Carquinez Strait.

15. Peyton Slough was classified in 1997 as a Toxic Hot Spot after sediments were collected, analyzed, and evaluated for toxicity by Water Board staff as part of the statewide Bay Protection and Toxic Cleanup Program. Ore processing activities and the stockpiling of sulfur-bearing mining wastes, which occurred during MOCOCO's ownership, caused acidification of surface and subsurface waters that discharged to the wetlands. These acidic conditions leach toxic concentrations of copper and zinc from the mining wastes. The discharge continued after ore processing activities ceased because the stockpiled mining waste sunk as much as 40 feet into the subsurface due to the plasticity of the Bay Mud beneath them. Groundwater flowing through the mining waste became acidified, leaching inorganic contaminants. When the acidified groundwater came into contact with wetland and slough waters of neutral pH, these metals precipitated out of solution or adsorbed to existing sediments.

    The Water Board therefore adopted Site Cleanup Requirement Order No. 01-094 to require the responsible party (a previous owner, Rhodia Inc.) to remediate contaminated sediments in the wetlands and Peyton Slough. Remedial actions (described in detail in Finding 21) involved excavating contaminated sediments to the extent feasible; hydraulically isolating the waste to prevent migration of contamination within the initial channel of Peyton Slough; and creating a new adjacent channel to the east for Peyton Slough within clean sediments of the wetlands to the east.

16. The Facility is located along the Bay margin, making it susceptible to impacts from sea level rise, such as increased flooding, rising tides and water tables, and increased wave action. Particularly vulnerable are the subsurface bodies of mining waste and the infrastructure necessary to hydraulically contain them, as well as several groundwater monitoring wells that are located near the shoreline. In addition, the Discharger has documented erosion of the shoreline that threatens both the North Cinder/Slag Body and wastes contained within the former slough channel. This erosion has already impacted one monitoring well. Provision 7 requires the development and implementation of a plan to address these concerns.

Waste Management Units (WMUs)

17. The Facility contains three categories of WMUs:

Active WMUs - Surface impoundments used to treat process water used in operations at the Facility, which have the potential to cause subsurface contamination and are therefore regulated by these WDRs;

Inactive WMUs – Historic mining waste disposal units, which must be maintained to prevent the migration of contamination and are therefore regulated by these WDRs; and

Closed WMUs – Former surface impoundments that were clean closed and are therefore not regulated by these WDRs (descriptions are provided for historical record purposes only).

These WMUs are described below and shown in Figure 2:

Active WMUs (3, 4 and 5)

a. **Utility/Spill Control Pond (WMU 3**) - This active Class II surface impoundment occasionally collects designated waste of potentially low pH and elevated metal concentrations and is lined with a 40-mil Hypalon (chlorosulfonated polyethylene) liner overlying a 30-mil Hypalon liner. Installed in 1971, the Utility/Spill Control Pond is located on State Lands Commission property and is designed to contain potential spills from the Facility's storage tanks and loading areas, wastewater from the plant flare scrubber, excess NPDES system water, and stormwater runoff from the loading area. The surface impoundment has a capacity of 670,000 gallons with the required two feet of freeboard and discharges to a neutralization tank (T-28) for treatment (Figure 3). The base of this surface impoundment consists of solid mining waste (cinders and slag). A release of liquids from the pond could leach metals and metalloids from the waste into groundwater. The current Operations and Maintenance Plan stipulates that sludges are removed from this surface impoundment every five years, and the liner is inspected and repairs made as necessary at that time. This frequency is sufficient because the surface impoundment stores liquids infrequently and temporarily, on an emergency basis, three to four days a year.

b. **Surge Pond (WMU 4)** - This active Class II surface impoundment stores designated waste with potentially low pH and elevated metal concentrations and is lined with an 80-mil HDPE liner overlying two 40-mil Hypalon liners and a 30-mil Hypalon liner. The Surge Pond has a capacity of 500,000-gallons with the required two feet of freeboard. Water from the acid plant enters a 23,000-gallon fiberglass neutralization tank (T-28), which is located in the middle of the Surge Pond, where sodium hydroxide and aluminum sulfate are added to raise the pH to about 3.5 or higher. Tank T-28 is regulated under DTSC's Tier Permitting Program as a conditionally authorized unit. After pretreatment in T-28, the water overflows into the Surge Pond. Liquids from the Surge Pond are discharged to T-21 (13,000-gallon tank) for further treatment (Figure 3). The Self-Monitoring Program attached to this Order stipulates that the thickness of solids that accumulate in this pond are to be measured semi-annually, the exposed liner inspected annually, and a comprehensive liner inspection when solids are removed approximately every five years.

c. **Settling Pond (WMU 5)** - This active Class II surface impoundment is the final element in the wastewater treatment stream and is lined with two 40-mil Hypalon liners overlying a 30-mil Hypalon liner. The Settling Pond has a capacity of 630,000 gallons with the

required two feet of freeboard and is a wastewater effluent clarifying pond, receiving wastewater discharged from Tank T-21. The final effluent is discharged to the Carquinez Strait under NPDES Permit CA0006165 (Figure 3). The Settling Pond is divided into three sections of varying volume to enhance settling. The Self-Monitoring Program attached to this Order stipulates that the thickness of solids accumulated in the pond is to be measured three times per week and the liner inspected annually.

Inactive WMUs (1 and 2)

d. **Cinder/Slag Bodies (WMUs 1 and 2)**: MOCOCO stored large quantities of slag and cinders, classified as Class B Mining Waste, at the site. The mining waste was discharged primarily to two massive piles located in the north and south of the plant operations on Bull's Head Point. The majority of the mining waste was removed from the site in the 1970s; however, some mining waste remains below the water table due to subsidence of the massive mining waste piles. The resulting subsurface cinder/slag bodies are referred to as the North Cinder/Slag Body and the South Cinder/Slag Body.

   i. **North Cinder/Slag Body (WMU 1)**: After the removal of the exposed mining waste in the northern portion of the site (WMU 1), the property owner at the time capped the remaining mining waste with a minimum of two feet of low-permeability soil in 1978. The resulting North Cinder/Slag Body occupies 8.3 acres located on land owned by the State Lands Commission in the northern most point of the site, between the Operations Area on Bull's Head Point and the Carquinez Strait. It is estimated that approximately 235,000 cubic yards of mining waste remains below the cap, ranging in thickness from a trace to as much as 37 feet below the 1988 ground surface.

   In 1971-72, when it was observed that leachate from the North Cinder/Slag Body was migrating toward the Carquinez Strait, Stauffer Chemical Company installed a slurry cutoff wall and the LCRS. The slurry wall consists of a 2-foot wide trench filled with compacted Bay Mud, ranging in depth from 9 to 12 feet below the ground surface. The slurry wall spans approximately 400 linear feet of the North Cinder/Slag Body, along the Carquinez Strait waterfront, beginning at its eastern edge, but does not span the entire border between the Carquinez Strait and the Cinder/Slag Body (Figure 2). The LCRS is comprised of a French drain located immediately upgradiant and alongside of the slurry wall, connected to recovery sump S-24. Leachate from the east end of the North Cinder/Slag Body is collected in recovery sump S-28. Since 1990, the leachate has been conveyed to the PEP Plant for treatment. Groundwater in the western portion of the North Cinder/Slag Body would flow toward the Carquinez Strait; however the LCRS is operated to create enough drawdown to eliminate migration of leachate past the slurry wall. Similarly, in the eastern portion of the North Cinder/Slag Body, groundwater would flow toward the wetlands bordering the Carquinez Strait and the Peyton Slough wetlands if not for the LCRS, which is operated to create enough drawdown to eliminate migration of leachate out of the permeable slag to the wetlands. In addition, the soil cover must be inspected annually and repairs implemented to minimize infiltration.

ii. **South Cinder/Slag Body (WMU 2)**: Exposed mining waste was removed from the WMU 2 pile in the south portion of the site in 1980 and capped with a minimum of two feet of low-permeability soil. It is estimated that 287,000 cubic yards of mining waste remain on 7.1 acres, ranging in thickness from a trace to about 40 feet below the 1988 ground surface. Stauffer Chemical Company installed an LCRS consisting of two leachate sumps, S-25 and S-29 (without a French drain). The leachate removed from these sumps is discharged to and treated at the PEP Plant. Groundwater from this area flows toward the wetlands to the east; however, the LCRS is operated to create enough drawdown to eliminate migration of leachate toward the wetlands. Additionally, as an integral part of the Peyton Slough remediation project, Rhodia Inc. installed an engineered containment berm to ensure that stormwater runoff from the operations areas of the Facility is separated from the wetlands (Figure 2 illustrates the approximate berm location). Also, the Bay Mud fill of the old Peyton Slough channel acts as a slurry wall along the eastern perimeter of the Facility.

WMUs 1 and 2 are the only portions of the Facility that contain concentrated mining waste; however mining waste is spread throughout the Facility subsurface, where it was used as fill and in foundations for structures, including some surface impoundments.

Closed WMUs (6 and 7)

e. **Former Solar Evaporation Ponds (WMUs 6 and 7)** - Prior to construction of the PEP Plant, two lined evaporation surface impoundments, designated Pond 1 and Pond 2, were used to store the leachate from the cinder/slag bodies. The leachate, which was contaminated with metals and of low pH, was pumped from sumps S-24, S-28, S-25, and S-29 to the surface impoundments. The leachate stored in the ponds was classified as hazardous due to elevated levels of zinc. These two ponds were subsequently clean-closed under the Toxic Pits Cleanup Act, and therefore these WMUs are not regulated by these WDRs.

i. **Former Pond 1 (WMU 7, current Stormwater Accumulation Pond)** - Pond 1 was located in the southern portion of the site. The pond's sludges and liner were removed in accordance with a Water Board-approved closure plan. The pond is now used for stormwater runoff collection, which is not regulated by these WDRs. In accordance with the Facility's NPDES permit, a water quality assessment is performed prior to discharge.

ii. **Former Pond 2 (WMU 6)** - In 1995, Pond 2, the northernmost of the two solar evaporation ponds, was clean-closed in accordance with a Water Board-approved closure plan. The liner and sludges were removed and disposed of offsite. Potential impacts to subsurface soils and groundwater beneath the surface impoundment were investigated, after which the pond was backfilled and covered with compacted soil.

Heretofore, "WMUs" refers only to active and inactive WMUs that are regulated by these WDRs, excluding closed WMUs.

18. **WMU Groundwater Monitoring:** The current Self-Monitoring Program (described in Finding 26 through 28 and attached to this Order) includes monitoring wells installed around the WMUs to monitor the shallow and intermediate groundwater to detect potential impacts on groundwater.

19. **Non-WMU Mining Waste in Wetlands:** As discussed in Findings 15 and 20, actions taken to remediate contamination of Peyton Slough and wetlands adjacent to the Facility were successful; however, it was infeasible to remove all mining waste from the wetlands. The remaining contamination is isolated by sheet piling, an ultra-low permeability liner, and clay sediments. For logistical reasons, we have not designated this area a WMU. For instance, the type of monitoring well network that would be required by Title 27 for a WMU would disturb wildlife within a high-functioning marsh habitat, which is not preferred. However, these WDRs include requirements for monitoring and maintenance of this waste material (see Provision 9) to ensure wastes continue to be isolated from waters of the State. The necessity of the latter requirement has been demonstrated by several management actions taken to backfill ponded areas, repair headcuts near the cap, and prevent further erosion of the bulkhead that protects the capped waste at the shoreline. If future circumstances dictate designating this waste as a WMU (for example, if monitoring suggests contamination is migrating) the Water Board may update these WDRs to change the designation.

REGULATORY HISTORY

20. **Land Disposal Program Orders:** Industrial wastewater that is generated at the Facility and classified as designated waste is temporarily stored in surface impoundments onsite (Figure 2). These surface impoundments have the potential to contaminate groundwater and are designated WMUs pursuant to Title 27. Historic mining wastes buried in the subsurface in two areas of the Facility also have the potential to contaminate groundwater and are therefore considered WMUs. The Water Board has adopted WDRs to regulate such discharges associated with designated WMUs. Previous WDRs include:

    a. Order No. 88-080 was adopted on May 18, 1988. The Water Board adopted Cease and Desist Order No. 88-174 on December 21, 1988, for violations to Order No. 88-080 and the Toxic Pits Cleanup Act, which required Rhone-Poulenc to cease placing or storing hazardous waste in Pond 1 and Pond 2. Order No. 91-166 amended the compliance schedule associated with Order No. 88-174.

    b. Order No. 97-121, rescinded in 2008, required a workplan to investigate metal contamination in Peyton Slough sediments. It required plans for spill contingency, operation and maintenance, and post-earthquake inspections and reports related to the Facility's leachate recovery system, as well as documentation of financial assurances.

    c. Order No. R2-2008-0075 (rescinded by this Order) updated the Facility's Self-Monitoring Program and accounted for a previous change in ownership of the Facility.

21. **Cleanup and Mitigation Orders:** In 2001, Site Cleanup Requirement Order No. 01-094 was adopted to require cleanup of sediment contamination in Peyton Slough and surrounding wetlands adjacent to the Facility. Contamination was caused by discharges of surface and

groundwater, contaminated primarily with copper and zinc from the acidic mining wastes. These wastes resulted from MOCOCO's operation of a copper smelting facility from 1899 to 1968 on the current location of the Facility.

To comply with Order No. 01-094, previous owner Rhodia Inc. implemented the following:

a. Excavating a new channel for Peyton Slough in uncontaminated soils within the wetland east of the old channel;

b. Excavating and removing, or where infeasible managing in place, sediments accumulated on the banks of Peyton Slough (known as side–cast spoils) due to historical dredging activities; and

c. Isolating mining waste within the former Peyton Slough channel with low permeability Bay Mud, and installing engineered bulkheads at each end of the cap for erosion protection, to inhibit migration of contamination.

22. **Section 401 Water Quality Certification**: A Water Quality Certification pursuant to section 401 of the federal Clean Water Act (i.e., "401 Certification") was issued through adoption of WDRs Order No. R2-2002-0115. This order required compensatory mitigation for temporary impacts to wetlands during construction of the cleanup project and remains in effect as of adoption of these WDRs. To mitigate for the project's permanent and temporary fill and other direct impacts to waters of the U.S, the following Performance Criteria were established:

a. Create a net gain of 5.46 acres of wetlands. Much of this increase in wetland acreage was accomplished through the conversion of uplands (the dredge spoil piles) to wetlands;

b. Reestablish salt marsh harvest mouse (SMHM) habitat. SMHM habitat that is impacted by cleanup activities must be compensated at a ratio of 3:1 for high-quality habitat and 2:1 for low-quality habitat. Approximately 17 acres of SMHM habitat will be re-established;

c. Increase the hydraulic capacity of the new slough channel by at least 20% and provide one-time funding for Contra Costa Mosquito Vector Control District to remove debris and excess vegetation from the railroad culvert, located where Peyton Slough crosses Waterfront Road south of the Facility. This was expected to enhance the quality of all the marshes in the Peyton Slough marsh system by increasing water circulation and tidal range;

d. Make the new slough alignment more sinuous than the existing slough. The sinuosity would provide increased habitat for species that utilize tidal sloughs, including SMHM and black rail, and would benefit the Sacramento splittail by providing a more diverse flow regime;

e. Improve the circulation of Rhodia Marsh, located in the southwest corner of the project site, by creating first-order channels. The creation of first-order channels was expected to increase tidal influence;

f. Enhance the marsh north of the tide gate structure by providing 1,400 linear ft. of first order channels. This was expected to improve water circulation and provide additional habitat for juvenile salmonids and other species that utilize shallow tidal environments;

g. Enhance the 9-acre south spread area (area between the existing slough and the proposed new alignment, to the south of the levee, where dredge spoil piles have spread due to erosion) by raising the elevation to create tidal marsh habitat; and

h. Install remote controlled actuators on the new tide gates to optimize the operation of the tide gates and the management of the Peyton Slough/McNabney Marsh system.

23. **Treated Wastewater Discharges:** The Facility's process water and stormwater is regulated under NPDES Permit CA0006165, Order No. R2-2015-0052.

Historical Monitoring Programs

24. The Discharger has conducted monitoring pursuant to the Site Cleanup Requirements. Groundwater adjacent to, and surface water and sediments samples from, Peyton Slough was monitored quarterly for dissolved copper and zinc and pH. Baseline sampling of dissolved copper, zinc, and pH, were conducted in groundwater, surface water, and sediments in the Peyton Slough marsh environment prior to the Peyton Slough remediation efforts. Following the Peyton Slough remediation efforts, all three media were monitored over a ten-year period and compared to the baseline conditions. An overall improvement of groundwater and surface water quality was demonstrated. Dissolved copper and zinc were lower than the baseline condition following the Peyton Slough remediation project. There was no evidence of a statistically significant upward trend any time during the monitoring period. Sediment samples were generally at or below recognized background levels for these constituents. The monitoring of groundwater, surface water, and sediments following the Peyton Slough remediation efforts demonstrated the effectiveness of those efforts, primarily the installation of an engineered cap over the former alignment of Peyton Slough, and achieved the desired goal of improved water quality in Peyton Slough.

25. Mining waste was historically used as fill in undisclosed locations within the footprint of the Facility and in the adjacent wetlands. Pockets containing elevated copper and zinc therefore exist in some locations within the Facility and wetlands, and groundwater in some onsite areas does not meet Water Quality Criteria (WQC). However, it is currently infeasible or unnecessary to remediate these areas, either because they lie within the capture zone of the hydraulic containment system or they are located within high-functioning wetland habitat. The attached Self-Monitoring Program (SMP) addresses this by requiring intra-well statistical trend analysis for monitoring wells that exceed WQC, in order to provide adequate contaminant release detection monitoring and to identify if remedial actions may be warranted in the future.

Current Monitoring Programs

26. *Groundwater:* The ubiquitous distribution of mining waste at the site requires that the Detection Monitoring Program (DMP) for the Facility be based on a containment approach to ensure that contaminants do not migrate offsite. During both semi-annual monitoring events,

samples are collected from 13 groundwater monitoring wells where analytes are zinc, copper, and pH. Every five years, all constituents of concern (COCs) listed in Table A-1 of the SMP will be analyzed in the 13 groundwater wells (see attachment).

The list of COCs is based on an assessment of pollutants within WMUs, leachate, or wastewater that have the potential to impact beneficial uses of water if released. The COCs therefore are a comprehensive list of pollutants contained in the wastewater stored in the surface impoundments and in the leachate of subsurface mining wastes (North and South Cinder/Slag Bodies). Monitoring Parameters (MPs) are a subset of COCs, monitored more frequently, that can signal a discharge from a WMU. The list of MP analytes typically includes pollutants that tend to migrate quickly through the subsurface. Significant data exists on the makeup of leachate at the Facility; however, there is a lack of data on wastewater stored in surface impoundments, and the rationale for the current list of COCs and MPs has not been sufficiently documented. Provision 5 requires an evaluation of the SMP to address this.

27. *Stormwater:* Runoff from the Facility is collected in sumps, and the water is treated at the PEP Plant prior to discharge, if necessary, pursuant to the Facility's NPDES Order No. R2-2015-0052.

28. *Facility Inspections:* The thickness of the settled solids is monitored semi-annually in all surface impoundments, except for the Settling Pond, which is monitored three times per week. Surface impoundment liners are inspected annually, except for the Utility/Spill Control Pond, which is used only a few times per year and is therefore is inspected approximately only once every five years. LCRS functionality is assessed three times per week when operating by measuring water levels in sumps S-24, S-25, S-28 and S-29. Shoreline erosion that might impact wastes, and evidence of seeps, will be monitored quarterly pursuant to the SMP (see Table A-2 in the attached SMP).

29. *401 Certification Performance Criteria Monitoring:* Environmental permits obtained for the remediation and restoration, including the 401 Certification described in Finding 22, required a minimum ten year post-construction monitoring and adaptive management period. The site was monitored from 2007 through 2015 for progress towards meeting performance criteria related to water quality, sediment deposition, hydrology, bathymetry, benthic invertebrate colonization, wildlife use, and vegetation establishment. In 2009, criteria for benthic macroenvironment colonization of the new slough and tributary were met. In 2011, the marsh north of the tide gate levee had met all vegetation and hydrology goals, and cessation of monitoring was approved by regulatory agencies.

Results in the marshes south of the levee have been positive, and the Discharger has demonstrated that performance criteria related to vegetation were achieved ahead of the ten year schedule. Unfortunately, the success criteria were not met in a sustainable manner as intended by the 401 Certification. Performance criteria are set with the objective of establishing goals, which, when achieved, maximize the sustainability of the restored lands. Frequent tide gate manipulation has been necessary to flood the marsh plain sufficiently to grow the required vegetation. While maintenance of that vegetation may require less frequent inundation than was required during plant establishment, continued tide gate operation (and

potentially other on-going actions) is necessary to ensure the continued existence and function of the vegetation. Water Board staff and the Discharger are coordinating with stakeholders to develop a tide gate operations plan, including identifying an entity or group of entities to operate the gates.

BASIN PLAN

30. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the 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 Water Board and approved by the State Water Resources Control Board (State Water Board), the Office of Administrative Law, and U.S. EPA, where required.

ANTIDEGRADATION POLICY

31. Title 40 of the Code of Federal Regulations, part 131.12, requires that state water quality standards include an anti-degradation policy consistent with 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 because it does not allow degradation.

BENEFICIAL USES

32. The Order protects the following existing beneficial uses of Peyton Slough as a tributary to the Carquinez Strait:

    a. Fish spawning
    b. Wildlife habitat
    c. Water contact recreation
    d. Non-contact water recreation
    e. Industrial service supply
    f. Ocean, commercial, and sport fishing
    g. Estuarine habitat
    h. Fish migration
    i. Preservation of rare and endangered species, and
    j. Navigation.

33. The Order protects the following existing and potential beneficial uses of the groundwater:

    a. Municipal and domestic supply
    b. Industrial process and service supply
    c. Fresh water replenishment to surface waters, and
    d. Agricultural supply.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

34. Adoption of this Order is exempt from CEQA pursuant to CEQA Guidelines sections 15061(b)(3) and 15306. CEQA applies only to projects that have the potential for causing a significant effect on the environment. Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA. This Order requires the Discharger to continue site monitoring and maintenance activities, and these will not result in any additional actions that may have an effect on the environment beyond the existing baseline conditions. The CEQA Guidelines recognize that information collection does not result in a major disturbance to environmental resources. In addition, this action is an Order pertaining to an existing facility. There is no expansion of use beyond that existing under prior orders. For these reasons, the project is also exempt from the application of CEQA pursuant to CEQA Guidelines section 15301.

35. 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. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use and by prohibiting discharges that cause or contribute to exceedances of maximum contaminant levels in receiving water.

NOTICE AND MEETING

36. The Water Board has notified the Discharger and interested persons of its intent to update the Facility's WDRs and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

37. The Water Board, at a public meeting, heard and considered all comments pertaining to this update of the Facility's WDRs.

IT IS HEREBY ORDERED pursuant to the authority in CWC sections 13263 and 13267 and Title 27 that the Discharger shall meet the applicable provisions contained in Title 27 and shall comply with the following:

A. PROHIBITIONS

1. Neither the treatment, discharge, nor the storage of waste shall create a condition of pollution, contamination or nuisance as defined in CWC section 13050. The treatment, discharge, or storage of materials that may impact the beneficial uses of groundwater or surface water shall not be allowed to create a condition of pollution or nuisance as defined in CWC §13050(l) and (m) nor degrade the quality of waters of the State or of the United States.

2. Migration of pollutants through subsurface transport to waters of the State is prohibited.

3. There shall be no discharge of wastes to surface waters except as permitted under the NPDES permits.

4. The discharge of pollutants from the mining wastes or surface impoundments onto land, or into groundwater or surface water, is prohibited.

5. Excavation within or reconfiguration of any existing WMU or of the non-WMU mining waste within wetlands regulated by these WDRs is prohibited without prior concurrence of Water Board staff. Minor excavation or reconfiguration activities, such as the installation of signs or minor routine maintenance and repair, do not require prior Water Board staff concurrence.

6. There shall be no discharges to a surface impoundment, and any residual liquids and sludge shall be removed expeditiously if it is determined the surface impoundment is leaking or there is a failure that causes a threat to water quality.

7. If it is determined that a WMU is leaking or there is a failure that causes a threat to water quality, there shall be no discharges to that surface impoundment, and any residual liquids and sludge shall be removed expeditiously.

8. The creation of any new WMU is prohibited without prior Water Board amendment of these WDRs.

9. The relocation of wastes to or from WMUs is prohibited without prior Water Board staff written concurrence and shall not create a condition of pollution or nuisance as defined in CWC section 13050(l) and (m). Wastes shall not be relocated to any location where they can be discharged into waters of the State or of the United States.

10. The discharge of hazardous waste at the Facility is prohibited. For the purpose of this Order, the term “hazardous waste” is as defined in Title 27, section 20164.

11. The discharge of leachate or wastewater (including from surface impoundments, process waters, and runoff from the Facility’s operation areas) is prohibited where that leachate or wastewater:

    a. Has the potential to cause corrosion or decay, or otherwise reduce or impair the integrity of the containment structures;

    b. If mixed or commingled with other wastes in the unit, could produce a violent reaction including heat, pressure, fire, explosion, or the production of toxic by-products;

    c. Requires a higher level of containment than provided by the unit;

    d. Is "restricted hazardous waste"; or

    e. Impairs the integrity of the containment structures.

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

13. Wastes shall not be disposed in any position where they may migrate from the disposal site to adjacent geologic materials, waters of the State, or waters of the United States during disposal operations, closure, and the post-closure maintenance period, pursuant to Title 27, section 20310(a).

14. The Discharger shall not cause the following conditions to exist in waters of the State at any place outside of the Facility:

    a. **Surface Waters**

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

        ii. Bottom deposits or aquatic growth;

        iii. Adversely altered temperature, turbidity, or apparent color beyond natural background levels;

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

        v. 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.

    b. **Groundwater**

        i. Degradation of groundwater quality and/or substantial worsening of existing groundwater impacts; and

        ii. Subsurface migration of pollutants associated with the Discharger's operations to waters of the State.

B. SPECIFICATIONS

1. The Discharger shall comply with all applicable provisions of Title 27 that are not specifically referenced in this Order.

Reporting Specifications

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

3. The Discharger shall implement any SMP issued by the Executive Officer. The purpose of the SMP is to detect, at the earliest opportunity, any unauthorized discharge of waste constituents from surface impoundments, mining waste, or any unreasonable impairment of beneficial uses associated with the Facility's past or present activities.

4. The Discharger shall continue the DMP for groundwater beneath the Facility. The Discharger shall periodically evaluate the DMP to determine if monitoring is achieving the

program goals. The SMP attached to this Order is intended to constitute the DMP for the Facility.

5. The Discharger shall manage WMUs, including surface impoundments and buried mining wastes, so as to isolate wastewater from waters of the State and to prevent a statistically significant monitoring parameter concentration from existing in the waters passing through points of compliance, as defined in Title 27, sections 20405 and 20420. The Discharger shall operate surface impoundments and mining waste containment systems so as to not exceed the concentration limits of the SMP.

6. The existing containment, drainage, and monitoring systems at the Facility shall be maintained for as long as the wastes and leachate pose a threat to water quality. The Discharger shall continue the water quality monitoring program, pursuant to Title 27, section 20410, as long as the threat of a release from surface impoundments exists.

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

8. The Discharger shall notify the Water Board immediately of any waste containment system failures occurring at the Facility. Any failure that potentially compromises the integrity of containments structures shall be promptly corrected after approval of the method and schedule by the Executive Officer.

9. The Discharger shall notify the Water Board at least 180 days prior to beginning any intermediate or final closure activities. 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.

WMU Specifications

10. Closure of all WMUs shall be in compliance with the requirements of Title 27, section 21400.

11. If the Water Board determines that any WMU is polluting or threatening to pollute State waters, the Water Board may require the Discharger to immediately cease the discharge.

12. Title 27, section 20310, requires that Class II surface impoundments be designed and constructed to prevent migration of wastewater from the impoundment to adjacent geologic materials, groundwater, or surface water during operations, closure, and the post-closure maintenance periods.

13. As required by Title 27, section 20370 (seismic design), the Discharger ensure that all engineered structures (including, but not limited to, containment structures) of any part of the surface impoundments and mining waste containment structures shall have a

foundation capable of: 1) providing support for the structures; 2) withstanding hydraulic pressure gradients; and 3) preventing failure due to settlement, compression, or uplift and all effects of ground motions including the maximum credible earthquake event. The surface impoundments were constructed in 1971, before this regulatory requirement was established, and the impoundments may not meet this requirement. Based upon existing data demonstrating that the surface impoundments have not been significantly impacted by earthquakes since their construction, and groundwater monitoring results do not indicate the surface impoundments have adversely impacted groundwater past the point of compliance, the current surface impoundments will not require a retrofit to achieve this requirement. Any new surface impoundments must meet current Title 27 requirements.

14. Surface impoundments and mining waste containment structures shall be designed, constructed, and operated to withstand ground accelerations associated with the maximum credible earthquake without damage to the foundation, the containment structures, or other structures which control wastewater, surface drainage, or erosion.

15. Surface impoundments must be designed to isolate wastewater from waters of the State. This is accomplished by a low permeability liner.

16. The pipeline discharge to the surface impoundments shall be equipped with devices, or fail-safe operating procedures, to prevent overfilling.

17. During the active life of the surface impoundments, the settled solids shall be removed from surface impoundments periodically, but at least once every five years, except for the Settling Pond, which shall be dredged annually. An inspection shall be made of the liner system when solids are removed to assure there is no damage prior to refilling the impoundment. Provision 6 of this Order requires the Discharger to update the Facility's Operations and Maintenance Plan, including planned removal of settled solids from surface impoundments.

18. The Class II surface impoundments shall be protected from any washout or erosion of wastes from inundation, shall have no less than two feet (vertical) of freeboard, and shall be operated to prevent overtopping.

19. The Storm Water Accumulation Pond shall be operated to accommodate the precipitation of a 24-hour storm with a 100-year return frequency. It shall have sufficient freeboard to accommodate seasonal precipitation and precipitation conditions specified, but in no case less than two vertical feet of freeboard, and shall be operated to prevent overtopping as a result of wind conditions likely to accompany such precipitation conditions.

20. The Discharger must contain all Class B mining wastes to prevent migration of leachate to adjacent geologic materials, groundwater, or surface water during operations, closure, and the post-closure maintenance periods. The containment system and the LCRS must be designed to isolate leachate from the waters of the State. All containment structures must be maintained to preclude failure as a result of potential rapid geologic changes.

21. The Discharger shall operate the LCRS to prevent the migration of contamination. The LCRS shall be designed and operated to function without clogging and shall be inspected a minimum of three times per week when operating. Extracted leachate/wastewater from the mining waste sumps and surface impoundments shall be transported to the PEP Plant for treatment as needed. The Discharger shall operate surface impoundments and mining waste containment systems according to a detailed operating, maintenance, and contingency plan, which will include at a minimum, procedures for routine inspection of surface impoundments and mining waste containment systems (including the LCRS), discharge into an impoundment, discharge out of an impoundment and the LCRS, contingency measures if wastewater or leachate is detected or problems with the containment structures are found, investigations of the impact of releases from the surface impoundment or a mining waste containment system, and notifications of agencies. Provision 6 of this Order requires the Discharger to update the Facility's Operations and Maintenance Plan, including the requirements for maintenance of the LCRS. Inspections of the surface impoundments and waste containment systems are also required in the SMP attached to this Order.

22. The LCRS shall be designed and operated to function without clogging through the scheduled maintenance/closure of the WMU and during the post-closure maintenance period. The systems shall be tested at least monthly, when in operation, to demonstrate proper operation. The results of the test shall be compared with earlier tests made under comparable conditions. These results shall be submitted to the Water Board with the Facility's Self-Monitoring Report.

23. The Discharger shall maintain cover (low-permeability caps) over WMUs 1 and 2 to minimize infiltration. Provision 6 of this Order requires the Discharger to update the Facility's Operations and Maintenance Plan, including the requirements for maintenance of the mining waste WMUs.

24. WMUs at the Facility shall be protected from any washout or erosion of wastes or covering material and from inundation that could occur during a 100-year flood event and from sea level rise and associated increased wave action. Final cover systems for WMUs shall be graded and maintained to promote lateral runoff and prevent ponding and infiltration of water. Provision 7 of this Order requires the Discharger to plan for sea level rise.

25. The Discharger shall notify the Water Board immediately of any failure that threatens the integrity of any containment and/or control facilities, structures, or devices. Any such failure shall be promptly corrected after approval of the method and schedule by the Executive Officer.

26. The Discharger shall maintain the WMUs so as to prevent a statistically significant increase in water quality protection standards (WQPS) at points of compliance as provided in Title 27 and in the SMP.

27. 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.

28. The Discharger shall operate the WMUs according to a detailed operating, maintenance, and contingency plan that will include at a minimum, procedures for routine inspection of the surface impoundments, discharge into a pond, discharge out of a pond, contingency measures if problems with the containment structures are found, and notification of agencies.

Monitoring Specifications

29. 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 install additional groundwater monitoring wells and/or undertake corrective action measures, including submittal of a site investigation report.

30. The Discharger shall install, maintain in good working order, and operate efficiently any monitoring system necessary to assure compliance with these WDRs.

31. If it is determined by the Executive Officer, based on groundwater monitoring information, that water quality at or beyond the point of compliance wells becomes degraded, the Discharger will be required to submit and implement a site-specific groundwater corrective action proposal.

32. The Discharger shall conduct monitoring activities according to the SMP attached to this Order, and as may be amended by the Executive Officer, to verify the compliance of WMU ponds with updated WQPS (see Provision 3).

33. Any additional monitoring wells installed at the Facility 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.

34. 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 and uploaded to GeoTracker (see Provision 20). All information related to well construction shall be submitted to the Water Board upon well completion.

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

36. All samples shall be analyzed by State-certified laboratories, or laboratories accepted by the Water Board, using approved U.S. EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Water Board review. This provision does not apply to analyses that can only be reasonably performed onsite (e.g., pH).

Soil Contamination

37. The Discharger shall notify the Water Board of any soil contamination not previously identified in subsurface investigations that is discovered during any subsurface investigation or excavation work conducted on the Facility that may potentially adversely impact water quality.

C. PROVISIONS

1. Compliance: 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. Violations may result in enforcement actions, including Water Board orders or court orders requiring corrective action or imposing civil monetary liability.

2. Authority: All technical and monitoring reports required by this Order are requested pursuant to CWC section 13267. 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 Discharger to enforcement action pursuant to CWC section 13268.

3. Self-Monitoring Program (SMP): The Discharger shall comply with the SMP attached to this Order (Part A and Part B). Part B of the SMP references the approved Groundwater Monitoring Program (GMP), which is intended to constitute the DMP pursuant to Title 27, section 20420, and is designed to identify significant water quality impacts from the specified WMU and demonstrate compliance with the WQPS established pursuant to Title 27, section 20390 for these WMUs. The SMP may be amended as necessary at the discretion of the Executive Officer. Reports shall be submitted semi-annually by **May 31** and **November 30** of each year. The annual report to the Water Board shall cover the previous calendar year as described in Part A of the updated SMP.

COMPLIANCE DATE: Upon adoption of this Order

4. Revision of the Groundwater Monitoring Program: The Discharger shall submit an updated GMP, acceptable to the Executive Officer, based on any planned construction or earthwork at the Facility that may result in the abandonment, destruction, or relocation of any groundwater monitoring well that is part of the GMP. The update shall also include relevant updates to the monitoring objectives, sampling procedures and frequency, analytical methods used, and any impacts or changes to the surface water monitoring program.

COMPLIANCE DATE: 90 days after work is complete

5. Self-Monitoring Program Evaluation: The Discharger shall develop, submit, and implement a report, acceptable to the Executive Officer, evaluating the efficacy of the SMP attached to this Order and, if necessary, proposing changes. In particular, the list of COCs and MPs must be evaluated to ensure pollutants in the wastewater stream (in surface impoundments) and leachate (in mining wastes) are included as COCs, and MPs consist of pollutants that would be most indicative of a release (e.g., those that migrate quickly through the subsurface) or are of most concern to potential receptors.

   COMPLIANCE DATE: July 31, 2017

6. Operation and Maintenance Plan: The Discharger shall develop, submit, and implement an Operation and Maintenance Plan, acceptable to the Executive Officer, to demonstrate that waste containment infrastructure is being maintained and operated in a manner to minimize the potential for discharge of wastes or waste contaminants. The plan shall outline actions necessary to respond to potential discharges to waters of the State, for example a release from a surface impoundment or mining waste containment system. The plan must include the following:

   a. The scheduled periodic inspection and removal of surface impoundment sludge and the inspection of the surface impoundment liner/containment system, as detailed in the SMP. The report should include a discussion of the expected life of the liner/containment system;

   b. A contingency plan for violations of the freeboard requirement or a liner failure;

   c. A contingency plan in the event of a leak or spill from a surface impoundment, including notification of agencies and actions required to initiate an investigation, if necessary;

   d. The measurement and recording of leachate levels in the LCRS and any other functionality measurement necessary to demonstrate that the water table beneath the impoundment is maintained below the elevation of the natural clay liner. The LCRS must be inspected at least three times per week when in operation. These requirements are also detailed in the SMP;

   e. The scheduled periodic inspection of the mining waste containment systems, as detailed in the SMP;

   f. A contingency plan in the event of the failure of a mining waste containment system, including notification of agencies and actions required to initiate an investigation, if necessary;

   g. The annual inspection of the asphalt that serves as an impermeable barrier over the South Cinder/Slag Body and a plan to address cracks and other failures that might permit water to infiltrate through the asphalt into the subsurface mining waste;

h. The quarterly inspection of the shoreline to evaluate erosion and potential impacts to wastes contained within the North Cinder/Slag Body; and

i. A contingency plan to address shoreline erosion that threatens the containment of mining waste at the Facility.

COMPLIANCE DATE: June 30, 2017, and updated every two years thereafter

7. Long-Term Flood Protection Plan: The Discharger shall develop, submit, and implement a plan, acceptable to the Executive Officer, for long-term flood and/or sea level rise protection at the Facility. The report shall include a consideration of feasible options for achieving protection from the 100-year flood to account for rising sea levels, increased flood frequency and intensity, and increased wave action. 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 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: October 1, 2018, and every five years thereafter

8. Change in Discharge: In the event of a material change in the character, location, or volume of a discharge, the Discharger shall file with the Water Board a new Report of Waste Discharge. A material change includes, but is not limited to, the following:

   a. Addition of a major industrial waste discharge to a 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 to a WMU or water body beyond that specified in the WDRs; or

   e. Increase in area or depth to be used for solid or liquid waste disposal beyond that specified in the WDRs.

COMPLIANCE DATE: 120 days prior to any material change

9. Plan for Monitoring and Maintenance of Non-WMU Mining Waste in Wetlands: The Discharger shall develop, submit, and implement a plan, acceptable to the Executive Officer, to monitor and maintain the subsurface mining waste remaining within wetlands adjacent to the Facility (described in Findings 15, 19, and 20) and associated infrastructure (e.g., cap, bulkheads and bulkheads) to prevent the migration of contamination. Reporting of monitoring findings, maintenance planned and conducted, and the schedule should be

incorporated into reports submitted pursuant to the Self-Monitoring Program attached to this Order.

COMPLIANCE DATE: August 30, 2017, and updated every five years

10. Financial Assurance: The Discharger shall submit to the Water Board evidence of an irrevocable post-closure fund acceptable to the Executive Officer, to ensure monitoring, maintenance, and any necessary remediation actions for all wastes onsite with the potential to impact waters of the State that are regulated by these WDRs (WMUs and non-WMU mining wastes in wetlands). 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. 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 waste containment, cover, and monitoring systems, including activities associated with monitoring and maintenance of non-WMU mining waste within wetlands adjacent to the Facility (see Provision 9).

    Additionally, cost estimates must be provided for corrective action for known releases that may be required for all wastes on site with the potential to impact waters of the State that are regulated by these WDRs (WMUs and non-WMU mining wastes in wetlands, also referred to as the former Peyton Slough Channel). The fund value shall be based on the sum of these estimates. The cost estimates and funding shall be updated to reflect change 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: October 15, 2017, and updated every five years with an annual update for inflation

11. 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.

12. Notification for Projects that Might Impact Subsurface Mining Waste: In the event of any proposed project the Discharger becomes aware of that might disturb subsurface mining waste regulated by these WDRs (WMUs as well as non-WMU mining waste on lands not owned by the Discharger) or associated infrastructure, the Discharger is required to notify the Water Board division responsible for the remediation project (currently, the Groundwater Protection Division). The notification must include the nature of the project and describe how mining waste or associated infrastructure could be impacted, contact information of project responsible parties, and a satellite image indicating the potentially affected area and property ownership information.

    COMPLIANCE DATE: 180 Days prior to project implementation (sooner is recommended to obtain Water Board staff input)

13. Change in Ownership: In the event of any change in control or ownership of the Facility presently owned or controlled by the Discharger, the Discharger shall notify the succeeding

owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Water Board upon a final change in ownership. To assume operation of this Order, the succeeding owner or operator must apply in writing to the Executive Officer, requesting transfer of this Order within 30 days of the change of ownership. Any change in the Discharger named on this Order requires an update or amendment to the WDRs by action of the Water Board. The request must contain the requesting entity's full legal name, mailing address, electronic address, and telephone number of the persons responsible for contact with the Water Board. Failure to submit the request shall be considered a discharge without WDRs, a violation of CWC §13263 and §13267.

COMPLIANCE DATE: 30 days after a change in site control or ownership

14. Revision: This Order is subject to 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 Water Board will review this Order periodically and may revise its requirements when necessary.

15. Closure Plan: The Discharger shall submit a Closure and Post-Closure Maintenance plan for any WMU planning to close, acceptable to the Executive Officer, as outlined in Title 27, sections 21090-21200. 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.

COMPLIANCE DATE: 180 Days prior to closure

16. 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 Water Board, it shall promptly submit such facts or information.

17. 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.

18. Severability: Provisions of these WDRs are severable. If any provisions of these requirements are found to be invalid, the remainder of these requirements shall not be affected.

19. Operations 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.

20. Reporting Requirements: All reports submitted pursuant to this Order must be in accordance with the State Water Board-adopted regulations requiring electronic report and data submittal to the State's GeoTracker database (CCR, Title 23, §§3890-3895). Email notification should be provided to Water Board staff whenever a file is uploaded to GeoTracker. In addition, the Discharger shall submit hard copies of reports to Water Board staff. The Discharger is responsible for submitting the following via GeoTracker:
    a. All chemical analytical results for soil, water, and vapor samples;
    b. The latitude and longitude of any sampling point for which data is reported, accurate to within 1 meter and referenced to a minimum of two reference points from the California Spatial Reference System, if available, unless specified in the SMP;
    c. The surveyed elevation relative to a geodetic datum of any permanent sampling point;
    d. The elevation of groundwater in any permanent monitoring well relative to the surveyed elevations;
    e. A site map or maps showing the location of all sampling points;
    f. The depth of the sampling point or depth and length of screened interval for any permanent monitoring well;
    g. PDF copies of boring logs; and
    h. PDF copies of all reports, workplans, and other documents (the document, in its entirety [signature pages, text, figures, tables, etc.] must be saved to a single PDF file) including the signed transmittal letter and professional certification by a California professional civil engineer or a professional geologist.

21. 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. 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.

22. Reporting of Hazardous Substances Release: If any hazardous substance (defined as a substance that poses a risk) 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, as soon as it is safe to do so, to the following:

        i. The Water Board by calling (510) 622-2369 during regular office hours (Monday through Friday, 8 a.m. – 5 p.m.); and

        ii. The California Office of Emergency Services (Cal OES) at (800) 852-7550.

    b. A written report shall be filed with the 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; and

        vii. The persons/agencies notified.

    This reporting is in addition to reporting to Cal OES as required by the Health and Safety Code.

23. Reporting Releases to Cal OES: Except for a discharge that is in compliance with these WDRs, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage 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 immediately notify Cal OES of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with section 8574.7) of the Government Code and immediately notify the Water Board of the discharge as soon as:

    a. That person has knowledge of the discharge;

    b. Notification is possible; and

    c. Notification can be provided without substantially impeding cleanup or other emergency measures.

    This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of CWC section 13271 unless the Discharger is in violation of a prohibition in the Basin Plan.

24. Release Reporting Requirements to Water Board: In the case of a release (as defined in Provision 22), the following must be provided to the Water Board within five days of knowledge of the release:

    a. Site map illustrating location and approximate size of impacted area;

    b. Photographs of the impacted area before and after remediation; and

    c. 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.

25. Endangerment of Health or the Environment: The Discharger shall report any noncompliance that may endanger human health or the environment. Any such information shall be provided orally to the Executive Officer, or authorized representative, **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. A description of the noncompliance, and its cause;

    b. The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; and

    c. 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 industrial products or treated or untreated wastewater; and

    c. Any treatment plant upset that causes the discharge limitation(s) of this Order to be exceeded.

26. Entry and Inspection: The Discharger shall allow Water Board staff, 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 CWC, any substances or parameters at any location.

27. 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 §404 of the federal Clean Water Act and discharge subject to a general NPDES permit) must file an NPDES permit application with the Water Board (40 CFR §122.21).

28. 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.

    Unless otherwise permitted by the Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Public Health. 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 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 U.S. EPA.

29. 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 §13263(f)).

30. Document Distribution: Copies of correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the Water Board and any other interested agencies.

31. General Prohibition: Neither the treatment nor the discharge of waste shall create a pollution, contamination or nuisance, as defined by CWC §13050, CWC §13263, and Cal. Health & Safety Code §5411.

32. The Discharger shall immediately notify the Water Board and the Local Enforcement Agency (Contra Costa Health, Hazardous Material Program) if additional groundwater contamination or potential contamination is detected. The Discharger shall immediately initiate corrective action to stop and contain the migration of pollutants from the surface impoundment or mining waste.

33. The Discharger shall notify the Water Board of any previously unknown soil or groundwater contamination discovered during any subsurface investigations conducted at the Facility, which may potentially have an adverse impact on ground or surface waters.

34. The Discharger shall remove and relocate any wastes that are discharged at this site in violation of these WDRs.

35. The Discharger shall immediately notify the Water Board of any flooding, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures. Any such failure shall be promptly corrected after approval of the method and schedule by the Executive Officer.

36. 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 Richter Magnitude 6.5 or greater at or within 30 miles of the Facility. The report shall describe the containment features, groundwater monitoring, and control facilities potentially impacted by the static and seismic deformations of any WMU or waste containment system. Damage that may result in discharge or threatened discharge to 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 negative impacts to waters of the State must be reported immediately upon discovery to the Water Board's Spill Hotline at (510) 622-2369 and by sending an email to Rb2SpillReports@waterboards.ca.gov. In addition, report to Cal OES at (800) 852-7550.

37. 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.

38. This Order supersedes and rescinds Order No. R2-2008-0075.

39. This Order is subject to Water Board review and updating, as necessary, to comply with changing State or federal laws, regulations or policies, or guidelines; changes in the Water Board's Basin Plan; or changes in discharge characteristics.

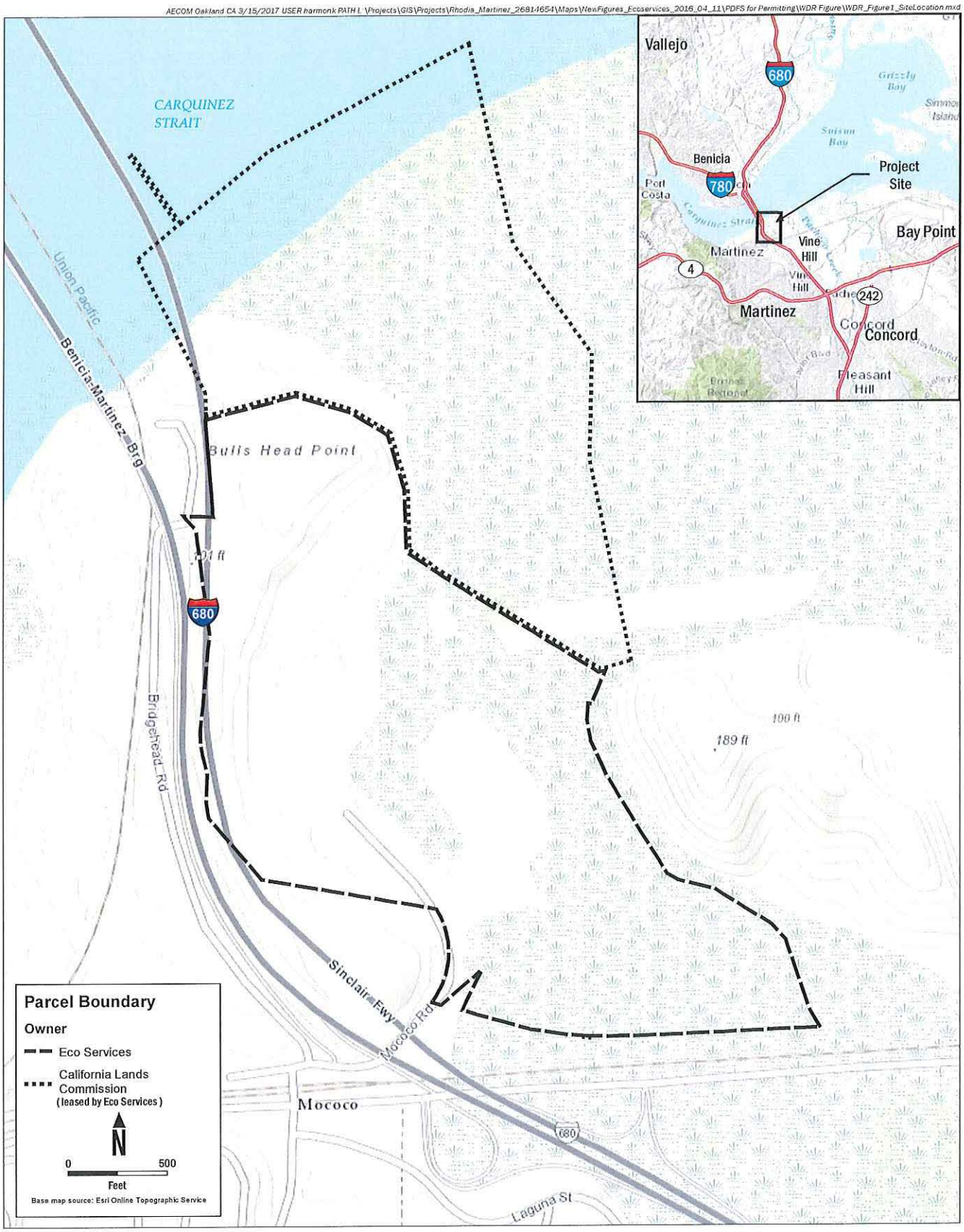
I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 12, 2017.

Digitally signed by Bruce H. Wolfe
Date: 2017.04.20 17:03:52 -07'00'

Bruce H. Wolfe
Executive Officer

Attachments:

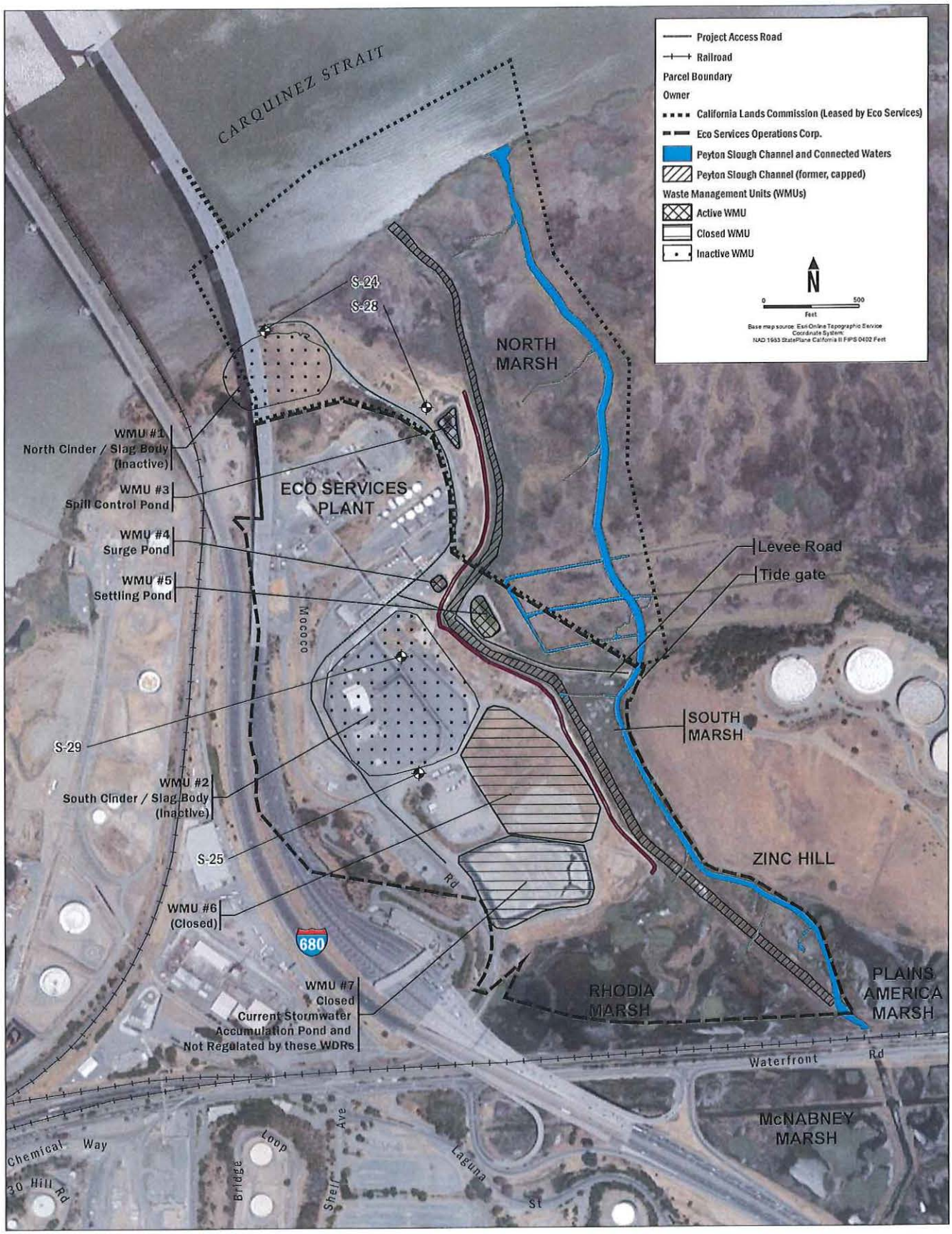
Figure 1 - Site Location
Figure 2 - Site Plan
Figure 3 – Waste Stream Schematic
Self-Monitoring and Reporting Program, Part A and B



Eco Services Operations Corp.
100 Mococo Road
Martinez, CA 94553

FIGURE 1

Site Location



AECOM

Eco Services Operations Corp.

FIGURE 2

Site Plan

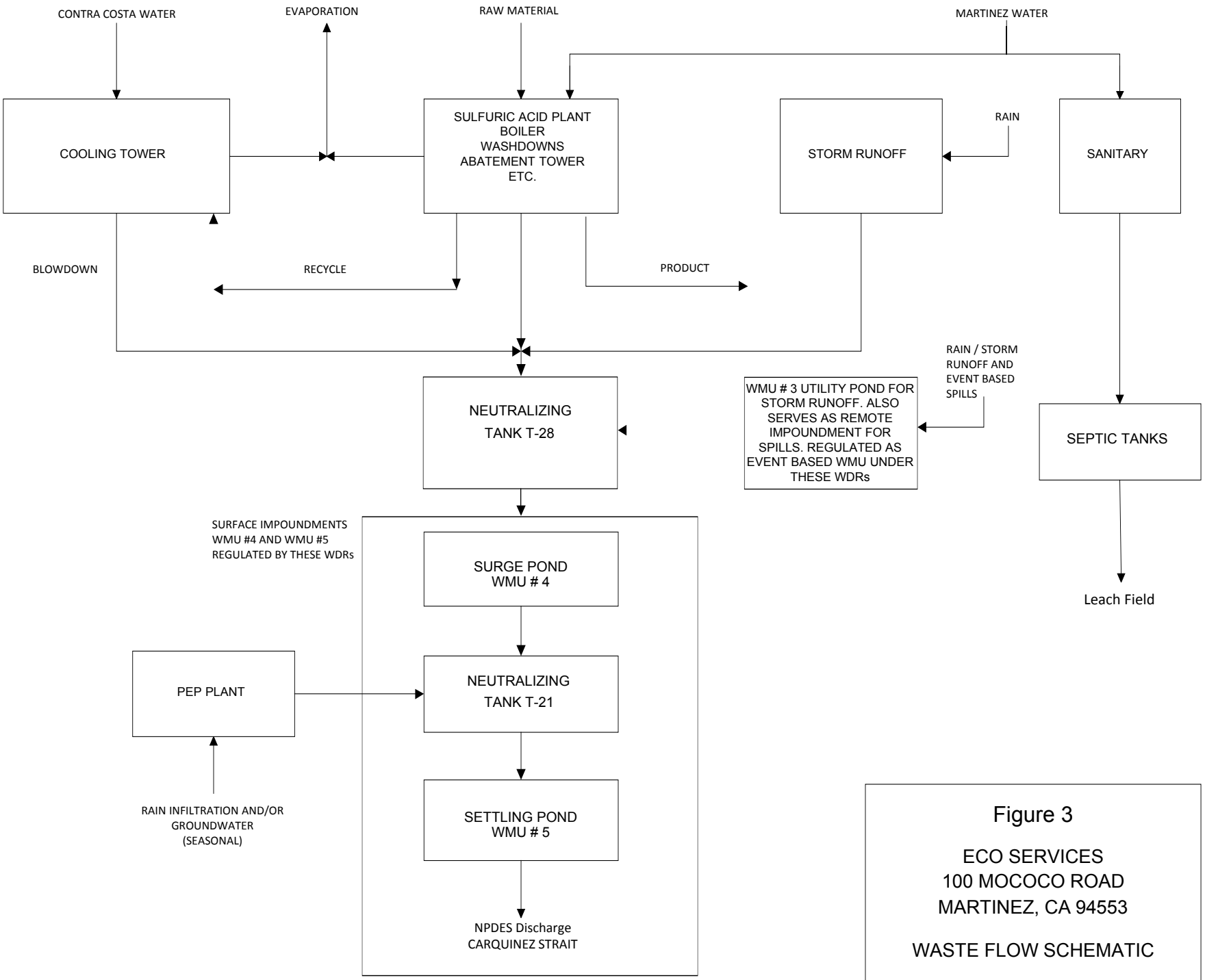


Figure 3

ECO SERVICES
100 MOCOCO ROAD
MARTINEZ, CA 94553

WASTE FLOW SCHEMATIC

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

ECO SERVICES OPERATIONS CORP.
MARTINEZ PLANT
100 MOCOCO ROAD
MARTINEZ, CA
CONTRA COSTA COUNTY

ORDER NO. R2-2017-0011

CONSISTS OF

PART A

AND

PART B

PART A

A. AUTHORITY AND PURPOSE

Reporting responsibilities of waste discharges are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and the Water Board's Resolution No. 73-16. This Self-Monitoring Program is issued in accordance with CCR Title 27.

The principal purposes of a Self-Monitoring Program are to:

1. Document compliance with waste discharge requirements (WDRs) and prohibitions established by the Water Board;

2. Facilitate self-policing by the waste dischargers in the prevention and abatement of pollution arising from waste discharge;

3. Develop or assist in the development of standards of performance and toxicity standards;

4. Assist the dischargers in complying with requirements of Title 27.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the most recent version of U.S. 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 all reports of such work submitted to the Water Board shall be signed by a duly authorized representative of the laboratory.

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 water that actually or potentially receives surface or groundwater that pass over, through, or under waste materials or contaminated soils. In this case the groundwater beneath and adjacent to the waste management units and the surface runoff from the site are considered receiving waters.

    a. Receiving Waters:

        1) Floating and suspended materials of waste origin: presence or absence, source, and size of affected area;

        2) Discoloration and turbidity: description of color, source, and size of affected area;

3) Evidence of odors, presence or absence, characterization, source, and distance of travel from source;

4) Evidence of beneficial use or lack of, for example presence of water-associated wildlife;

5) Flow rate; and

6) Weather conditions: wind direction and estimated velocity, total precipitation during the previous five days and on the day of observation.

b. Perimeter of surface impoundments:

1) Evidence of uncontrolled liquid leaving the surface impoundments or Facility, estimated size of affected area and flow rate (show affected area on map);

2) Evidence of odors, presence or absence, characterization, source, and distance of travel from source; and

3) Evidence of erosion.

c. The surface impoundments:

1) Evidence of odors, presence or absence, characterization, source, and distance of travel from source;

2) Evidence of algal or other unusual growth, precipitation of sludge minerals, quantity, nature and chemical composition;

3) Evidence of erosion, slope or ground movement;

4) Adequacy of access road; and

5) Standard Analysis and measurements (monitoring parameters) are listed on Table A-1 (attached).

D. SAMPLING, ANALYSIS, AND OBSERVATIONS

The Discharger is required to perform sampling, analyses, and observations in the groundwater and leachate per section 20415 and per the general requirements specified in section 20415(e) of Title 27.

E. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the Discharger 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 Water 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; and

6. Results of analyses, and detection limits for each analysis.

F. REPORTS TO BE FILED WITH THE WATER BOARD

1. **Self-Monitoring Reports**

Written monitoring reports shall be filed by **May 31 and November 30** of each year. As part of the November 30 report, an annual report shall be filed each year. The reports shall be comprised of 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 Discharger has 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 reporting 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. 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 monitoring report shall include a compliance evaluation summary. The summary shall contain:

1) A graphic description of the direction of groundwater flow under/around surface impoundments and mining waste, based upon the past and present water level elevations and pertinent visual observations;

2) The method and time of water level measurement; the type of pump used for purging; pump placement in the well; method of purging; pumping rate; equipment and methods used to monitor field pH, temperature, and conductivity during purging; calibration of the field equipment; results of the pH, temperature conductivity and turbidity testing; well recovery time; and method of disposing of the purge water;

3) Type of pump used for sampling; pump placement for sampling; a detailed description of the sampling procedure; number and description of equipment,

field, and travel blanks; number and description of duplicate samples; type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples; and any other observations; and

4) A written discussion of the groundwater analyses indicating any change in the quality or characteristics of the groundwater or indications of leaks.

c. A comprehensive discussion of the compliance record and status, as well as any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the WDRs and Title 27.

d. A map or aerial photograph shall accompany each report showing observation and monitoring station locations.

e. Laboratory statements with the results of analyses specified in Part B must be included in each report. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory, and all reports of such work submitted to the Water Board shall be signed by a duly authorized representative of the laboratory.

1) The methods of analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods other than U.S. EPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and approved by the Executive Officer prior to use.

2) In addition to the results of the analyses, laboratory quality assurance/quality control (QA/QC) information must be included in the monitoring report. The laboratory QA/QC information should include the method, equipment, and analytical detection limits; the recovery rates; an explanation for any recovery rate that are outside laboratory control limits; 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/groundwater collection, monitoring, control, and removal facilities, which includes a summary of fluid volumes removed, and a discussion of the disposal/treatment methods utilized.

g. A summary and certification of completion of all standard observations for the surface impoundments, the perimeter of the surface impoundments, and the mining waste.

h. The Annual Monitoring Report shall be submitted to the Water Board covering the previous year and shall be filed by November 30 of each year. The Report shall include, but is not limited to, the following:

1) A graphical presentation for each monitoring point; submit in graphical format the laboratory analytical data for all samples taken. Each such graph shall plot the concentration of one or more constituents over time for a given monitoring point, at a scale appropriate to show trends or variations in water quality. On the basis of any aberrations noted in the plotted data, the Executive Officer may direct the Discharger to carry out a preliminary investigation, the results of which will determine whether or not a release is indicated;

2) A tabular summary of all the monitoring data obtained during the previous year;

3) A comprehensive discussion of the compliance record and the corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the WDRs;

4) A map showing the area, if any, in which filling has been completed during the previous calendar year;

5) A written summary of the groundwater analyses indicating any change in the quality of the groundwater; and

6) 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 control volumes removed from the units, and a discussion of the leachate disposal methods utilized.

i. Tabular and graphical summaries of the monitoring data obtained during the previous year; the annual report should be accompanied by a compact disc, MS-EXCEL format, tabulating the year's data.

2. **Contingency Reporting**

a. A report shall be made by telephone of any seepage from the disposal area immediately after it is discovered. A written report shall be filed with the Water Board within **five days** thereafter. This report shall contain the following information:

1) A map showing the location(s) of discharge if any;

2) Approximate flow rate;

3) The number of samples of the discharge collected for chemical analysis, or defensible reason samples could not be collected;

4) The nature of effects, i.e., all pertinent observations and analyses; and

5) The corrective measures underway, proposed, or as specified in the WDRs.

b. A report shall be made in writing to the Water Board within **seven days** of determining that a statistically significant difference occurred between a downgradient sample and a Water Quality Protection Standard (WQPS) (see Part A,

Section G). Notification shall indicate which WQPS(s) has/have been exceeded. The Discharger shall immediately resample at the compliance point where the difference has been found and re-analyze.

c. A report shall be made by telephone of any requirement violation(s) immediately after it is discovered. A written report shall also be filed within seven days that includes a discussion of the requirement violation(s) and actions taken or planned for correcting the violation(s).

d. If resampling and analysis confirms the earlier finding of a significant difference between monitoring results and WQPS(s), the Discharger must submit to the Water Board, an amended Report of Waste Discharge as specified in Title 27, section 20420(k)(5) for establishment of an Evaluation Monitoring Program, meeting the requirements of Title 27, section 20425.

e. Within **180 days** of determining a statistically significant evidence of a release, submit to the Water Board an engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern.

3. **Well Logs**

A boring log and a monitoring well construction log shall be submitted for each new 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 well installation.

G. WATER QUALITY PROTECTION STANDARDS

1. Constituents of Concern: The Constituents of Concern (COC) for groundwater are listed in Table A-1 of this SMP. COCs are the exhaustive list of chemicals expected to be present in potential discharge. Groundwater and surface water shall be analyzed for COCs at least one time **every five years**.

2. Monitoring Parameters: The Monitoring Parameters and a sampling schedule for groundwater and surface water are listed in Table A-1 of this SMP. Monitoring Parameters are a subset of COCs that shall be analyzed and reported in every Self-Monitoring Report, serving to indicate if a release has occurred.

3. Monitoring Points: Monitoring Points for the surface impoundments and mining waste are identified in Figure A-1 of this SMP.

4. Point of Compliance: To contain contaminants, the Discharger has proposed Points of Compliance wells (POC wells) that act as points on a line past which contaminants in exceedance of PBCLs must not migrate. The POC for the Facility is the vertical surface that

extends from the outside edge of the lateral containment structures through the two uppermost aquifers underlying the unit. These are outlined in Figure A-1.

5. Performance Based Concentration Limits: Groundwater concentrations of COCs and monitoring parameters will be compared first to water quality criteria (WQC) established for the protection of estuarine aquatic habitat (as listed in the Environmental Screening Levels Summary Table F). All analytes below the WQC shall be considered in compliance, requiring no further analysis. For each POC well analyte that exceeds the WQC within the most recent data set, performance-based concentration limits (PBCLs) will be used to identify migration of contaminants past the POC. The PBCL will consist of an intrawell statistical trend analysis of all data after the 3rd quarter of 2006, utilizing the following protocol, devised with guidance from U.S. EPA (USEPA, 2006), Data Quality Assessment: Statistical Methods for Practitioners (EPA QA/G-9S); as well as American Society for Testing and Materials (ASTM, 1998) guidance, "Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs":

   An outlier evaluation shall be performed to screen out or exclude erroneous values. Visual inspection of graphical plots, such as histograms, box-and-whisker plots, and normal probability plots shall be used to identify candidate outliers within the data set. A U.S. EPA-recommended statistical outlier test, such as the Dixon's test (if $n<25$) or the Rosner's test (if $n\geq25$), shall be performed at 99% confidence level. Confirmed statistical outliers shall then be excluded from subsequent trend testing as described below.

   A Mann-Kendall test will then be applied to identify data trends. The significance probability of the test, or commonly known as the p-value, shall be determined using Table A-12b of Appendix A of U.S. EPA (2006). If this p-value is less than 0.01 (i.e., at 99 percent confidence level), a significant trend is concluded and the sign of S shall be used to determine whether it is a significant upward or downward trend.

   Any POC well statistical analysis resulting in a downward trend or no trend will be considered in compliance.

   Any POC well statistical analysis resulting in a significant upward trend triggers immediate notification to the Water Board case manager and shall be made prior to and separate from the monitoring report. Water Board staff will determine whether retesting is necessary based on historical data, trends, etc.

   Confirmed retests will be considered out of compliance, requiring notification in the monitoring reports and, potentially, corrective action.

Part B

1. DESCRIPTION OF OBSERVATION STATIONS AND SCHEDULE OF OBSERVATIONS

A. GROUNDWATER MONITORING:

Semi-Annual Report: **Due May 31 of each year**
Annual Report: **Due November 30 of each year**

Groundwater from the water table shall be sampled and analyzed as detailed in Table A-1. Monitoring well locations are shown in Figure A-1. Groundwater analyses shall include the following field measurements: pH, temperature, specific conductance, water level, volume purged, number of casings volumes purged, and whether the well went dry during sampling (including measures taken to ensure accuracy of analyses given this condition). Groundwater monitoring wells installed in the future will be sampled and analyzed as detailed in Table A-1 and on a quarterly basis until a statistically significant dataset is established.

B. FACILITIES MONITORING:

Semi-Annual Report: **Due May 31 of each year**
Annual Report: **Due November 30 of each year**

The Discharger shall inspect all facilities to ensure proper and safe operation as detailed below and in Table A-2 and report semi-annually. The facilities to be monitored shall include, but not be limited to:

1) Waste containment systems;

2) Waste treatment systems;

3) Surface water retention basins;

4) Leak detection systems (where applicable); and

5) Leachate/groundwater management facilities and secondary containment where applicable.

Attachment: Figure A-1 – Monitoring Well and Facilities Location Map
Table A-1 – Groundwater Monitoring Requirements
Table A-2 – Facilities Monitoring Requirements

FIGURE A-1

POINT OF COMPLIANCE
MONITORING WELL LOCATION MAP

Table A-1 – Groundwater Monitoring Requirements

Monitoring Wells	Analytes and Schedule of Monitoring
HLA-1 **MW-8A** **MW-14A** **MW-16** **MW-18** **MW-20** **MW-46** **MW-48** **MW-57** **MW-62R** **MW-66** **MW-67** **MW-68**	Monitoring Parameters (MPs) – At least semi-annually Copper Zinc pH Constituents of Concern (COCs) – At least every 5 years Arsenic Barium Cadmium Iron Lead Nickel

Table A-2 – Facilities Monitoring Requirements

Facility Inspections	Monitoring/Maintenance Schedule
Surface Impoundments	
Monitor thickness of settled solids	Settling Pond 3 times per week All other semi-annually
Inspect liner (Comprehensive when solids removed, otherwise exposed liner)	Settling and Surge Ponds Annually Utility/Spill Control Pond every 5 years
Leachate Collection and Recovery System (LCRS)	
Inspect system operations and measure sump water levels	3 times per week when in operation
Mining Waste Containment Systems	
Visual inspection of cover (asphalt and soil) to minimize infiltration	Annually
Visual inspection of shoreline for evidence of leachate seep and to monitor shoreline erosion	Quarterly