



California Regional Water Quality Control Board

San Francisco Bay Region



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Orig

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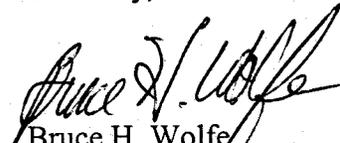
**Subject: Transmittal of Final Order No. R2-2004-0042, NPDES Permit No. CA0006165
for Rhodia Inc., Martinez Plant, Contra Costa County**

Dear Mr. Koo:

Attached is a copy of the Final Order No. R2-2004-0042 adopted by the Board on June 16, 2004.
The requirements of this Order are effective starting on September 1, 2004.

You may contact Robert Schlipf at (510) 622-2478 if you have any questions.

Sincerely,


Bruce H. Wolfe
Executive Officer

Attachments: Order No. R2-2004-0042

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

NPDES PERMIT NO. CA0006165

ORDER NO. R2-2004-0042

WASTE DISCHARGE REQUIREMENTS FOR:

RHODIA INC.

MARTINEZ, CONTRA COSTA COUNTY

Adopted: June 16, 2004

Effective: September 1, 2004

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. R2-2004-0042

NPDES PERMIT NO. CA0006165

REISSUING WASTE DISCHARGE REQUIREMENTS FOR:

RHODIA INC.

100 MOCOCO ROAD

MARTINEZ, CONTRA COSTA COUNTY

FINDINGS

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

1. *Discharger and Permit Application.* Rhodia Inc. (hereinafter called the Discharger) has applied to the Board for reissuance of waste discharge requirements and a permit to discharge treated wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES).

Facility Description

2. *Description of Facility.* The Discharger owns and operates a sulfuric acid regeneration plant at 100 Mococo Road in Martinez, Contra Costa County (hereinafter the site). The site has been operating since April 1970. It consists of approximately 110-acres on three separate parcels. To the immediate northeast of the site, the State of California owns 12 acres of vacant land that is administered through the State Lands Commission (SLC). Shell Oil Martinez Refinery is west of the site, Peyton Slough is to the east, a large salt marsh is to the south, and Carquinez Strait is to the north. The Discharger has a 10 to 15 foot easement on the SLC property for the routing of outfall E-001 to Carquinez Strait. Attachment A of this Order is the site location map.
3. *Description of Products Manufactured.* Using primarily spent acids from the nearby petroleum refineries, and molten sulfur as raw material, the Discharger utilizes a regeneration process to manufacture approximately 300,000 tons per year of various strengths and grades of sulfuric acid. The final scrubber in the system produces ammonia sulfate/bisulfite liquor, which is sold as a fertilizer product.
4. *Description of General Product Application or End-Use.* Sulfuric acid is the largest volume industrial chemical manufactured in the United States. Common uses are for making fertilizers, rayon, film, explosives, car batteries, dyes and pigments. The major use of the sulfuric acid produced from the site is as an alkylation catalyst in gasoline manufacturing by local petroleum refineries. Ammonia sulfate/bisulfite is used as a fertilizer in agricultural applications.
5. *Description of Production Process.* The production process begins with the decomposition of spent sulfuric acid and molten sulfur in a high temperature (1800°F) industrial furnace. The spent sulfuric acid is decomposed and sulfur is combusted to form a sulfur dioxide rich gas. The hydrocarbon that is part of the spent acid is combusted to form water vapor and carbon dioxide. Excess air is introduced into the furnace to ensure complete combustion. The gas is cooled through a waste heat boiler and a quench tower, cleaned by multiple wet electrostatic precipitators, dried in a drying tower,

and converted into sulfur trioxide in a converter unit. The sulfur trioxide then combines with water in an absorption tower to form sulfuric acid. Prior to releasing to the atmosphere through a stack, the gas containing unconverted sulfur dioxide is cleaned in an ammonia scrubber/mist eliminator where a fertilizer product, ammonium bisulfite, is formed.

6. *Groundwater Clean Up.* The plant was built in 1969-1970 by Stauffer Chemical Company on land where Mountain Copper Company used to operate a copper smelter. Over the years, large piles of copper smelting slag and cinders accumulated in the north and south areas of the site. Due to their heavy weight, these waste piles subsided into the soft Bay mud. Under Board Order No. 91-166, the Discharger closed two evaporative ponds that used to hold metal-contaminated groundwater, in accordance with the requirements of the Toxic Pits Cleanup Act. Additionally, Board Order No. 97-121 requires the Discharger to extract groundwater from the cinder/slag burial area to prevent leachate from entering the Carquinez Strait. The Discharger constructed a Process Effluent Purification (PEP) plant in 1989 to treat groundwater, and identified nickel, zinc, copper, and cadmium to be the primary metals of concern in the PEP effluent. The PEP plant uses sodium hydroxide to remove elevated levels of metals from the extracted groundwater. In this process, the PEP Plant produces two filter cakes: one high in iron that is disposed of at a Class II landfill, and one high in zinc that is disposed of at a Class I landfill.
7. The U.S. Environmental Protection Agency (U.S. EPA) and the Board have classified this Discharger as a major discharger.

Purpose of Order

8. This NPDES permit regulates the discharges of (i) treated effluent from the onsite treatment plant to Carquinez Strait, a water of the United States and the State, and (ii) stormwater runoff to Peyton Slough, a shallow water body tributary to Carquinez Strait. Both Carquinez Strait and Peyton Slough and contiguous tributaries between these water bodies are considered the receiving waters for this Order. These discharges are currently governed by Waste Discharge Requirements (NPDES Permit) specified in the Board Order No. 98-104, adopted by the Board on October 21, 1998 (the previous permit).

Discharge Description

9. The description of wastewater and stormwater discharged from the site is based on information contained in the Report of Waste Discharge, recent self-monitoring reports, stormwater pollution prevention plan, and other relevant information. Attachment B is a water flow schematic for the plant. All sanitary waste is piped to leach fields located on various portions of the site.
 - a. *Waste 001*
 - (1) Waste 001 consists of an average of 0.127 million gallons per day (mgd) of wastewater, with a potential maximum daily rate of over 0.779 mgd during heavy rain periods. The wastewater consists of cooling tower blowdown, acidic process water, boiler blowdown, various scrubber and washdown waters, stormwater runoff associated with industrial activities, and effluent from the PEP plant, which operates about six months out of the year, and has a long-term average flow rate of 0.032 mgd, and a maximum daily flow rate of 0.144 mgd.

The Discharger implemented in-plant recycle procedures to minimize acid releases to the wastewater treatment system. With the exception of the PEP effluent, all wastewater streams are mixed in a 23,000-gallon fiberglass tank (T-28) where sodium hydroxide and aluminum sulfate are added for neutralization and flocculation. Overflow from the T-28 is

contained in a surge pond, from which the wastewater flows to a 13,000-gallon neutralizing tank (T-21) for further pH adjustment. The Discharger routes PEP Plant effluent to T-21. The combined effluent then enters a 630,000-gallon settling pond for final polishing. This Order defines the final effluent from the settling pond as treated waste, which is discharged to Carquinez Strait, about 730 feet from the shoreline, via deep water outfall E-001 at the location depicted in Table 2.

- (2) The wastewater comes from three major sources. (1) The majority of Rhodia's wastewater effluent comes from non-contact cooling tower blowdown. The provider of the cooling water is the Contra Costa Water District (CCWD). Because of the evaporative cooling process, there will be increases in metal concentrations. (2) The next largest contribution to the Rhodia wastewater stream comes from the PEP plant that treats onsite groundwater. Historical site usages have resulted in the presence of iron pyrite cinders and slag on the site. As a result, the groundwater pumped to the PEP plant can have elevated concentrations of iron, zinc, and other metals. (3) The final major contribution to the wastewater treatment system comes from the Discharger's sulfuric acid regeneration process. The extremely high temperature that the spent acid streams undergo in this process (in excess of 1800°F) effectively degrades or otherwise eliminates almost all organic compounds.
- (3) Table 1 below describes the quality of treated effluent (E-001). For conventional and non-conventional pollutants, data are from the Report of Waste Discharge submitted in April 2003; while for priority pollutants, data are from self-monitoring reports from 2000 through 2003.

Table 1 Effluent Characteristics at E-001

Constituents	Long-term Average	Maximum Daily
Chemical Oxygen Demand (COD)	17.9 mg/L 14.55 lb/day	35 mg/L 48.16 lb/day
Total Suspended Solids (TSS)	5.93 mg/L ^[1] 4.87 lb/day ^[1]	18.8 mg/L 15.96 lb/day
Oil and Grease (O&G)	1 mg/L ^[1] 0.59 kg/day ^[1]	1.1 mg/L 0.86 kg/day
pH	6.5 (minimum)	8.8 (maximum)
Temperature (winter) °C	13.8	18.9
Temperature (summer) °C	25.0	28.9
Arsenic (µg/L) ^[1]	6.8	12
Cadmium (µg/L) ^[1]	1.6	4
Chromium VI (µg/L) ^[1]	5.7	14
Copper (µg/L) ^[1]	11.8	31
Lead (µg/L)	All non detect (ND)	<2.0
Mercury (µg/L) ^[2]	0.033	0.27
Nickel (µg/L)	19.14	37
Selenium (µg/L) ^[1]	11.3	29.2
Silver (µg/L) ^[1]	1.3	3
Zinc (µg/L) ^[1]	13.9	48
Cyanide (µg/L)	All ND	<10

[1] To calculate average values, nondetects were replaced with ½ of the detection limit.

[2] Mercury values do not include the February 2000 datum because it is not an ultra-clean point.

- b. *Waste 002* consists of stormwater runoff from the western highlands drain collection system on the site, from the paved areas around the maintenance office and warehouse, and from the closed evaporation pond. It has been discharged through outfall E-002 to Peyton Slough at the location depicted in Table 2.
- c. *Discharge Locations.* Table 2 lists the latitudes and longitudes of the two discharge outfalls.

Table 2 Discharge Outfalls

Outfall	Description	Latitude	Longitude
E-001	Wastewater	38°02'18"	122°07'01"
E-002	Stormwater	38°01'57"	122°06'41"

Regional Monitoring Program

10. On April 15, 1992, the Board adopted Resolution No. 92-043 directing the Executive Officer to implement a Regional Monitoring Program for San Francisco Bay. Subsequent to a public hearing and various meetings, the Board requested major permit holders in this region, under authority of Section 13267 of the California Water Code, to report on the water quality of the San Francisco Bay Estuary. These permit holders, including the Discharger, responded to that request by participating in a collaborative effort, through the San Francisco Estuary Institute (formerly the Aquatic Habitat Institute). This effort is known as the San Francisco Bay Regional Monitoring Program for Trace Substances (the RMP). The Discharger has agreed to continue to participate in the RMP, which includes collection of data on pollutants and toxicity in water, sediment, and biota of the estuary.

Applicable Plans, Policies and Regulations

11. Water quality objectives (WQOs), water quality criteria (WQC), effluent limitations, and calculations contained in this Order are based on the statutes, documents, and guidance detailed in Section III of the attached Fact Sheet, which is incorporated here by reference.

Beneficial Uses of Receiving Waters

12. The beneficial uses of the Peyton Slough, Carquinez Strait and Suisun Bay receiving waters, as identified in the Board's June 21, 1995 *Water Quality Control Plan San Francisco Bay Basin (Region 2)* (the Basin Plan) (Table 2-7 on pp. 2-25), and based on known uses of the receiving waters in the vicinity of the discharge, are:

- Industrial Service Supply
- Navigation
- Water Contact Recreation
- Non-Contact Recreation
- Ocean Commercial and Sport Fishing
- Wildlife Habitat
- Preservation of Rare and Endangered Species
- Fish Migration
- Fish Spawning
- Estuarine Habitat

Bases for Effluent Limitations

General Basis

Applicable Water Quality Objectives

13. The WQOs and WQC applicable to the receiving water of this discharge are from the Basin Plan, the U.S. EPA's May 18, 2000 *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (the California Toxics Rule, or the CTR), and U.S. EPA's *National Toxics Rule* (the NTR).
 - a. The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, as well as narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The pollutants for which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in fresh water, lead, mercury, nickel, silver, zinc, and total polynuclear aromatic hydrocarbons (PAHs) in salt water. The narrative toxicity objective states in part, "[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states in part, "[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered." Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.
 - b. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries such as here, except where the Basin Plan's Tables 3-3 and 3-4 specify numeric objectives for priority toxic pollutants. In these cases, the Basin Plan's numeric objectives apply over the CTR (except in the South Bay south of the Dumbarton Bridge).
 - c. The NTR established numeric aquatic life criteria for selenium, numeric aquatic life and human health criteria for cyanide, and numeric human health criteria for 34 toxic organic pollutants for waters of San Francisco Bay upstream to, and including, Suisun Bay and Carquinez Strait. This includes the receiving water for this Discharger.
14. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR Part 122.44(d) specifies that water quality-based effluent limitations (WQBELs) may be set based on U.S. EPA criteria, supplemented where necessary by other relevant information, to attain and maintain narrative WQC to fully protect designated beneficial uses. The Fact Sheet for this Permit discusses the specific bases and rationales for effluent limitations, and is incorporated as part of this Order.

Basin Plan Receiving Water Salinity Policy

15. The Basin Plan states that the salinity characteristics of the receiving water shall be considered in determining the applicable WQOs. Freshwater objectives apply to discharges to waters both outside the zone of tidal influence and with salinities lower than 5 parts per thousand (ppt) at least 75 percent in a normal water year. Marine water objectives shall apply to discharges to waters with salinities greater than 5 ppt at least 75 percent in a normal water year. For discharges to waters with salinities in between these two categories or tidally influenced fresh waters that support estuarine beneficial uses, the objectives shall be the lower of the marine water or freshwater objectives, based on ambient hardness, for each substance (BP, pp. 4-13). For constituents with WQOs specified in the Basin Plan, it is appropriate to use the Basin Plan definition for determining whether the receiving water is fresh, marine, or estuarine.

CTR Receiving Water Salinity Policy

16. The CTR states that the salinity characteristics (i.e., freshwater versus saltwater) of the receiving water shall be considered in determining the applicable WQC. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than 1 ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to waters with salinities in between these two categories, or tidally influenced fresh waters that support estuarine beneficial uses, the criteria shall be the lower of the salt- or freshwater criteria (the freshwater criteria are calculated based on ambient hardness), for each substance. In applying CTR criteria, it is appropriate to use the CTR definition for determining whether the receiving water is fresh, marine, or estuarine.

Receiving Water Salinity

17. The receiving waters for the subject discharge are the waters of Peyton Slough, Carquinez Strait and Suisun Bay, which are tidally influenced waterbodies, with significant fresh water inflows during the wet weather season. Furthermore, Carquinez Strait and Suisun Bay are specifically defined as estuarine under both the Basin Plan and CTR definitions. Therefore, the effluent limitations specified in this Order for discharges to Carquinez Strait and Suisun Bay are based on the lower of the marine and freshwater Basin Plan WQOs and CTR and NTR WQC.

Receiving Water Hardness

18. Some WQOs and WQC are hardness dependent. Hardness data collected through the RMP are available for waterbodies in the San Francisco Bay Region. In determining the WQOs and WQC for this Order, the Board used a hardness value of 46 mg/L, which is the minimum hardness observed at the Pacheco River RMP Station during the period of 1993-2001. This represents the best available information for hardness of the receiving water after it has mixed with the discharge.

Technology-Based Effluent Limitations

19. Effluent limitation guidelines requiring the application of best available technology economically achievable (BAT) have not been promulgated by the U.S. EPA for the type of discharge authorized by this permit. Effluent limitations of this Order are based on the Basin Plan, other State plans and policies, and best professional judgment (BPJ).

The technology-based effluent limitations for the following conventional and non-conventional pollutants: total suspended solids (TSS), oil and grease (O&G), and settleable matter are retained from the previous permit. For chemical oxygen demand (COD), this permit increases the concentration-based limit from 46 to 52 mg/L to reflect the Discharger's water conservation efforts. This is because the Discharger documented that it has reduced the amount of freshwater it uses to produce a ton of acid by about 12% from the time the COD limit was developed. This satisfies the backsliding exception in CWA 402(o)(2) that indicates a less stringent limit is justifiable if material and substantial alterations occur at the facility after permit issuance.

Water Quality-Based Effluent Limitations

20. Toxic substances are regulated by WQBELs derived from the Basin Plan, Tables 3-3 and 3-4, the CTR, the NTR, and/or BPJ as defined in Section IV of the attached Fact Sheet. WQBELs in this Order are revised and updated from the limits in the previous permit, and their presence in this Order is based on the evaluation of the Discharger's data as described below under the Reasonable Potential Analysis (RPA). Numeric WQBELs are required for all constituents that have Reasonable Potential to cause or contribute to an excursion above any State water quality standard. Reasonable Potential is determined and final WQBELs are developed using the methodology outlined in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of*

California (the State Implementation Plan or the SIP). If the Discharger demonstrates that the final limits will be infeasible to meet and provides justification for a compliance schedule, then interim limits are established, with a compliance schedule to achieve the final limits. Further details about the effluent limitations are given below and in the associated Fact Sheet.

- a. Maximum Daily Effluent Limitations (MDELs) are used in this permit to protect against acute water quality effects. It is impracticable to use weekly average limitations to guard against acute effects. Although weekly averages are effective for monitoring the performance of biological wastewater treatment plants, the MDELs are necessary for preventing fish kills or mortality to aquatic organisms.
- b. NPDES regulations, the SIP, and U.S. EPA's Technical Support Document (TSD) provide the basis to establish MDELs. NPDES regulations at 40 CFR 122.45(d) state:

"For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall unless impracticable be stated as:

(1) Maximum daily and average monthly discharge limitations for all discharges other than publicly owned treatment works; "

- c. The SIP (p. 8, Section 1.4) requires that WQBELs be expressed as MDELs and average monthly effluent limitations (AMELs).
- d. The TSD (p.96) states a maximum daily limitation is appropriate because the 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed. A maximum daily limitation would be toxicologically protective of potential acute toxicity impacts.

Receiving Water Ambient Background Data used in Calculating WQBELs

21. Ambient background values are used in the RPA and in the calculation of effluent limitations. For the RPA, ambient background concentrations are the observed maximum water column concentrations. The SIP states that for calculating WQBELs, ambient background concentrations are either the observed maximum ambient water column concentrations or, for criteria/objectives intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations. The RMP station at Yerba Buena Island, located in the Central Bay, has been sampled for most of the inorganic (CTR constituent numbers 1-15) and some of the organic (CTR constituent numbers 16-126) toxic pollutants. Not all the constituents listed in the CTR were analyzed by the RMP during this time.

These data gaps are addressed by the Board's August 6, 2001 Letter titled "Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy" (hereinafter referred to as the Board's August 6, 2001 Letter—available online; see Standard Language and Other References Available Online, below). The Board's August 6, 2001 Letter formally requires the Discharger (pursuant to Section 13267 of the California Water Code) to conduct ambient background monitoring and effluent monitoring for those constituents not currently sampled by the RMP and to provide this technical information to the Board. On May 15, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report*. This study includes monitoring results from sampling

events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. The RPA was conducted and the WQBELs were calculated using RMP data from 1993 through 2001 for inorganics and organics at the Yerba Buena Island RMP station, and additional data from the BACWA *Ambient Water Monitoring Interim Report* for the Yerba Buena Island RMP station.

Constituents Identified on the 303(d) List

22. On June 6, 2003, U.S. EPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 2002 303(d) list) was prepared in accordance with Section 303(d) of the Federal Clean Water Act to identify specific waterbodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Carquinez Strait and Suisun Bay are listed as an impaired waterbodies. The pollutants impairing Carquinez Strait and Suisun Bay include mercury, nickel (Suisun Bay only), selenium, PCBs total, dioxins and furans, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs. Carquinez Strait and Suisun Bay are also impaired by exotic species. Copper, which was previously identified as impairing Suisun Bay, was not included as impairing pollutants in the 2002 303(d) list and has been placed on the new Monitoring List.

Dilution and Assimilative Capacity

23. In response to the State Board's Order No. 2001-06, the Board evaluated the assimilative capacity of the receiving water for 303(d)-listed pollutants for which the Discharger has Reasonable Potential in its discharge. The evaluation included a review of RMP data (local and Central Bay stations), effluent data, and WQOs/WQC. From this evaluation, it is determined that the assimilative capacity is highly variable because of the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, "dilution credit may be limited or denied on a pollutant-by-pollutant basis...."

- a. For certain bioaccumulative pollutants, based on BPJ, dilution credit is not included in calculating the final WQBELs. This determination is based on available data on concentrations of these pollutants in aquatic organisms, sediment, and the water column. The Board placed selenium, mercury, and polychlorinated biphenyls (PCBs) on the CWA Section 303(d) list. U.S. EPA added dioxin and furan compounds, chlordane, dieldrin, and 4,4'-DDT to the CWA Section 303(d) list. Dilution credit is not included for the following pollutants: mercury, selenium, dieldrin, 4,4'-DDE, and dioxins and furans. The following factors suggest that there is no more assimilative capacity in the Bay for these pollutants.
- i. San Francisco Bay fish tissue data show that these pollutants, except for selenium, exceed screening levels. The fish tissue data are contained in *Contaminant Concentrations in Fish from San Francisco Bay 1997* (May 1997). Denial of dilution credits for these pollutants is further justified by fish advisories to the San Francisco Bay. The Office of Environmental Health and Hazard Assessment (OEHHA) performed a preliminary review of the data from the 1994 San Francisco Bay pilot study, *Contaminated Levels in Fish Tissue from San Francisco Bay*. The results of the study showed elevated levels of chemical contaminants in the fish tissues. Based on these results, OEHHA issued an interim consumption advisory covering certain fish species from the Bay in December 1994. This interim consumption advice was issued and is still in effect owing to health concerns based on exposure to sport fish from the bay contaminated with mercury, PCBs, dioxins, and pesticides (e.g., DDT).
- ii. For selenium, the denial of dilution credits is based on Bay waterfowl tissue data presented in the California Department of Fish and Game's Selenium Verification Study (1986-1990).

These data show elevated levels of selenium in the livers of waterfowl that feed on bottom dwelling organisms such as clams. In addition, in 1987 OEHHA issued an advisory for the consumption of two species of diving ducks in the North Bay found to have high tissue levels of selenium. This advisory is still in effect.

- b. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass-loading limits should be limited to current levels. The Board finds that mass-loading limits are warranted for mercury for the receiving waters of this Discharger. This is to ensure that this Discharger does not contribute further to impairment of the narrative objective for bioaccumulation.
- c. As mentioned in an earlier finding, the discharge is through a deepwater diffuser to Carquinez Strait. Based on a study dated March 1992, the Discharger reports that the diffuser achieves at least 20:1 initial dilution. To address uncertainties with mixing (discussed below) and to protect beneficial uses of the Bay, this Order limits the dilution credit for nonbioaccumulative constituents to 10:1. Limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for derivation of the dilution credit.
 - i. A far-field background station is appropriate because the receiving waterbody (the Bay) is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.
 - ii. Because of the complex hydrology of the San Francisco Bay, a mixing zone cannot be accurately established.
 - iii. Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
 - iv. The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper, silver, nickel, and lead).

The main justification for using a 10:1 dilution credit is the uncertainty in accurately determining both ambient background and the mixing zone in a complex estuarine system with multiple wastewater discharges. The detailed rationale is described in the Fact Sheet

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

24. The Board plans to adopt Total Maximum Daily Loads (TMDLs) for pollutants on the 303(d) list in Carquinez Strait and Suisun Bay no later than 2010, with the exception of dioxin and furan compounds. For dioxins and furans, the Board intends to consider this matter further after U.S. EPA completes its national health reassessment. Future review of the 303(d) list for Carquinez Strait and Suisun Bay may result in revision of the schedules and/or provide schedules for other pollutants.
25. The TMDLs will establish waste load allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources, and will result in achieving the water quality standards for the waterbodies. Final WQBELs for 303(d)-listed pollutants in this discharge will be based on WLAs contained in the respective TMDLs.
26. The Board's strategy to collect water quality data and to develop TMDLs is summarized below:

- a. *Data collection*—The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or WQOs. This collective effort may include development of sample concentration techniques for approval by U.S. EPA. The Board will require dischargers to characterize the pollutant loads from their facilities into the water quality-limited waterbodies. The results will be used in the development of TMDLs, and may be used to update or revise the 303(d) list and/or change the WQOs for the impaired waterbodies including Carquinez Strait.
- b. *Funding mechanism*—The Board has received, and anticipates continuing to receive, resources from Federal and State agencies for TMDL development. To ensure timely development of TMDLs, the Board intends to supplement these resources by allocating development costs among dischargers through the RMP or other appropriate funding mechanisms.

Interim Limitations and Compliance Schedules

27. Section 2.1.1 of the SIP states:

“the compliance schedule provisions for the development and adoption of a TMDL only apply when: ... (b) the Discharger has made appropriate commitments to support and expedite the development of the TMDL. In determining appropriate commitments, the RWQCB should consider the discharge’s contribution to current loadings and the Discharger’s ability to participate in TMDL development.”

The Discharger agreed to assist the Board in TMDL development through active participation in the RMP. The Board adopted Resolution No. 01-103, on September 19, 2001, authorizing the Executive Officer of the Board to enter into a Memorandum of Understanding with BACWA and other parties to accelerate the development of Water Quality Attainment Strategies (WQAS), including TMDLs, for San Francisco Bay.

28. The SIP and the Basin Plan authorize compliance schedules in a permit if an existing discharger cannot immediately comply with a new and more stringent effluent limitation. Compliance schedules for limitations derived from CTR or the NTR WQCs are based on Section 2.2 of the SIP, and compliance schedules for limitations derived from Basin Plan WQOs are based on the Basin Plan. Both the SIP and the Basin Plan require the discharger to demonstrate the infeasibility of achieving immediate compliance with the new limitation to qualify for a compliance schedule. The SIP and Basin Plan require the following documentation to be submitted to the Board to support a finding of infeasibility:

- Descriptions of diligent efforts the discharger has made to quantify pollutant levels in the discharge, sources of the pollutant in the waste stream, and the results of those efforts.
- Descriptions of source control and/or pollution minimization efforts currently under way or completed.
- A proposed schedule for additional or future source control measures, pollutant minimization, or waste treatment.
- A demonstration that the proposed schedule is as short as practicable.

For limitations based on CTR or NTR criteria (i.e., copper, selenium, 4,4'-DDE, and dieldrin) this Order establishes a 5-year compliance schedule until September 1, 2009, as allowed by the CTR and SIP. For limitations based on the Basin Plan numeric objectives (i.e., mercury and nickel), this Order establishes a compliance schedule until March 31, 2010 or until the Board adopts TMDLs for mercury and nickel. The Basin Plan provides for a 10-year compliance schedule to implement

measures to comply with new standards as of the effective date of those standards. This provision has been construed as authorizing compliance schedules for new interpretations of existing standards (such as the numeric WQOs specified in the Basin Plan) resulting in more stringent limitations than in the previous permit. Because the SIP has been adopted, the Board has newly interpreted these objectives. As a result of applying the SIP methodologies, the effluent limitations for some pollutants are more stringent than the previous permit limits, and compliance schedules may be appropriate for the new limitations for those pollutants. The Board may take appropriate enforcement actions if interim limitations and requirements are not met.

29. Until final WQBELs or WLAs are adopted for 303(d)-listed pollutants, state and federal anti-backsliding and antidegradation policies and the SIP, require that the Board include interim effluent limitations for them. The interim effluent limitations will be the lower of the following:
- current performance; or
 - the previous permit's limitations

In addition to interim concentration limitations for copper, selenium, nickel, mercury, 4,4-DDE, and dieldrin, this Order establishes an interim performance-based mass limitation to maintain the Discharger's current loading of mercury, a 303(d)-listed bioaccumulative pollutant that has Reasonable Potential. This interim performance-based mass limitation is based on recent discharge data.

30. On February 25, 2004, the Discharger submitted a final feasibility study (the February 25, 2004 Feasibility Study), asserting it is infeasible to immediately comply with the WQBELs calculated according to SIP Section 1.4 for copper, nickel, mercury, and selenium. Board staff conducted a statistical analysis of recent effluent data with respect to these pollutants (see the attached Fact Sheet for detailed results of this analysis). Based on the results of the statistical analysis, the Board concurs with the February 25, 2004 Feasibility Study for the above pollutants. There is also infeasibility for immediate compliance with the 4,4'-DDE and dieldrin WQBELs, as both pollutants were not detected in the effluent with method detection limits (MDLs) above the SIP specified minimum levels (MLs). In addition, the MLs are above the WQC for 4,4'-DDE and dieldrin, therefore, compliance cannot be determined at this time. Therefore, this Order establishes compliance schedules for copper, nickel, mercury, selenium, 4,4'-DDE, and dieldrin. The SIP and 40 CFR Part 122.47 require that the Board establish interim numeric limitations and interim requirements to control these pollutants. Specific bases for these interim limitations are described in the findings for each pollutant, below. This Order also establishes interim requirements in a provision for development and/or improvement of Pollution Prevention and Best Management Practices programs for these pollutants, and for submittal of annual reports on these programs.

Antibacksliding and Antidegradation

31. The limitations in this Order are in compliance with the Clean Water Act Section 402(o) prohibition against establishment of less stringent WQBELs for the following reasons:
- (1) For impairing pollutants, the revised final limitations will be in accordance with TMDLs and WLAs once they are established.
 - (2) For non-impairing pollutants, the final limitations are or will be consistent with current State WQOs/WQC.

Specific Basis

Reasonable Potential Analysis

32. As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the Reasonable Potential to cause, or contribute to an excursion above any State water quality standard." Using the method prescribed in Section 1.3 of the SIP, the Board has analyzed the effluent data to determine whether the discharge, which is the subject of this Order, has a Reasonable Potential to cause or contribute to an excursion above a State water quality standard (RPA). For all parameters that have Reasonable Potential, numeric WQBELs are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQC from the NTR, and CTR.

RPA Methodology

33. The method for determining Reasonable Potential involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on effluent concentration data. The RPA for all constituents is based on zero dilution, according to Section 1.3 of the SIP. There are three triggers in determining Reasonable Potential.

- (1) The first trigger is activated when the MEC is greater than the lowest applicable WQO/WQC, which has been adjusted for pH, hardness (for freshwater WQO/WQC only), and translators, if appropriate. If the MEC is greater than the adjusted WQO/WQC, then that pollutant has Reasonable Potential and a WQBEL is required.
- (2) The second trigger is activated if the observed maximum ambient background concentration (B) is greater than the adjusted WQO/WQC ($B > WQO/WQC$):
 - i. The MEC is less than the adjusted WQO/WQC ($MEC < WQO/WQC$), or
 - ii. The pollutant was not detected in any of the effluent samples and all the detection levels are greater than or equal to the adjusted WQO/WQC.
- (3) The third trigger is activated if a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO/WQC, or effluent and background data are unavailable or insufficient (e.g., all nondetects). A limit is required only under certain circumstances to protect beneficial uses.

RPA Determinations

34. The MECs, WQOs/WQC, bases for the WQOs/WQC, background concentrations used, and Reasonable Potential conclusions from the RPA are listed in Table 3 for all constituents analyzed. The RPA results for some of the constituents in the CTR were not determined because of the lack of objectives/criteria or effluent data. Further details on the RPA can be found in the Fact Sheet.

35. *Summary of RPA Results.* The RPA was based on the effluent monitoring data from 2000 through 2003 for metals and cyanide, and from November 1999 through 2003 for organic pollutants. Based on the RPA methodology described above and in the SIP, the following constituents have been found to have Reasonable Potential to cause or contribute to an excursion above WQOs/WQC: cadmium, chromium VI, copper, mercury, nickel, selenium, silver, dioxins, bis(2-ethylhexyl)phthalate, 4,4'-DDE, and dieldrin. Based on the RPA, numeric water quality based effluent limits are required for these constituents (except for dioxins, as discussed further below).

Table 3 Summary of Reasonable Potential Analysis Results

CTR #.	Constituent ^[1]	Applicable (Most Stringent) WQO (µg/l)	Applicable (Most Stringent) WQO Basis ^[2]	MEC (µg/l) ^[3]	Maximum Background Conc. (ug/L) Yerba Buena	RP (Trigger Type) ^[4]
2	Arsenic	36	BP sw	12	2.46	No
4	Cadmium	0.62	BP fw H=46mg/L	4	0.1268	Yes (1)
5b	Chromium (VI)	11	BP fw	14	4.4	Yes (1)
6	Copper	3.73	CTR sw	31	2.45	Yes (1)
7	Lead	1.18	BP fw, H=46	<2.5	0.8	No
8	Mercury*	0.025	BP sw/fw	0.27	0.0064	Yes (1)
9	Nickel*	7.1	BP sw	37	3.7	Yes (1)
10	Selenium*	5.0	NTR fw	29.2	0.39	Yes (1)
11	Silver	1.07	BP fw H=46	3	0.0516	Yes (1)
13	Zinc	55	BP fw H=46	48	4.4	No
14	Cyanide	1.0	CTR sw	<10	<0.4	No
16	TCDD-TEQ*	1.4x10 ⁻⁸	BP narrative	<4.8 x10 ⁻⁷	7.1x10 ⁻⁸	Yes (2)
68	Bis(2-Ethylhexyl) Phthalate	5.9	CTR, hh	6.4	<0.5	Yes (1)
109	4,4'-DDE*	0.00059	CTR hh	All ND	0.000693	Yes (2)
111	Dieldrin*	0.00014	CTR hh	All ND	0.000264	Yes (2)
CTR #17-126 except 68, 109, and 111	Others	Various or NA	CTR hh	ND, less than WQO, NA, or no WQO	NA or less than WQOs	No or Undetermined ^[5]

[1] * Indicates constituents on 303(d) list, dioxin applies to 1998 Toxicity Equivalent Factors (TEQs) of 2,3,7,8-TCDD.

[2] RPA based on the following: Hardness (H) = 46 mg/L as CaCO₃; BP = Basin Plan; CTR = California Toxics Rule; NTR=National Toxics Rule; fw = freshwater; sw = saltwater; hh = human health.

[3] NA- not available, ND- non-detect.

[4] See Finding 33 above for the definition of the three RPA triggers.

[5] Undetermined due to the lack of objectives/criteria and/or lack of effluent data (see Table B of the Fact Sheet for full RPA results).

RPA Results for Impairing Pollutants

36. While TMDLs and WLAs are being developed, interim concentration limitations are established in this permit for 303(d)-listed pollutants that have a Reasonable Potential to cause or contribute to an excursion above the water quality standard. In addition, mass limitations are required for bioaccumulative 303(d)-listed pollutants that can be reliably detected. Constituents on the 303(d) list for which the RPA determined a need for effluent limitations are mercury, selenium, 4,4'-DDE (chemically linked to DDT), dieldrin, and dioxins. Final determination of Reasonable Potential for

other constituents identified on the 303(d) list could not be performed because of a lack of an established WQO or WQC.

Specific Pollutants

37. *Polynuclear Aromatic Hydrocarbons (PAHs)*. This Order implements the policy and regulations of the CTR and SIP in regard to PAHs, that is, Reasonable Potential is determined for individual PAHs. The Basin Plan contains a WQO for total PAHs for the protection of saltwater aquatic life of 15 µg/L, as a 24-hour average; therefore, RPA is also performed on the total PAHs. Effluent data for individual PAHs are available for the period from November 1999 through August 2003. None of the sixteen individual PAHs were detected. Therefore, the total PAH concentration is assumed to be "0", and thus, no Reasonable Potential is identified. The nature of this discharge generally suggests that PAHs are unlikely to be found in the effluent (see findings under "Discharge Description" above).

38. *Dioxin*.

a. The CTR establishes a numeric human health WQC of 0.014 picogram per liter (pg/L) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms. The preamble of the CTR states that California NPDES permits should use toxicity equivalents (TEQs) where dioxin-like compounds have a Reasonable Potential with respect to narrative criteria. In U.S. EPA's National Recommended WQOs, December 2002, U.S. EPA published the 1998 World Health Organization Toxicity Equivalence Factor (TEF) scheme. In addition, the CTR preamble states U.S. EPA's intent to adopt revised WQC guidance subsequent to their health reassessment for dioxin-like compounds. The SIP applies to all toxic pollutants, including dioxins and furans.

b. The Basin Plan contains a narrative WQO for bioaccumulative substances:

"Many pollutants can accumulate on particulates, in sediments, or bioaccumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."

This narrative WQO applies to dioxin and furan compounds, based in part on the consensus of the scientific community that these compounds associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms.

c. U.S. EPA's 303(d) listing determined that the narrative objective for bioaccumulative pollutants was not met because of the levels of dioxins and furans in the fish tissue.

d. The Discharger has monitored for dioxins and furans. The limited data set is all nondetect, although all detection limits have been above the WQC. As shown in Table 3, 2002-2003 ambient receiving water quality data provided in the May 15, 2003 BACWA report show TCDD TEQ levels exceeding the WQC; therefore, there is Reasonable Potential for TCDD TEQ.

39. *4,4'-DDE and Dieldrin*.

a. Board staff could not determine MECs for 4,4'-DDE and dieldrin because the effluent data consisted of all nondetect values, and all the detection limits were higher than the WQC (Section 1.3 of the SIP). The Board conducted the RPA by comparing the WQC with RMP ambient background concentration data gathered using research-based sample collection, concentration, and analytical methods. This analysis concluded that the background concentrations are greater than the WQC and, therefore, that 4,4'-DDE and dieldrin have Reasonable Potential, and numeric

WQBELs are required. Although 4,4'-DDE maximum background data are questionable owing to blank contamination, these data were used to evaluate Reasonable Potential for 4,4'-DDE, based on the following considerations: (1) other RMP monitoring data from stations close to the Discharger's outfall show elevated 4,4'-DDE concentrations (such as Suisun Bay, Sacramento River stations, and the like); and (2) 4,4'-DDE in fish tissue in the Bay has exceeded the fish advisory level.

- b. The current 303(d) list includes the Bay as impaired for dieldrin and DDT; 4,4'-DDE is chemically linked to the presence of DDT. The Board intends to develop TMDLs that will lead to the overall reduction of dieldrin and 4,4'-DDE. The WQBELs specified in this Order may be changed to reflect the WLAs from this TMDL. Ongoing studies are investigating the feasibility and reliability of different methods of increasing sample volumes to lower the detection limits for pesticides. If analytical methodologies improve and the detection levels decrease to a point that show discharge concentrations above the limitations in this Order, the Board will reevaluate the Discharger's feasibility to comply with the limitations and determine the need for a compliance schedule and interim performance-based limitations at that time. Since dieldrin and 4,4'-DDE are both bioaccumulative and on the 303(d) list owing to fish tissue concentrations, there is no assimilative capacity, and no dilution credit was allowed in the final limitation calculations.
40. *Other Organics.* Self-monitoring data indicate that from 1999 to 2003, the Discharger sampled for all organic pollutants. This data set was used to perform the RPA for organic pollutants. The Discharger is required to continue monitoring its effluent for priority pollutants under the requirement of Provision D.2. Upon completion of the monitoring, the Board may re-evaluate the RPA and determine if WQBELs are required.
 41. *Effluent Monitoring.* This Order does not include effluent limitations for constituents that do not show a Reasonable Potential, but continued monitoring for these pollutants is required as described in the August 6, 2001 Letter. If concentrations of these constituents increase significantly or if constituents are detected in the effluent at levels above the applicable WQOs/WQC, the Discharger will be required to investigate the source of the increases and establish remedial measures.
 42. *Permit Reopener.* This Order includes a reopener provision to allow numeric effluent limitations to be added or deleted for any constituent that exhibits or does not exhibit, respectively, Reasonable Potential. The Board will make this determination based on monitoring results.

Development of Specific Effluent Limitations

43. Cadmium

- a. *Cadmium WQOs.* The Basin Plan contains freshwater WQOs for cadmium of 0.62 µg/L as a four-day average, and 1.6 µg/L as a 1-hour average, as calculated using the receiving water hardness value of 46 mg/L, as CaCO₃.
- b. *RPA Results.* This Order establishes effluent limitations for cadmium because the 4 µg/L MEC exceeds the governing WQO of 0.62 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c. *WQBELs.* The cadmium WQBELs calculated according to SIP procedures are 8.3 µg/L as the MDEL and 4.1 µg/L as the AMEL.

- d. *Discharger's Performance and Attainability.* Effluent cadmium data from 2000 through 2003 ranged from <1 to 4 µg/L (17 samples). Board staff conducted a statistical analysis on the effluent data collected from 2000 through 2003, and the results showed that the Discharger can comply with the WQBELs for cadmium.
- e. *Antibacksliding/Antidegradation.* The antibacksliding and antidegradation requirements do not apply since the previous permit did not contain effluent limitations for cadmium.

44. Chromium

- a. *Chromium WQOs.* The Basin Plan contains freshwater WQOs for hexavalent chromium (VI) of 11 µg/L as a 4-day average, and 16 µg/L as a 1-hour average. The WQOs for chromium (VI) can be met as total chromium as provided by the Basin Plan.
- b. *RPA Results.* This Order establishes effluent limitations for chromium because the 14 µg/L MEC exceeds the governing WQO of 11 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c. *WQBELs.* The chromium WQBELs calculated according to SIP procedures are 118 µg/L as the MDEL and 57 µg/L as the AMEL.
- d. *Discharger's Performance and Attainability.* Effluent chromium (VI) data from 2000 through 2003 ranged from <1 to 14 µg/L (17 samples). Board staff conducted a statistical analysis on the effluent data, and the results showed that the Discharger can comply with the WQBELs for chromium.
- e. *Antibacksliding/Antidegradation.* The antibacksliding and antidegradation requirements do not apply since the previous permit did not contain effluent limitations for chromium.

45. Copper

- a. *Copper WQC.* The saltwater criteria for copper in the CTR are 3.1 µg/L for chronic protection and 4.8 µg/L for acute protection. Included in the CTR are translator values to convert the dissolved criteria to total criteria. The Discharger may also perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 U.S. EPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion*, describe this process and provide guidance on how to establish a site-specific translator. Using the CTR translator of 0.83, translated criteria of 3.7 µg/L for chronic protection and 5.8 µg/L for acute protection were used to determine Reasonable Potential and calculate effluent limitations
- b. *RPA Results.* This Order establishes effluent limitations for copper because the 31 µg/L MEC exceeds the governing WQC of 3.7 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
- c. *Water Quality-based Effluent Limitations.* The copper WQBELs calculated according to SIP procedures are 25 µg/L as the MDEL and 13 µg/L as the AMEL.
- d. *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from 2000 through 2003 and determined that the assertion of

infeasibility is substantiated for copper (see Section IV.A.6 and Table D of the attached Fact Sheet for detailed results of the statistical analysis).

- e. *Interim Limitation.* Because it is infeasible for the Discharger to immediately comply with the copper WQBELs, an interim limitation is required. Board staff conducted a statistical analysis of recent effluent data. Historically, interim performance-based effluent limitations (IPBELs) have been referenced to the 99.87th percentile value of recent effluent data. Statistical analysis indicates that the 99.87th percentile of the recent copper effluent data is 39 µg/L. The previous permit included a WQBEL of 37 µg/L as a daily average, which is more stringent than the 99.87th percentile of the recent effluent data. Therefore, the previous permit limitation of 37 µg/L is established in this Order as the interim limitation, expressed as a daily maximum limitation.
 - f. *Discharger Performance and Attainability.* During the period 2000 through 2003, all effluent copper concentrations were below the 37 µg/L interim limitation (range from <1 µg/L to 31 µg/L, 48 samples); therefore, it is expected that the Discharger can comply with the interim limitation for copper.
 - g. *Term of Interim Limitation.* The copper interim limitation shall remain in force until September 1, 2009, or until the Board amends the limitations based on additional data or site-specific objectives (SSOs).
 - h. *Copper Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement copper source control strategies, as required by Provision D.4 of this Order.
 - i. *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim effluent limitation is based on the previous permit limitation, and the final limits are more stringent.
46. *Mercury*
- a. *Mercury WQOs/WQC.* Both the Basin Plan and the CTR include objectives and criteria that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as a 4-day average and 2.1 µg/L as a 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.
 - b. *RPA Results.* This Order establishes effluent limitations for mercury because the 0.27 µg/L MEC exceeds the governing WQO of 0.025 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
 - c. *WQBELs.* The mercury WQBELs calculated according to SIP procedures are 0.043 µg/L as the MDEL and 0.014 µg/L as the AMEL.
 - d. *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with the mercury WQBELs. Board staff statistically analyzed the Discharger's effluent data from 2000 through 2003 (ultra-clean data only, the February 2000 was excluded from the analysis since it was collected before the ultra-clean technique was applied) and determined that the assertion of infeasibility is substantiated for mercury (see Section IV.A.6 and Table D of the attached Fact Sheet for detailed results of the statistical analysis).

- e. *IPBEL*. Because it is infeasible for the Discharger to immediately comply with the mercury WQBELs, this Order establishes a mercury IPBEL of 0.32 µg/L, which is the 99.87th percentile of the effluent data collected from 2000 through 2003 (the February 2000 datum was excluded because the Discharger did not use the ultraclean method). The previous Order did not include a mercury effluent limitation.
 - f. *Interim Mercury Mass Emission Limitation*. In addition to the concentration-based mercury IPBEL, this Order establishes an interim 12-month moving average mercury mass-based effluent limitation of 0.0024 kg/month. This is based on treatment plant performance at the 99.87 percentile value (or average + 3* standard deviation) determined from effluent data gathered from 2000 through 2003. To calculate this mass limit for mercury, Board staff used the average quarterly flow and the mercury datum for that period (the Discharger only monitors for mercury on a quarterly basis). This mass-based effluent limitation maintains current loadings until a TMDL is established. The final mass-based effluent limitation will be based on the WLA derived from the mercury TMDL.
 - g. *Discharger's Performance and Attainability*. During the period May 2000 through 2003, the Discharger's effluent concentrations ranged from 0.0043µg/L to 0.27 µg/L (15 samples). All samples were below the interim limitation of 0.32 µg/L. It is therefore expected that the Discharger can comply with the interim limitation for mercury.
 - h. *Term of IPBEL*. The mercury IPBEL shall remain in effect until March 31, 2010 or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL. During the next permit reissuance, Board staff may reevaluate the mercury IPBEL.
 - i. *Mercury Source Control Strategy*. As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement mercury source control strategies, as required by Provision D.4 of this Order.
 - j. *Expected Final Mercury Limitations*. The final mercury WQBELs and the interim mass limitation will be revised to be consistent with the WLA assigned in the adopted mercury TMDL. In order to maintain current ambient receiving water conditions while the TMDL is being developed, the Discharger must comply with performance-based mercury concentration and mass-based limitations contained in this Order.
 - k. *Antibacksliding/Antidegradation*. The antibacksliding and antidegradation requirements do not apply since the previous permit did not contain effluent limitations for mercury.
47. *Nickel*
- a. *Nickel WQOs*. The Basin Plan objectives for nickel of 7.1 µg/L as a 24-hour average and 140 µg/L as an instantaneous maximum are more stringent than those contained in the CTR.
 - b. *RPA Results*. This Order establishes effluent limitations for nickel because the 37 µg/L MEC exceeds the governing WQO of 7.1 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
 - c. *WQBELs*. The nickel WQBELs calculated according to SIP procedures are 57 µg/L as the MDEL and 32 µg/L as the AMEL.

- d. *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from 2000 through 2003 and determined that the assertion of infeasibility is substantiated for nickel (see Section IV.A.6 and Table D of the attached Fact Sheet for detailed results of the statistical analysis).
 - e. *IPBEL.* Because it is infeasible for the Discharger to immediately comply with the nickel WQBELs, an IPBEL is required. Board staff conducted a statistical analysis of recent effluent data. Statistical analysis indicates that the 99.87th percentile of the Discharger's recent nickel effluent data is 46 µg/L, and this is established as the IPBEL. The previous permit included a WQBEL of 53 µg/L as a daily average.
 - f. *Nickel Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement nickel source control strategies, as required by Provision D.4 of this Order.
 - g. *Expected Final Nickel Limitations.* The final nickel WQBELs will be revised to be consistent with the WLA assigned in the adopted nickel TMDL. While the TMDL is being developed, the Discharger will comply with performance-based nickel concentration limitation to cooperate in maintaining current ambient receiving water conditions.
 - h. *Discharger's Performance and Attainability.* During the period 2000 through 2003, all effluent nickel concentrations were below the 46 µg/L interim limitation (range from 7.2 µg/L to 37 µg/L, 16 samples); therefore, it is expected that the Discharger can comply with the interim limitation for nickel.
 - i. *Term of Interim Limitation.* The nickel interim limitation shall remain in effect until March 31, 2010, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL for Suisan Bay.
 - j. *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied because the calculated WQBELs are more stringent than the previous permit. Though the previous limit of 53 µg/L is numerically less stringent than the calculated MDEL of 57 µg/L, the pair of AMEL/MDEL is statistically more stringent than the single daily average limit. This conclusion is apparent in the Board's determination of infeasibility to comply with the MDEL/AMEL, and the Discharger's record of consistent compliance with previous permit limit in the past 5 years.
48. *Selenium*
- a. *Selenium WQC.* Selenium WQC were promulgated in the NTR for specific waters, which include Carquinez Strait. The NTR established a Criterion Chronic Concentration (CCC) for the protection of aquatic life of 5 µg/L and a Criterion Maximum Concentration (CMC) for the protection of aquatic life of 20 µg/L.
 - b. *RPA Results.* The 29.2 µg/L MEC exceeds the governing WQC of 5 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
 - c. *Concentration-based WQBELs.* The WQBELs calculated according to SIP procedures are 8.2 µg/L as the MDEL and 4.1 µg/L as the AMEL.

- d. *Immediate Compliance Infeasible.* The Discharger's Infeasibility Study asserts the Discharger cannot immediately comply with these WQBELs. Board staff statistically analyzed the Discharger's effluent data from 2000 through 2003 and determined that the assertion of infeasibility is substantiated for selenium (see Section IV.A.6 and Table D of the attached Fact Sheet for detailed results of the statistical analysis).
 - e. *IPBEL.* Because it is infeasible for the Discharger to immediately comply with the selenium WQBELs, an IPBEL is required. Board staff conducted a statistical analysis of recent effluent data. Statistical analysis indicates that the 99.87th percentile of the Discharger's selenium effluent data is 46 µg/L, and this is established as the IPBEL. The previous permit included a WQBEL of 50 µg/L as a daily average.
 - f. *Discharger's Performance and Attainability.* During the period 2000 through 2003, all effluent selenium concentrations were below the 46 µg/L interim limitation (range from <7 µg/L to 29.2 µg/L, 16 samples); therefore, it is expected that the Discharger can comply with the interim limitation for selenium.
 - g. *Term of IPBEL.* The selenium interim limitation shall remain in effect until September 1, 2009, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.
 - h. *Selenium Source Control Strategy.* As a prerequisite to being granted the compliance schedule and interim limits described above, the Discharger must implement selenium source control strategies, as required by Provision D.4 of this Order.
 - i. *Expected Final Selenium Limitations.* The final selenium WQBELs will be revised to be consistent with the WLA assigned in the adopted selenium TMDL. While the TMDL is being developed, the Discharger will comply with the performance-based selenium concentration limitation to cooperate in maintaining current ambient receiving water conditions.
 - j. *Antibacksliding/Antidegradation.* Antibacksliding and antidegradation requirements are satisfied, since the interim and final effluent limitations are more stringent than the previous permit limit.
49. *Silver*
- a. *Silver WQOs.* The Basin Plan contains a freshwater WQO for silver of 1.1 µg/L as an instantaneous maximum, calculated based on the receiving water hardness value of 46 mg/L, as CaCO₃.
 - b. *RPA Results.* This Order establishes effluent limitations for silver because the 3 µg/L MEC exceeds the governing WQO of 1.1 µg/L, demonstrating Reasonable Potential by Trigger 1, above.
 - c. *WQBELs.* The silver WQBELs calculated according to SIP procedures are 10.4 µg/L as the MDEL and 4.6 µg/L as the AMEL.
 - d. *Discharger's Performance and Attainability.* Board staff conducted a statistical analysis on the Discharger's effluent data collected from 2000 through 2003, and the results showed that the Discharger can comply with the WQBELs for silver (see the Fact Sheet for detailed results of this analysis).

- e. *Antibacksliding/Antidegradation*. The antibacksliding and antidegradation requirements do not apply since the previous permit did not contain effluent limitations for silver.
50. *Bis(2-Ethylhexyl)Phthalate*
- a. *Bis(2-Ethylhexyl)Phthalate WQC*. The CTR establishes a human health value of 5.9 µg/L for bis(2-ethylhexyl)phthalate, based on consumption of organisms.
- b. *RPA Result*. This Order establishes effluent limitations for bis(2-ethylhexyl)phthalate because the 6.4 µg/L MEC exceeds the governing WQC of 5.9 µg/L, demonstrating Reasonable Potential by Trigger 1, above. The Discharger indicates that it does not believe this sample is representative of its effluent because bis(2-ethylhexyl) phthalate is not used in onsite processes, and is a common laboratory contaminant. However, there is no conclusive evidence to substantiate the Discharger's position. The Discharger should eliminate any potential causes of contamination in sampling/analysis, and implement proper QA/QC to ensure the validity of future data. If the Discharger implements such measures, it should have no problem with compliance, and future data will be used in determining Reasonable Potential in the next permit reissuance.
- c. *WQBELs*. The final WQBELs calculated for bis(2-ethylhexyl)phthalate are: AMEL of 53 µg/L and MDEL of 106 µg/L.
- d. *Discharger's Performance and Attainability*. Effluent data from 2000 through 2003 ranged from <3.3 to 6.4 µg/L (6 samples with one detected value only). The limited data preclude any meaningful statistical analysis of feasibility to comply. Since the MEC is much lower than the WQBELs, it is expected that the Discharger is able to comply with the WQBELs.
- e. *Antibacksliding/Antidegradation*. There were no WQBELs in the previous permit; therefore, anti-backsliding and anti-degradation provisions do not apply.
51. *4,4'-DDE and Dieldrin*
- a. *WQC*. In the CTR, the lowest criteria for 4,4'-DDE and dieldrin are the human health values based on the consumption of organisms of 0.00059 µg/L and 0.00014 µg/L, respectively.
- b. *RPA Results*. This Order establishes limitations for 4,4'-DDE and dieldrin because the ambient background concentrations (0.000693 µg/L and 0.000264 µg/L, respectively) exceed the governing WQC, demonstrating a Reasonable Potential by Trigger 2, above.
- c. *WQBELs*. The 4,4'-DDE and dieldrin WQBELs calculated according to SIP procedures are 0.00059 µg/L as the AMEL and 0.00118 µg/L as the MDEL for 4,4'-DDE, and 0.00014 µg/L as the AMEL and 0.00028 µg/L as the MDEL for dieldrin.
- d. *Immediate Compliance Infeasible*. Compliance with the final WQBELs cannot be determined at this time as the MLs, 0.05 µg/L for 4,4'-DDE and 0.01 µg/L for dieldrin identified in Appendix 4 of the SIP, are higher than the final calculated WQBELs.
- e. *Interim Effluent Limitations*. Interim limitations are established at the respective MLs. The interim limitations are as follows: 0.05 µg/L for 4,4'-DDE and 0.01 µg/L for dieldrin as the MDELs.
- f. *Discharger's Performance and Attainability*. Self-monitoring effluent data are available from 1999 through 2003. Neither pollutant was detected in the effluent in any of the samples.

- g. *Term of Interim Effluent Limitations.* The 4,4'-DDE and dieldrin interim effluent limitations shall remain in effect until September 1, 2009, or until the Board amends the limitations based on additional data, SSOs, or the WLA in the TMDL.

52. *Dioxin TEQ*

- a. *Dioxin WQC.* The CTR establishes a numeric human health WQC of 0.014 pg/L for 2,3,7,8-TCDD based on consumption of organisms. The preamble of the CTR states that California NPDES permits should use TEQs where dioxin-like compounds have Reasonable Potential with respect to narrative criteria. The preamble further states that U.S. EPA intends to use the 1998 World Health Organization TEF scheme in the future and encourages California to use this scheme in State programs. In addition, the CTR preamble states U.S. EPA's intent to adopt revised WQC guidance subsequent to their health reassessment for dioxin-like compounds. Staff used TEQs to translate the narrative WQOs to numeric WQOs for the other 16 congeners.
- b. *RPA Results.* The dioxin TEQ maximum background concentration is above the governing WQC, which triggers RP using Trigger 2, above. All effluent data are non-detects, although the detection limits are higher than the WQC.
- c. *Dioxin Effluent Limits.* The final limits for dioxin TEQ will be based on the WLA assigned to the Discharger in the TMDL. As noted above, all effluent data were non-detects. The detection limits historically used by the Discharger, however, are insufficient to accurately determine the concentrations of the dioxin congeners in the discharge. The SIP does not specify an ML for dioxin analysis. It is, therefore, not possible to determine an IPBEL for dioxin and the previous permit did not include a dioxin limit. As a result, no interim limitation is established for dioxin at this time. This permit requires additional dioxin monitoring to complement a special dioxin project being conducted by the Clean Estuary Partnership (CEP). The special dioxin project will consist of impairment assessment and a conceptual model for dioxin loading into the Bay. The report will be submitted to the Board by mid-2004. The permit will be reopened, as appropriate, to include interim dioxin limitations when additional data become available.

Whole Effluent Acute Toxicity

53. This Order includes effluent limits for whole-effluent acute toxicity that are unchanged from the previous permit. Compliance evaluation is based on 96-hour static renewal bioassays because this is an intermittent discharge. All bioassays shall be performed according to the U.S. EPA-approved method in 40 CFR Part 136, currently "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water, 5th Edition." Dischargers have identified several practical and technical issues that need to be resolved before implementing the new procedures. The primary unresolved issue is the use of younger, possibly more sensitive fish, which may necessitate a reevaluation of permit limits. SWRCB staff recommended to the Boards that new or renewed permit holders be allowed a time period in which laboratories can become proficient in conducting the new tests. A provision is included in this Order granting the Discharger up to 2 months to implement the new test method. In the interim, the Discharger may continue using the current test protocols. The Discharger monitors two species for effluent acute toxicity: rainbow trout and three-spine stickleback. The monitoring data from 2000 through 2003 indicate that the Discharger has been in compliance with the effluent limits.

Whole Effluent Chronic Toxicity

54. a. *Permit Requirements.* In accordance with U.S. EPA and SWRCB Task Force guidance, Section 4 of the SIP, and based on BPJ, this permit includes requirements for chronic toxicity monitoring

based on the Basin Plan narrative toxicity objective. This permit includes the Basin Plan narrative toxicity objective as the applicable effluent limit, implemented via monitoring with numeric values as "triggers" to initiate both accelerated monitoring and a chronic toxicity reduction evaluation (TRE). The permit requirements for chronic toxicity are also consistent with the CTR and SIP requirements.

- b. *Discharge Monitoring.* The Discharger monitors effluent chronic toxicity with mussels (*Mytilus sp.*) twice per year. Monitoring data from 2000 through 2003 showed that the survival TUC was always less than 1.0.

The Discharger conducted a new screening phase study during August and September 2003, with three testing species: giant kelp (*Macrocystis pyrifera*), mussel (*Mytilus sp.*), and inland silversides (*Menidia beryllina*). During the first round of testing in August, no toxicity was observed (survival and/or growth TUC <1.0) for all three species. However, during the second round of the testing, the giant kelp exhibited higher sensitivity to the effluent (survival TUC=1.5 and growth TUC=4.1). Therefore, the giant kelp was determined to be the most sensitive species, and will be used in future routine monitoring.

- c. *Permit Reopener.* The Board will consider amending this permit to include numeric toxicity limitations if the Discharger fails to aggressively implement all reasonable control measures included in its approved TRE workplan, following detection of consistent, significant, non-artifactual toxicity.

Pollution Prevention

55. The Discharger implements Pollution Prevention in conjunction with its Best Management Practices Program.

- a. Section 2.4.5 of the SIP specifies under what situations and for which priority pollutant(s) (i.e., reportable priority pollutants) the Discharger shall be required to conduct a Pollutant Minimization Program in accordance with Section 2.4.5.1.
- b. There may be some redundancy between the Pollution Prevention Program and the Pollutant Minimization Program requirements.
- c. Where the two programs' requirements overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
- d. For constituents identified under Effluent Limitations, Section B, the Discharger will conduct appropriate source control or pollutant minimization measures that are consistent with its approved Pollution Prevention Program. For constituents with compliance schedules under this permit, the applicable source control/pollutant minimization requirements of Section 2.1 of the SIP will also apply.

Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy

56. *SIP- Required Dioxin study.* The SIP states that each Board shall require major and minor POTWs and industrial dischargers in its region to conduct effluent monitoring for the 2,3,7,8-TCDD congeners whether or not an effluent limitation is required for 2,3,7,8-TCDD. The monitoring is intended to assess the presence and amounts of the congeners being discharged to inland surface

waters, enclosed bays, and estuaries. The Boards will use these monitoring data to establish strategies for a future multi-media approach to control these chemicals.

57. On August 6, 2001, the Board sent a letter to all the permitted dischargers pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data, and the dioxin study. The letter (described above) is referenced throughout the permit as the "August 6, 2001 Letter".
58. Pursuant to the August 6, 2001 Letter from Board Staff, the Discharger is required to submit workplans and sampling results for characterizing the levels of selected constituents in the effluent and ambient receiving water. Provisions D.2 and D.3 of this Order incorporate these requirements.

Monitoring Requirements (Self-Monitoring Program)

59. The SMP includes monitoring at the outfall for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. This Order requires monthly monitoring for cadmium, chromium, copper, nickel, mercury, selenium, and silver to demonstrate compliance with effluent limitations. For bis(2-ethylhexyl)phthalate, 4,4'-DDE, and dieldrin, annual monitoring is required to demonstrate compliance with effluent limitations. In lieu of near field discharge specific ambient monitoring, it is generally acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the August 6, 2001 Letter and the RMP.

Optional Studies

60. *Optional Mass Offset.* This Order contains requirements to prevent further degradation of the impaired waterbody. Such requirements include the adoption of interim mass limitations that are based on treatment plant performance, provisions for aggressive source control, and treatment plant optimization. After implementing these efforts, the Discharger may find that further net reductions of the total mass loadings of the 303(d)-listed pollutants to the receiving water can only be achieved through a mass offset program. This Order includes an optional provision for a mass offset program.
61. *Copper Translator Study.* The Basin Plan does not establish a saltwater WQO for copper. Therefore, the CTR WQC for copper, 3.1 µg/L dissolved, is the applicable standard. Since NPDES permit limitations must be expressed as a total recoverable metal value, a translator is required to convert the dissolved objective into a total recoverable objective. Per Appendix 3 of the SIP, the default translator used in this permit is 0.83, which converts the 3.1 µg/L dissolved criterion to a 3.7 µg/L total criterion. An optional copper translator study is included in this permit to encourage the Discharger to develop a local translator value for copper in place of the default translator value of 0.83 established in the SIP.

Storm Water Pollution Prevention Plan

62. Storm water self-monitoring data (outfall E-002) from 2000 through 2003 indicates that pH ranged from 6.7 to 8.6, and the median and maximum oil and grease concentrations were <2 mg/L and 3.7 mg/L, respectively.
63. The Discharger is required to continue to update and maintain its storm water pollution prevention plan (SWPPP) for the entire facility as required by Provision D.5 of this Order.
64. Both the CTR and Basin Plan indicate that storm water discharges are best controlled through the design and implementation of technologically and economically feasible best management practices

(BMPs) rather than establishing numeric effluent limitations. The Discharger shall update its BMP plan as required by Provision D.6 of this Order.

Other Discharge Characteristics and Permit Conditions

O & M Manual

65. The Discharger maintains an Operations and Maintenance Manual to provide treatment facilities and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. In order to remain a useful and relevant document, the manual shall be kept updated to reflect significant changes in treatment facility equipment and operation practices.

NPDES Permit and CEQA

66. This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act - CEQA) pursuant to Section 13389 of the California Water Code.

Notification

67. The Discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity to submit their written views and recommendations. Board staff prepared a Response to Comments, which is hereby incorporated by reference as part of this Order.

Public Hearing

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

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code, regulations, and plans and policies adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the Discharger shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited.
2. The discharge of treated Waste 001 to Carquinez Strait at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1 is prohibited.
3. The discharge of all toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, is prohibited.
4. Discharge of treated wastewater (Waste 001) at flows greater than 0.8 mgd, is prohibited.

B. EFFLUENT LIMITATIONS

The following effluent limitations apply to effluent discharged to Carquinez Strait and Suisun Bay through the Outfall E-001 as defined in the Self-Monitoring Program.

1. Conventional Pollutants:

The effluent limits for conventional pollutants are listed in Table 4.

Table 4 Effluent Limitations for Conventional Constituents

Constituent	Units	Monthly Average	Daily Maximum
a. Chemical Oxygen Demand	mg/L kg/day	--	52 42.5
b. Total Suspended Solids (TSS)	mg/L kg/day	20 9.46	30 27.7
c. Oil & Grease	mg/L kg/day	--	5 4.6
d. Settleable Matter	ml/L-hr	0.1	0.2

2. *pH*

The pH of the effluent shall not exceed 9.0 s.u. nor be less than 6.0 s.u. The Discharger may elect to use a continuous on-line monitoring system(s) for measuring pH. If the discharger employs continuous monitoring, then the Discharger shall be in compliance with the pH limitation specified herein, provided that both of the following conditions are satisfied:

- a. The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and
- b. No individual excursion from the required range of pH values shall exceed 60 minutes.

3. *Whole Effluent Acute Toxicity*

Representative samples of the effluent shall meet the following limitations for acute toxicity. Compliance with these limitations shall be achieved in accordance with Provision D.7 of this Order.

- a. The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be as follows:
 - i. 11-sample median value of not less than 90 percent survival.
 - ii. 11-sample 90th percentile value of not less than 70 percent survival.
- b. Acute toxicity limitations are further defined as follows:
 - i. 11-sample median limitation:
Any bioassay test showing survival of 90 percent or greater is not a violation of this limitation. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limitation, if 5 or more of the past 10 or fewer bioassay tests also show less than 90 percent survival.
 - ii. 90th percentile limitation:
Any bioassay test showing survival of 70 percent or greater is not a violation of this limitation. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limitation, if 1 or more of the past 10 or fewer bioassay tests also show less than 70 percent survival.
- c. Bioassays shall be performed using the most up-to-date U.S. EPA protocol and the most sensitive species as specified in writing by the Executive Officer based on the most recent screening test results. Bioassays shall be conducted in compliance with "Methods for Measuring the Acute

Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,” currently 5th Edition, as required by Provision D.7 of this Order, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP) upon the Discharger’s request with justification.

4. *Whole Effluent Chronic Toxicity*

- a. Representative samples of the effluent shall meet the following requirements for chronic toxicity. Compliance with the Basin Plan narrative chronic toxicity objective shall be achieved in accordance with Provision D.8 of this Order and shall be demonstrated according to the following tiered requirements based on results from representative samples of the treated final effluent meeting test acceptability criteria:
 - i. Perform routine monitoring.
 - ii. Perform accelerated monitoring after exceeding a one sample maximum value of 10 chronic toxicity units (TUc)¹. Accelerated monitoring shall consist of monthly monitoring.
 - iii. Return to routine monitoring if accelerated monitoring does not exceed the “trigger” in “2,” above.
 - iv. Initiate an approved toxicity identification evaluation/toxicity reduction evaluation (TIE/TRE) workplan if accelerated monitoring confirms consistent toxicity above the “trigger” in “2,” above.
 - v. Return to routine monitoring after the appropriate elements of the TRE workplan are implemented and either the toxicity drops below the “trigger” level in “2,” above or, based on the results of the TRE, the Executive Officer authorizes a return to routine monitoring.
- b. Test Species and Methods: The Discharger shall conduct routine monitoring with giant kelp (*Macrocystis pyrifera*). Bioassays shall be conducted in compliance with the most recently promulgated test methods, currently “Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms,” 3rd edition, unless the Executive Officer and ELAP grant an exception to the Discharger.

5. *Toxic Substances*

The effluent shall not exceed the limitations shown in Table 5.

Table 5 Effluent Limits for Toxic Pollutants ^{[1][2]}

Constituents		WQBELs		Interim Limits
CTR no.	Pollutants	Daily Maximum (MDEL) µg/L	Monthly Average (AMEL) µg/L	Daily Maximum µg/L
4	Cadmium	8.3	4.1	

¹A TUc equals 100 divided by the no observable effect level (NOEL). The NOEL is determined from IC, EC, or NOEC values. These terms are explained in Attachment A. Monitoring and TRE requirements may be modified by the Executive Officer in response to the degree of toxicity detected in the effluent or in ambient waters related to the discharge. Failure to conduct the required toxicity tests or a TRE within a designated period shall result in the establishment of effluent limitations for chronic toxicity.

Constituents		WQBELs		Interim Limits
CTR no.	Pollutants	Daily Maximum (MDEL) $\mu\text{g/L}$	Monthly Average (AMEL) $\mu\text{g/L}$	Daily Maximum $\mu\text{g/L}$
5b	Chromium (VI)	118	57	
7	Copper ^[3]			37
8	Mercury ^[4,5]			0.32
9	Nickel ^[5]			46
10	Selenium ^[3]			46
11	Silver	10.4	4.6	
68	Bis(2-Ethylhexyl)Phthalate	106	53	
109	4,4'-DDE ^[6]			0.05
111	Dieldrin ^[6]			0.01

- [1] a. Compliance with these limitations is intended to be achieved through treatment and, as necessary, pretreatment and source control.
 b. All analyses shall be performed using current U.S. EPA methods, or equivalent methods approved in writing by the Executive Officer.
 c. Limitations apply to the average concentration of all samples collected during the averaging period (daily = 24-hour period; monthly = calendar month).
- [2] A daily maximum or average monthly value for a given constituent shall be considered noncompliant with the effluent limits only if it exceeds the effluent limitation and the reported ML for that constituent. Table 6 below indicates the lowest ML that the Discharger's laboratory must achieve for compliance determination purposes.
- [3] Interim limitations for copper and selenium shall remain in effect until September 1, 2009, or until the Board amends the limitations based on additional data, SSOs, or WLAs in TMDLs. However, during the next permit reissuance, the Board may reevaluate the interim limitations.
- [4] Effluent mercury monitoring shall be performed by using ultra-clean sampling and analysis techniques, with a method detection limit of 0.002 $\mu\text{g/L}$ or lower.
- [5] Interim limitations for mercury and nickel shall remain in effect until March 31, 2010, or until the Board amends the limitation based on a WLA in the TMDL for mercury and nickel. However, during the next permit reissuance, the Board may reevaluate the interim limitations.
- [6] Interim limitations for 4,4-DDE and dieldrin shall remain in effect until September 1, 2009, or until the Board amends the limitation based on additional data, SSOs, or the WLAs in respective TMDLs. However, during the next permit reissuance, the Board may reevaluate the interim limitations.

Table 6 MLs for Pollutants with Effluent Limits

Constituent	ML ($\mu\text{g/L}$)
Cadmium	0.25
Chromium	0.5
Copper	0.5
Mercury	0.002
Nickel	1
Selenium	1
Silver	0.25
Bis(2-Ethylhexyl)Phthalate	5
4,4'-DDE	0.05
Dieldrin	0.01

6. *Interim Mass Emission Limitation for Mercury*

Until the mercury TMDL and WLAs are adopted, the Discharger shall demonstrate that the total mercury mass loading from its discharges to Carquinez Strait and Suisun Bay has not increased by complying with the following conditions:

- a. The total mercury mass load shall not exceed the mercury mass emission limitation of 0.0024 kilograms per month (kg/month), as computed in b, below.
- b. Compliance with this limitation shall be evaluated using monthly moving averages of total mass load, computed as described below:

$$12 - \text{Month Moving Average, kg / month} = \frac{\sum (\text{Last 12 months' Monthly Total Mass Loads, kg / month})}{12}$$

where

$$\text{Monthly Total Mass Load, kg / month} = Q * C * 0.1151$$

where

Q = monthly average effluent flow, MGD, as reported

C = monthly average effluent concentration, $\mu\text{g/L}$, corresponding to each month's flow.

If more than one concentration measurement is obtained in a calendar month, the average of these measurements is used as the monthly concentration value for that month. If test results are less than the method detection limit used, the concentration value shall be assumed to be equal to the method detection limit.

0.1151 = unit conversion factor to obtain kg/month using monthly average flow in MGD and concentration in $\mu\text{g/L}$.

- c. The Discharger shall submit a cumulative total of mass loadings for the previous 12 months with each monthly self-monitoring report. Compliance each month will be determined based on the 12-month moving averages over the previous 12 months of monitoring. The Discharger may use monitoring data collected under accelerated schedules (i.e., special studies) to determine compliance.
- d. The mercury TMDL and WLAs will supersede this mass emission limitation upon their completion. The Clean Water Act's antibacksliding rule, Section 402(o), indicates that this Order may be modified to include a less stringent requirement following completion of the TMDL and WLA, if the requirements for an exception to the rule are met.

C. RECEIVING WATER LIMITATIONS

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:
 - a. Floating, suspended, or deposited macroscopic particulate matter or foam.

- b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses.
 - c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels.
 - d. Visible, floating, suspended, or deposited oil or other products of petroleum origin.
 - e. Toxic or other deleterious substances to be present in concentrations or quantities that will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.
2. The discharge of waste shall not cause the following limitations to be exceeded in waters of the State at any one place within 1 foot of the water surface:
- a. Dissolved Oxygen: 7.0 mg/L, minimum
The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.
 - b. Dissolved Sulfide: 0.1 mg/L, maximum.
 - c. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.
 - d. Un-ionized Ammonia: 0.025 mg/L as N, annual median,
0.16 mg/L as N, maximum.
 - e. Nutrients: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
3. The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the State Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. PROVISIONS

1. Permit Compliance and Rescission of Previous Waste Discharge Requirements

The Discharger shall comply with all sections of this Order beginning on September 1, 2004. Requirements prescribed by this Order supersede the requirements prescribed by Order No. 98-104. Order No. 98-104 is hereby rescinded upon the effective date of this Order.

Special Studies

2. Effluent Characterization for Selected Constituents

The Discharger shall monitor and evaluate the discharge from Outfall E-001 for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter. Compliance with this requirement shall be achieved in accordance with the specifications stated in the Board's August 6, 2001 Letter under Effluent Monitoring for Major Dischargers. This information shall be included with the annual

report required by Part A of the Self-Monitoring Program. The first annual report under this Order is due January 30, 2005. The report shall summarize the data collected to date and describe future monitoring to take place. A final report that presents all the data shall be submitted to the Board no later than 180 days prior to the permit expiration date. This final report shall be submitted with the application for permit reissuance.

3. Ambient Background Receiving Water Study

The Discharger shall continue to collect or participate in collecting background ambient receiving water data with other Dischargers and/or through the RMP. This information is required to perform RPAs and to calculate effluent limitations. To fulfill this requirement, the Discharger shall submit data sufficient to characterize the concentration of each toxic pollutant listed in the CTR in the ambient receiving water. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters.

The sampling frequency and sampling station locations shall be specified in the sampling plan. The frequency of the monitoring shall consider the seasonal variability of the receiving water. It would be acceptable to select stations representative of incoming ocean waters because the combined effluent discharges to the Bay through deepwater diffusers.

Final Report: The Discharger shall submit a final report that presents all the data to the Board 180 days prior to permit expiration. This final report shall be submitted with the application for permit reissuance.

4. Pollution Prevention and Minimization Program (PMP)

- a. The Discharger shall conduct a Pollution Prevention Program to reduce pollutant loadings to the treatment plant and therefore to the receiving waters.
- b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than February 28th of each year. Annual reports shall cover January through December of the preceding year. Annual reports shall include at least the following information:
 - i. *A brief description of its treatment facilities and treatment processes.*
 - ii. *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a problem and/or which pollutants may be potential future problems. This discussion shall include the reasons why the pollutants were chosen.
 - iii. *Identification of sources for the pollutants of concern.* This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants. The Discharger shall also identify sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.
 - iv. *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement tasks itself or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time-line shall be included for the implementation of each task.
 - v. *Outreach to employees.* The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these

- pollutants of concern into the treatment facilities. The Discharger may provide a forum for employees to provide input to the Program.
- vi. *Discussion of criteria used to measure the program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Prevention Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in item b. (iii), b. (iv), and b. (v).
 - vii. *Documentation of efforts and progress.* This discussion shall detail all the Discharger's activities in the Pollution Prevention Program during the reporting year.
 - viii. *Evaluation of program's and tasks' effectiveness.* The Discharger shall use the criteria established in b. (vi) to evaluate the Program's and tasks' effectiveness.
 - ix. *Identification of Specific Tasks and Time Schedules for Future Efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks to more effectively reduce the amount of pollutants to the treatment facilities, and subsequently in its effluent.
- c. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:
- i. A sample result is reported as detected, but not quantified (less than the ML) and the effluent limitation is less than the reported ML;
 - ii. A sample result is reported as not detected (less than the MDL) and the effluent limitation is less than the MDL; or
 - iii. The dioxin TEQ exceeds the WQO (0.014 pg/L).

The Discharger shall expand its existing Pollution Prevention Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant (1) when there is evidence that it is present in the effluent above an effluent limitation and either (c)(i), c(ii), or (c) (iii) is triggered or (2) if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported ML.

- d. If triggered by the reasons in c. above and notified by the Executive Officer, the Discharger's Pollution Prevention Program shall, within 6 months, also include the following:
- i. An annual review and semiannual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data.
 - ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer when it is demonstrated that influent monitoring is unlikely to produce useful analytical data.
 - iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation.
 - iv. Development of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy.

- v. An annual status report that shall be sent to the Board including the following:
 - (1) All Pollution Prevention monitoring results for the previous year
 - (2) A list of potential sources of the reportable priority pollutant(s)
 - (3) A summary of all actions undertaken pursuant to the control strategy
 - (4) A description of actions to be taken in the following year.
- e. To the extent that the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the Discharger is allowed to continue, modify, or expand its Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
- f. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in the Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

5. Storm Water Pollution Prevention Plan and Annual Report

The Discharger shall update and submit an updated Storm Water Pollution Prevention Plan (SWPPP) acceptable to the Executive Officer by October 1st of each year. If the Discharger determines that it does not need to update its SWPPP, it shall submit a letter to the Executive Officer that indicates no revisions are necessary and the last year it updated its SWPPP. The Discharger shall implement the SWPPP and the SWPPP shall comply with the requirements contained in the attached Standard provisions.

The Discharger shall submit an annual storm water report by July 1 of each year covering data for the previous wet weather season for the identified storm water discharge points. The annual storm water report shall, at a minimum, include: (a) a tabulated summary of all sampling results and a summary of visual observations taken during the inspections; (b) a comprehensive discussion of the compliance record and any corrective actions taken or planned to ensure compliance with waste discharge requirements; and (c) a comprehensive discussion of source identification and control programs for constituents that do not have effluent limitations (e.g., total suspended solids).

6. Best Management Practices Program

The Discharger shall submit an updated Best Management Practices (BMP) program to the Executive Officer for approval by February 28 of each year. The BMP program shall be consistent with the requirements of U.S. EPA regulation 40 CFR 125, Subpart K and the general guidance contained in the "NPDES Best Management Guidance Document", U.S.EPA Report No. 600/9-79-045, December 1979 (revised June 1981).

Toxicity Requirements

7. Acute Toxicity

Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

- a. From permit adoption until no later than October 31, 2004:
 - i. Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour static renewal bioassays.
 - ii. Test organisms shall be three-spine stickleback and rainbow trout in parallel arrangement unless specified otherwise in writing by the Executive Officer.
 - iii. All bioassays may be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," 3rd Edition, with

exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

- b. From no later than November 1, 2004 on:
 - i. Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour static renewal bioassays.
 - ii. Test organisms shall be rainbow trout and fathead minnow in parallel arrangement unless specified otherwise in writing by the Executive Officer.
 - iii. All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," (currently 5th Edition), with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

8. Chronic Toxicity

The Discharger shall monitor and evaluate the effluent from the treatment plant for chronic toxicity to demonstrate compliance with the Basin Plan narrative toxicity objective. Compliance with this requirement shall be achieved in accordance with the following:

- a. The Discharger shall conduct routine chronic toxicity monitoring in accordance with the SMP of this Order.
- b. If data from routine monitoring exceeds the evaluation parameter below, then the Discharger shall conduct accelerated chronic toxicity monitoring. Accelerated monitoring shall consist of monthly monitoring.
- c. Chronic toxicity evaluation parameters are as follows:
 - i. A single sample maximum value of 10 TU_c.
 - ii. This parameter is defined as follows:
 - (1) TU_c (chronic toxicity unit): A TU_c equals 100/NOEL (e.g., if NOEL = 100, then toxicity = 1 TU_c). NOEL is the no-observed effect level determined from IC, EC, or NOEC values.
 - (2) The terms IC, EC, NOEL and NOEC and their use are defined in Attachment A of the SMP.
- d. If data from accelerated monitoring tests are found to be in compliance with the evaluation parameters, then routine monitoring shall be resumed.
- e. If accelerated monitoring tests continue to exceed either evaluation parameter, then the Discharger shall initiate a chronic TRE.
- f. The TRE shall be conducted in accordance with the following:
 - i. The Discharger shall prepare and submit to the Board for Executive Officer approval a TRE workplan. An initial generic workplan shall be submitted within 120 days of the date of adoption of this Order. The workplan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities.
 - ii. The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test observed to exceed either evaluation parameter.
 - iii. The TRE shall be conducted in accordance with an approved workplan.
 - iv. The TRE needs to be specific to the discharge and Discharger facility, and may be in accordance with current technical guidance and reference materials including U.S. EPA guidance materials. The TRE should be conducted as a tiered evaluation process, such as summarized below:

- (1) Tier 1 consists of basic data collection (routine and accelerated monitoring).
 - (2) Tier 2 consists of evaluation of optimization of the treatment process including operation practices, and in-plant process chemicals.
 - (3) Tier 3 consists of a toxicity identification evaluation (TIE).
 - (4) Tier 4 consists of an evaluation of options for additional effluent treatment processes.
 - (5) Tier 5 consists of an evaluation of options for modifications of in-plant treatment processes.
 - (6) Tier 6 consists of implementation of selected toxicity control measures, as well as follow-up monitoring and confirmation of implementation success.
- v. The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity.
 - vi. The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies should be employed.
 - vii. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.
 - viii. Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention, and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of compliance with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.
 - ix. The Board recognizes that chronic toxicity may be episodic and identification of the causes and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.
- g. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests, and definitions of terms used in the chronic toxicity monitoring are identified in Attachment A of the SMP. The Discharger shall comply with these requirements as applicable to the discharge.

Ongoing Programs

9. Regional Monitoring Program

The Discharger shall continue to participate in the RMP for trace substances in San Francisco Bay in lieu of more extensive effluent and receiving water self-monitoring requirements that may be imposed.

Optional Studies

10. Optional Mass Offset

The Discharger may submit to the Board for approval a mass offset plan to reduce 303(d)-listed pollutants to the same watershed or drainage basin. The Board may modify this Order to allow an approved mass offset program.

11. Copper and Nickel Translator Study and Schedule

The purpose of this study is to develop information that may be used to establish WQBELs based on dissolved criteria for copper and nickel. Optionally, the Discharger may implement a sampling plan to collect data for development of dissolved-to-total translators for copper and nickel. If the Discharger chooses to proceed with the study, which may be conducted in cooperation with other Dischargers, the work shall be performed in accordance with the following tasks:

Tasks	Schedule
a. Copper and nickel translator study plan: the study plan shall be acceptable to the Executive Officer and shall outline data collection for establishment of dissolved-to-total copper and nickel translators, as discussed in the findings. The study plan shall provide for development of translators in accordance with the State Board's SIP, U.S. EPA guidelines, and any relevant portions of the Basin Plan, as amended.	At the Discharger's discretion during the permit term.
b. Implementation of the plan: if the Discharger conducts a translator study, it will use field sampling data approximate to the discharge point and in the vicinity of the discharge point, or as otherwise provided for in the approved workplan.	As specified in the study plan.
c. Final report: A final report, acceptable to the Executive Officer, should be submitted, documenting the results of the copper and nickel translator study.	As specified in the study plan.

Facilities Status Reports and Permit Administration

12. Operations and Maintenance Manual, Review and Status Reports

- a. The Discharger shall maintain an O&M Manual as described in the findings of this Order for the Discharger's wastewater facilities. The O&M Manual shall be maintained in usable condition, and available for reference and use by all applicable personnel.
- b. The Discharger shall regularly review, revise, or update, as necessary, the O&M Manual(s) so that the document(s) may remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and revisions or updates shall be completed as necessary. For any significant changes in treatment facility equipment or operation practices, applicable revisions shall be completed within 90 days of completion of such changes.
- c. Annually, the Discharger shall submit to the Board a report describing the current status of its O&M Manual. This report shall include an estimated time schedule for completion of any revisions determined necessary, a description of any completed revisions, or a statement that no revisions are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

13. Contingency Plan, Review and Status Reports

- a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (available online—see Standard Language and Other References Available Online, below), and as prudent in accordance with current facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or adequately implement a

contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.

- b. The Discharger shall regularly review, and update as necessary, the Contingency Plan so that the plan may remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.
- c. Annually, the Discharger shall submit to the Board a report describing the current status of its Contingency Plan review and update. This report shall include a description or copy of any completed revisions, or a statement that no changes are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

14. Annual Status Reports

The annual reports identified in Provisions 12.c and 13.c, above, shall be submitted to the Board by February 28 of each year. Modification of report submittal dates may be authorized, in writing, by the Executive Officer.

15. 303(d)-Listed Pollutants, Site-Specific Objective and TMDL Status Review

The Discharger shall participate in the development of a TMDL or an SSO for mercury, copper, nickel, selenium, 4,4'-DDE, and dieldrin. By January 31 of each year, the Discharger shall submit an update to the Board to document its participation efforts toward development of the TMDL(s) or SSO(s). Board staff shall review the status of TMDL development. This Order may be reopened in the future to reflect any changes required by TMDL development.

16. New WQOs

As new or revised WQOs come into effect for the Bay and contiguous waterbodies (whether statewide, regional, or site specific), effluent limitations in this Order will be modified as necessary to reflect updated WQOs. Adoption of effluent limitations contained in this Order are not intended to restrict in any way future modifications based on legally adopted WQOs.

17. SMP

The Discharger shall comply with the SMP for this Order as adopted by the Board. The SMPs may be amended by the Executive Officer pursuant to U.S. EPA regulation 40 CFR 122.62, 122.63, and 124.5.

18. Standard Provisions and Reporting Requirements

The Discharger shall comply with all applicable items of the attached Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993 (the Standard Provisions), or any amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in the Standard Provisions, the specifications of this Order shall apply.

19. Change in Control or Ownership

In the event of any change in control or ownership of land or waste discharge facilities 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 immediately forwarded to the Board. To assume responsibility for and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see Standard Provisions and Reporting Requirements, August 1993, Section E.4.). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

20. Permit Reopener

The Board may modify or reopen this Order and Permit prior to its expiration date in any of the following circumstances:

- a. If present or future investigations demonstrate that the discharge(s) governed by this Order and permit will or have a Reasonable Potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters;
- b. If new or revised WQOs come into effect for the San Francisco Bay estuary and contiguous waterbodies (whether statewide, regional, or site specific). In such cases, effluent limitations in this Permit will be modified as necessary to reflect updated WQOs. Adoption of effluent limitations contained in this Order are not intended to restrict in any way future modifications based on legally adopted WQOs or as otherwise permitted under Federal regulations governing NPDES permit modifications;
- c. If translator or other water quality studies provide a basis for determining that a permit condition(s) should be modified.

21. NPDES Permit

This Order shall serve as an NPDES permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective on September 1, 2004, provided the U.S. EPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

22. Order Expiration and Reapplication

- a. This Order expires July 31, 2009.
- b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this permit and waste discharge requirements. The application shall be accompanied by screening phase monitoring for chronic toxicity, and a summary of all available water quality data, including conventional pollutant data from no less than the most recent three years, and of toxic pollutant data from no less than the most recent five years, in the discharge and receiving water.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 16, 2004.


BRUCE H. WOLFE
Executive Officer

Attachments

- A. Discharge Facility Location Map
- B. Discharge Facility Treatment Process Diagram
- C. Self-Monitoring Program, Part B
- D. Fact Sheet
- E. The following documents are part of this Order, but are not physically attached due to volume. They are available on the internet at:
<http://www.swrcb.ca.gov/rwqcb2/Download.htm>:
Self-Monitoring Program, Part A (August 1993)

Rhodia Inc.
NPDES Permit No. CA0006165
Order NO. R2-2004-0042

Standard Provisions and Reporting Requirements, August 1993
Board Resolution No. 74-10
August 6, 2001 Regional Board staff letter, "Requirement for Monitoring of Pollutants in
Effluent and Receiving Water to Implement New Statewide Regulations and Policy"



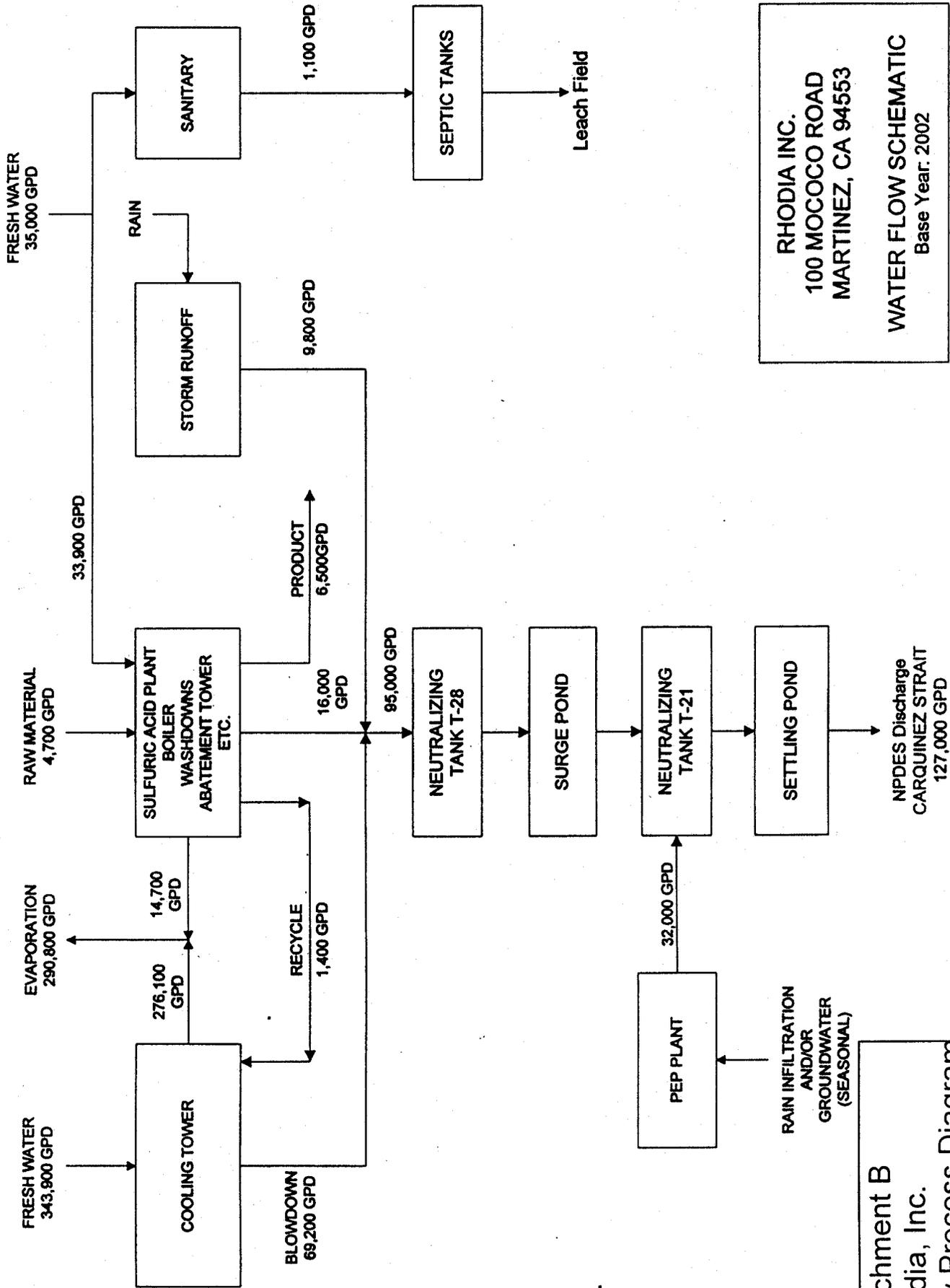
Attachment A
 Rhodia, Inc.
 Facility Location Map

Base Map: USGS topographic quads Vine Hill, Benicia

Rhodia Inc.
NPDES Permit No. CA0006165
Order NO. R2-2004-0042

Attachment B

Facility Treatment Process Diagram



RHODIA INC.
 100 MOCOCO ROAD
 MARTINEZ, CA 94553

WATER FLOW SCHEMATIC
 Base Year: 2002

Attachment B
 Rhodia, Inc.
 Flow Process Diagram

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

SELF-MONITORING PROGRAM

FOR

**RHODIA INC.
(FORMERLY d.b.a. RHONE-POULENC BASIC CHEMICALS CO.)
MARTINEZ PLANT
MARTINEZ, CONTRA COSTA COUNTY**

NPDES NO. CA0006165

ORDER NO. R2-2004-0042

Consists of:

**Part A (not attached)
Adopted August 1993**

and

Part B (Attached)

**Adopted: June 16, 2004
Effective: September 1, 2004**

Note: Part A (dated August 1993, Standard Provisions and Reporting Requirements for NPDES Surface Water Discharger Permits (dated August 1993), and Resolution No. 74-10 referenced in this Self Monitoring Program are not attached but are available for review or download on the Board's website at www.swrcb.ca.gov/rwqcb2.

SELF-MONITORING PROGRAM – Part B

I. DESCRIPTION OF SAMPLING AND OBSERVATION STATIONS

A. EFFLUENT

<u>Station</u>	<u>Description</u>
E-001	At any point in the treatment facilities between the point of discharge (to Carquinez Strait) at which all waste tributary to that outfall is present such that the sample is representative of the treated wastewater effluent.
E-002	At any point between the point of discharge (to Peyton Slough) and the point at which all waste tributary to that outfall is present, such that the sample is representative of the storm water effluent.

B. RECEIVING WATERS

<u>Station</u>	<u>Description</u>
C-001	At a point in Carquinez Strait, 730 feet from the shoreline above the deep water diffuser.

C. LAND OBSERVATIONS

<u>Station</u>	<u>Description</u>
P-1 through P-"n"	Located along the periphery of the treatment facilities at equidistant intervals, not to exceed 200 feet. (Note: A clear and legible sketch showing the location of these stations will accompany each report).

D. RAINFALL

<u>Station</u>	<u>Description</u>
R-1	The nearest official recording National Weather Service rainfall station or other station acceptable to the Executive Officer

II. SCHEDULE OF SAMPLING, MEASUREMENTS, AND ANALYSIS

The schedule of sampling, measurements, and analysis shall be that given in Table 1 below.

Table 1. Schedule For Sampling, Measurements, And Analyses [1][2]

Sampling Station	E-001			E-002		C-001	All P	R-1
	G	C-24	Co	G	Ob	G [15]	Ob	Ob
Flow Rate (mgd) [3]			D					
COD (mg/L)		M						
Settleable Matter (ml/L-hr) [4]	M							
Conductivity (µmhos/cm)				E[14]				
TSS (mg/L& kg/day)		2/M[16]		E[14]				
Oil and Grease (mg/L& kg/day) [4][5]	M			E[14]				
pH (s.u.) [6]			D	E[14]		A		
Temperature (°C)			D			A		
Turbidity (NTU)		Q						
Dissolved Oxygen (mg/L& %-Saturation)	M					A		
Sulfides (mg/L) [7]						A		
Unionized Ammonia (mg/L)						A		
Visible Oil					E[14]			
Visible Color					E[14]			
Acute Toxicity (% Survival) [8]		M						
Chronic Toxicity [9]		2/Y[17]						
Cadmium (µg/L&kg/day)		M						
Chromium (Hexavalent or Total) (µg/L&kg/day) [10]	M							
Copper (µg/L&kg/day)		M						
Mercury (µg/L&kg/day)	M [11]							
Nickel (µg/L&kg/day)		M						
Selenium (µg/L&kg/day)		M						
Silver (µg/L&kg/day)		M						
2,3,7,8-TCDD and Congeners (µg/l) [12]	2/Y							
Bis(2-Ethylhexyl)Phthalate (µg/l)	A							
4,4'-DDE (µg/l)	A							
Dieldrin (µg/l)	A							
Table 1 Selected Constituents (except those listed above)	As specified in August 6, 2001 Letter [13]							

Sampling Station	E-001			E-002		C-001	All P	R-1
Type of Sample	G	C-24	Co	G	Ob	G [15]	Ob	Ob
All Applicable Observations							W	
Rainfall								D

Legend for Table 1:

Types of Samples

Co = continuous
 C-24 = 24-hour composite
 G = grab
 Ob = observations

Types of Stations

E = treatment plant effluent
 P = treatment facility perimeter
 C = receiving waters
 R = Rainfall

Frequency of Sampling

D = once each day
 2/M = twice per month
 M = once each month
 Q = once each calendar quarter
 (with at least 2-month intervals)
 A = once per year
 2/Y = twice per year
 E = each occurrence

Footnotes for Table 1:

- [1] Indicates sampling is required during the entire year. The Discharger shall use approved U.S. EPA Methods with the lowest Minimum Levels (MLs) specified in the SIP and described in footnote 2 of effluent limitations B.5, and in the August 6, 2001 Letter.
- [2] Composite sampling: 24-hour composites may be made up of discrete grabs collected over the course of a day and volumetrically or mathematically flow-weighted. Samples for inorganic pollutants may be combined prior to analysis. Samples for organic pollutants should be analyzed separately. If only one grab sample will be collected, it should be collected during periods of maximum peak flows. Samples shall be taken on random days.
- [3] Flow monitoring: Effluent flow shall be measured continuously at Outfall 001 and recorded and reported daily. For effluent flows, the following information shall also be reported, monthly:
 - Daily: Daily Flow (MG)
 - Monthly: Average Daily Flow (MGD)
 - Monthly: Maximum Daily Flow (MGD)
 - Monthly: Minimum Daily Flow (MGD)
 - Monthly: Total Flow Volume (MG)
- [4] Grab samples shall be collected coincident with samples collected for the analysis of the regulated parameters.
- [5] Oil and grease: Each oil and grease sample event shall consist of a composite sample composed of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent rinsings as soon as possible after use, and the solvent rinsings shall be added to the composite sample for extraction and analysis.
- [6] pH: daily minimum and maximum shall be reported.
- [7] Sulfides: Receiving water analysis for sulfides should be run when dissolved oxygen is less than 2.0 mg/L.
- [8] Bioassays: Monitoring of the bioassay water shall include, on a daily basis, the parameters specified in the U.S. EPA-approved method, such as pH, dissolved oxygen, ammonia nitrogen, and temperature. These results shall be reported. If the fish survival rate in the effluent is less than 70 percent or if the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new batches of fish and shall continue back to back until compliance is demonstrated.

- [9] A Critical Life Stage Toxicity Test shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in Sections V and VI of the SMP contained in this Order.
- [10] Total Chromium may be substituted for Hexavalent Chromium at the Discharger's discretion.
- [11] The Discharger may, at its option, sample effluent mercury either as grab or as 24-hour composite samples. Use ultra-clean sampling (U.S. EPA 1669) to the maximum extent practicable and ultra-clean analytical methods (U.S. EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as U.S. EPA 245), if that alternative method has an ML of 2 ng/L or less.
- [12] Chlorinated dibenzodioxins and chlorinated dibenzofurans shall be analyzed using the latest version of U.S. EPA Method 1613; the analysis shall be capable of achieving one-half of the U.S EPA MLs and the Discharger shall collect 4-liter samples to lower the detection limits to the greatest extent practicable. Alternative methods of analysis must be approved by the Executive Officer.
- [13] Sampling for Table 1 Selected Constituents in the SIP is addressed in a letter dated August 6, 2001, from Board Staff: "Requirements for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy" (not attached, but available for review or download on the Board's website at www.swrcb.ca.gov/rwqcb).
- [14] Each occurrence shall refer to "significant stormwater discharge" on at least one storm event per month. These are continuous discharges of stormwater for a minimum of one hour, or an intermittent discharge of stormwater for a minimum of three hours in a 12-hour period.
- [15] Samples should be collected within 1 foot below the surface of the receiving waterbody.
- [16] Twice per month sampling shall occur in nonconsecutive weeks.
- [17] Twice per year sampling shall occur once in the dry season (May through October) and once in the wet season (November through April).

Table 2 lists the MLs (SIP) of the priority constituents included in Table 1. For compliance monitoring, analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to the MLs given below. All MLs are expressed as µg/L, approximately equal to parts per billion (ppb).

Table 2. Minimum Levels (µg/L or ppb)

CTR #	Constituent [1]	Types of Analytical Methods [2]											
		GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPG FAA	HYD-RIDE	CVAA	DCP
4.	Cadmium					10	0.5	10	0.25	0.5			1,000
5.	Chromium (total)					50	2	10	0.5	1			1,000
6.	Copper [3]					25	5	10	0.5	2			1,000
8.	Mercury [4]							0.5				0.2	
9.	Nickel					50	5	20	1	5			1,000
10.	Selenium						5	10	2	5	1		1,000
11.	Silver					10	1	10	0.25	2			1,000

CTR #	Constituent [1]	Types of Analytical Methods [2]											
		GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPG FAA	HYD-RIDE	CVAA	DCP
68.	Bis(2-Ethylhexyl) Phthalate	10	5										
109.	4,4'-DDE	0.05											
111.	Dieldrin	0.01											
	TCDD-TEQ [5]												

Footnotes for Table 2:

- [1] According to the SIP, method-specific factors (MSFs) can be applied. In such cases, this additional factor must be applied in the computation of the reporting limit. Application of such factors will alter the reported ML (as described in Section 2.4.1). Dischargers are to instruct laboratories to establish calibration standards so that the ML value is the lowest calibration standard. At no time is the discharger to use analytical data derived from the extrapolation beyond the lowest point of the calibration curve.
- [2] Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; Hydride = Gaseous Hydride Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., U.S. EPA 200.9); CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.
- [3] For copper, the Discharger may also use the following laboratory techniques with the relevant ML: GFAA with an ML of 5 µg/L and SPGFAA with an ML of 2 µg/L.
- [4] Use ultra-clean sampling (U.S. EPA 1669) to the maximum extent practicable, and ultra-clean analytical methods (U.S. EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as U.S. EPA 245), if the alternative method has an ML of 2 ng/L or less.
- [5] The SIP does not specify an ML for this constituent.

III. MODIFICATIONS to PART A of SELF-MONITORING PROGRAM

- A. If any discrepancies exist between Part A and Part B of the SMP, Part B prevails.
- B. Sections C.3. and C.5. are satisfied by participation in the Regional Monitoring Program.
- C. Modify Section F.1, first paragraph, as follows:

Spill Reports

A report shall be made of any spill of oil or other hazardous material. The spill shall be reported by telephone as soon as possible and no later than 24 hours following occurrence or discharger's knowledge of occurrence. Spills shall be reported by telephone as follows:

During weekdays, during office hours of 8 am to 5 pm, to the Regional Board:
 Current telephone number: (510) 622 – 2300, (510) 622-2460 (FAX).

During non-office hours, to the State Office of Emergency Services:

Current telephone number: (800) 852 - 7550.

A report shall be submitted to the Regional Board within five (5) working days following telephone notification, unless directed otherwise by Board staff. A report submitted by facsimile transmission is acceptable for this reporting. The written report shall contain information relative to: . . .

D. Modify Section F.2, first paragraph, as follows:

Reports of Plant Bypass, Treatment Unit Bypass and Permit Violation

The following requirements apply to all treatment plant bypasses and significant non-compliance occurrences, except for bypasses under the conditions contained in 40 CFR Part 122.41 (m)(4) as stated in Standard Provision A.13. In the event the Discharger violates or threatens to violate the conditions of the waste discharge requirements and prohibitions or intends to experience a plant bypass or treatment unit bypass due to: . . .

E. Modify Section F.4, first paragraph, as follows:

Self-Monitoring Reports

For each calendar month, a self-monitoring report (SMR) shall be submitted to the Regional Board in accordance with the requirements listed in Self-Monitoring Program, Part A. The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the Discharger's operation practices. The report shall be submitted to the Board **no later than thirty (30) days after the end of the reporting month.** The reports shall be comprised of the following: . . .

And add at the end of Section F.4 the following:

g. The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. The Discharger is currently submitting SMRs electronically in a format approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS). The ERS format includes, but is not limited to, a transmittal letter, summary of violation details and corrective actions, and transmittal receipt. If there are any discrepancies between the ERS requirements and the "hard copy" requirements listed in the SMP, then the approved ERS requirements supercede.

F. Add at the end of Section F.5, Annual Reporting, the following:

d. A plan view drawing or map showing the Dischargers' facility, flow routing and sampling and observation station locations.

G. The following are additions to Part A of Self-Monitoring Program:

1. Reporting Data in Electronic Format:

The Discharger has the option to submit all monitoring results in electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit the SMRs electronically, the following shall apply:

- a. *Reporting Method:* The Discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS).
- b. *Modification of Reporting Requirements:* Reporting requirements F.4 in the attached SMP, Part A, dated August 1993, shall be modified as follows. In the future, the Board intends to modify Part A to reflect these changes.
- c. *Monthly Report Requirements:* For each calendar month, an SMR shall be submitted to the Board in accordance with the following:
 - i. The report shall be submitted to the Board no later than 30 days from the last day of the reporting month.
 - ii. *Letter of Transmittal:* Each report shall be submitted with a letter of transmittal. This letter shall include the following:
 - (1) Identification of all violations of effluent limits or other discharge requirements found during the monitoring period.
 - (2) Details of the violations: parameters, magnitude, test results, frequency, and dates.
 - (3) The cause of the violations.
 - (4) Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory.
 - (5) Signature: The letter of transmittal shall be signed by the Discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

"I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."
 - iii. *Compliance Evaluation Summary:* Each report shall include a compliance evaluation summary. This summary shall include the number of samples in violation of applicable effluent limits.
 - iv. *Results of Analyses and Observations:*
 - (1) Tabulations of all required analyses and observations, including parameter, sample date, sample station, and test result.
 - (2) If any parameter is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.

- (3) Calculations for all effluent limits that require averaging of measurements shall use an arithmetic mean, unless specified otherwise in this permit or SMP.
- (4) Data Reporting for Results Not Yet Available: The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. The Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the subjected monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next following SMR after the data become available.

IV. RECORDING REQUIREMENTS – RECORDS TO BE MAINTAINED

Written reports, electronic records, strip charts, equipment calibration and maintenance records, and other records pertinent to demonstrating compliance with waste discharge requirements including self-monitoring program requirements, shall be maintained by the Discharger in a manner and at a location (e.g., wastewater treatment plant or discharger offices) such that the records are accessible to Board staff. These records shall be retained by the Discharger for a minimum of three years. The minimum period of retention shall be extended during the course of any unresolved litigation regarding the subject discharges, or when requested by the Regional Board or by the Regional Administrator of the US EPA, Region IX.

Records to be maintained shall include the following:

A. Parameter Sampling and Analyses, and Observations.

For each sample, analysis or observation conducted, records shall include the following:

1. Identity of parameter
2. Identity of sampling or observation station, consistent with the station descriptions given in this SMP.
3. Date and time of sampling or observation.
4. Method of sampling (grab, composite, other method). Date and time analysis started and completed, and name of personnel or contract laboratory performing the analysis.
5. Reference or description of procedure(s) used for sample preservation and handling, and analytical method(s) used.
6. Calculations of results.
7. Analytical method detection limits and related quantitation parameters.
8. Results of analyses or observations.

B. Flow Monitoring Data.

For all required flow monitoring, records shall include the following:

1. Total flow or volume, for each day.

2. Maximum, minimum and average daily flows for each calendar month.

C. Wastewater Treatment Process Solids.

1. For each treatment unit process which involves solid removal from the wastewater stream, records shall include the following:
 - a. Total volume and/or mass quantification of solids removed from each unit (e.g., grit, skimmings, undigested sludge), for each calendar month; and
 - b. Final disposition of such solids (e.g., landfill, other subsequent treatment unit).
2. For final dewatered sludge from the treatment plant as a whole, records shall include the following:
 - a. Total volume and/or mass quantification of dewatered sludge, for each calendar month; Solids content of the dewatered sludge; and
 - b. Final disposition of dewatered sludge (point of disposal location and disposal method).

V. CHRONIC TOXICITY MONITORING REQUIREMENTS

- A. Sampling. The Discharger shall collect 24-hour composite samples of the treatment facilities' effluent at the compliance point specified in Table 1 of the SMP, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.
- B. Test Species. Chronic toxicity shall be monitored by using critical life stage test(s) and the most sensitive tests species identified by screening phase testing described in Attachment A of the SMP. The Discharger shall conduct routine monitoring with the species approved by the Executive Officer. The approved species at this time is giant kelp (*Macrocystis pyrifera*).

If the Discharger uses two or more species, after at least twelve test rounds, the Discharger may request the Executive Officer to decrease the required frequency of testing, and/or to reduce the number of compliance species to one. Such a request may be made only if toxicity exceeding the TUc values specified in the effluent limitations was never observed using that test species.
- C. Conditions for Accelerated Monitoring: The Discharger shall accelerate the frequency of monitoring to monthly, or as otherwise specified by the Executive Officer, after exceeding a single sample maximum of 10 TUc.
- D. Methodology: Sample collection, handling and preservation shall be in accordance with U.S. EPA protocols. The test methodology used shall be in accordance with the references cited in the Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.
- E. Dilution Series: The Discharger shall conduct tests at 100%, 50%, 25%, 10%, and 5%, and 2.5%. The "%" represents percent effluent as discharged.

VI. CHRONIC TOXICITY REPORTING REQUIREMENTS

- A. Routine Reporting: Toxicity test results for the current reporting period shall include the following, at a minimum, for each test:
1. Sample date(s)
 2. Test initiation date
 3. Test species
 4. End point values for each dilution (e.g., number of young, growth rate, percent survival)
 5. NOEC value(s) in percent effluent
 6. IC₁₅, IC₂₅, IC₄₀, and IC₅₀ values (or EC₁₅, EC₂₅ ... etc.) in percent effluent
 7. TUC values (100/NOEC, 100/IC₂₅, and 100/EC₂₅)
 8. Mean percent mortality (\pm s.d.) after 96 hours in 100% effluent
 9. NOEC and LOEC values for reference toxicant test(s)
 10. IC₅₀ or EC₅₀ value(s) for reference toxicant test(s)
 11. Available water quality measurements for each test (i.e., pH, D.O., temperature, conductivity, hardness, salinity, ammonia)
- B. Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least three of the most recent samples. The information in the table shall include the items listed above under VI.A, item numbers 1, 3, 5, 6(IC₂₅ or EC₂₅), 7, and 8.

VII. MISCELLANEOUS REPORTING

- A. The Discharger shall retain and submit (when required by the Executive Officer) the following information concerning the monitoring program for organic and metallic pollutants.
1. Description of sample stations, times, and procedures.
 2. Description of sample containers, storage, and holding time prior to analysis.
 3. Quality assurance procedures together with any test results for replicate samples, sample blanks, and any quality assurance tests, and the recovery percentages for the internal surrogate standard.
- B. The Discharger shall submit in the monthly self-monitoring report the metallic and organic test results together with the detection limits (including unidentified peaks). All unidentified (non-priority pollutant) peaks detected in the U.S. EPA 624, 625 test methods shall be identified and semi-quantified. Hydrocarbons detected at $<10 \mu\text{g/L}$ based on the nearest internal standard may be appropriately grouped and identified together as aliphatic, aromatic and unsaturated hydrocarbons. All other hydrocarbons detected at $>10 \mu\text{g/L}$ based on the nearest internal standard shall be identified and semi-quantified.

- C. The Discharger shall submit a clear and legible sketch showing the locations of all ponds, treatment facilities, and points of waste discharge. The map shall be updated by the Discharger as changes occur.

VIII. SELECTED CONSTITUENTS MONITORING

- A. Effluent monitoring shall include evaluation for all constituents listed in Table 1 by sampling and analysis of final effluent.
- B. Analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to respective water quality objectives.

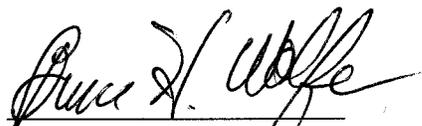
IX. MONITORING METHODS AND MINIMUM DETECTION LEVELS

The Discharger may use the methods listed in Table 2, above, or alternate test procedures that have been approved by the U.S. EPA Regional Administrator pursuant to 40 CFR 136.4 and 40 CFR 136.5 (revised as of May 14, 1999).

X. SELF-MONITORING PROGRAM CERTIFICATION

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

- A. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No. R2-2004-0042.
- B. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.
- C. Is effective as of September 1, 2004.



BRUCE H. WOLFE
EXECUTIVE OFFICER

ATTACHMENT A

CHRONIC TOXICITY

DEFINITION OF TERMS & SCREENING PHASE REQUIREMENTS

I. Definition of Terms

- A. No observed effect level (NOEL) for compliance determination is equal to IC₂₅ or EC₂₅. If the IC₂₅ or EC₂₅ cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.
- B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Kärber. EC₂₅ is the concentration of toxicant (in percent effluent) that causes a response in 25% of the test organisms.
- C. Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an IC₂₅ is the estimated concentration of toxicant that would cause a 25% reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as EPA's Bootstrap Procedure.
- D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

- A. The Discharger shall perform screening phase monitoring:
 - 1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or
 - 2. Prior to Permit reissuance. Screening phase monitoring data shall be included in the NPDES Permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.
- B. Design of the screening phase shall, at a minimum, consist of the following elements:
 - 1. Use of test species specified in Tables 1 and 2 (attached), and use of the protocols referenced in those tables, or as approved by the Executive Officer;
 - 2. Two stages:

- a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Table 3 (attached); and
 - b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.
3. Appropriate controls; and
 4. Concurrent reference toxicant tests.
- C. The Discharger shall submit a screening phase proposal to the Executive Officer for approval. The proposal shall address each of the elements listed above.

TABLE 1
CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFER- ENCE
alga	<i>(Skeletonema costatum)</i> <i>(Thalassiosira pseudonana)</i>	growth rate	4 days	1
red alga	<i>(Champia parvula)</i>	number of cystocarps	7-9 days	3
giant kelp	<i>(Macrocystis pyrifera)</i>	percent germination; germ tube length	48 hours	2
abalone	<i>(Haliotis rufescens)</i>	abnormal shell development	48 hours	2
oyster mussel	<i>(Crassostrea gigas)</i> <i>(Mytilus edulis)</i>	abnormal shell development; percent survival	48 hours	2
Echinoderms (urchins - (sand dollar -	<i>Strongylocentrotus purpuratus</i> , <i>S. franciscanus</i>); <i>Dendraster excentricus</i>	percent fertilization	1 hour	2
shrimp	<i>(Mysidopsis bahia)</i>	percent survival; growth	7 days	3
shrimp	<i>(holmesimysis costata)</i>	percent survival; growth	7 days	2
topsmelt	<i>(Atherinops affinis)</i>	percent survival; growth	7 days	2
silversides	<i>(Menidia beryllina)</i>	larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM Philadelphia, PA.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995
3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994

**TABLE 2
CRITICAL LIFE STAGE TOXICITY TESTS FOR FRESH WATERS**

SPECIES	(Scientific name)	EFFECT	TEST DURATION	REFERENCE
fathead minnow	<i>(Pimephales promelas)</i>	survival; growth rate	7 days	4
water flea	<i>(Ceriodaphnia dubia)</i>	survival; number of young	7 days	4
alga	<i>(Selastrum capricornutum)</i>	cell division rate	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms. Third edition. EPA/600/4-91/002. July 1994

TABLE 3

TOXICITY TEST REQUIREMENTS FOR STAGE ONE SCREENING PHASE

REQUIREMENTS	RECEIVING WATER CHARACTERISTICS		
	Discharges to Coast	Discharges to San Francisco Bay ‡	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic Diversity:	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater (†):	0	1 or 2	3
Marine/Estuarine:	4	3 or 4	0
Total number of tests:	4	5	3

† The fresh water species may be substituted with marine species if:

- (1) The salinity of the effluent is above 1 parts per thousand (ppt) greater than 95% of the time, or
- (2) The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

‡ Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95% of the time during a normal water year.

Fresh refers to receiving water with salinities less than 1 ppt at least 95% of the time during a normal water year.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
1515 CLAY STREET, SUITE 1400
OAKLAND, CA 94612
(510) 622 - 2300 Fax: (510) 622 - 2460**

**FACT SHEET
FOR**

NPDES PERMIT AND WASTE DISCHARGE REQUIREMENTS FOR

**RHODIA INC.
100 MOCOCO ROAD
MARTINEZ, CONTRA COSTA COUNTY**

**NPDES PERMIT NO. CA0006165
ORDER NO. R2-2004-0042**

PUBLIC NOTICE:

Written Comments

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments must be submitted to the Regional Board no later than **5:00 p.m. on May 21, 2004**.
- Send comments to the Attention of Robert Schlipf.

Public Hearing

- The draft permit will be considered for adoption by the Board at a public hearing during the Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1st floor Auditorium.
- This meeting will be held on: June 16, 2004, starting at 9:00 am.

Additional Information

- For additional information about this matter, interested persons should contact Regional Board staff member: Mr. Robert Schlipf, Phone: (510) 622-2478; email: rs@rb2.swrcb.ca.gov

This Fact Sheet contains information regarding a reissuance of waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for industrial wastewater discharges from Rhodia, Inc. (hereinafter the Discharger) sulfuric acid regeneration facility. The Fact Sheet describes the factual, legal, and methodological basis for the sections addressed in the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the effluent limitations.

I. INTRODUCTION

The Discharger applied to the Board for reissuance of waste discharge requirements and a permit to discharge industrial wastewater to waters of the State and the United States under the NPDES. The application and Report of Waste Discharge is dated April 23, 2003, and was amended on June 23, 2003.

1. Facility Description

The Discharger owns and operates a sulfuric acid regeneration plant (hereinafter the site or plant). The business was formerly owned and operated by Rhone-Poulenc Basic Chemicals. Rhodia was spun off from Rhone-Poulenc Inc., the mother company of Rhone-Poulenc Basic Chemicals, in late 1997, and took over the sulfuric acid manufacturing business on January 1, 1998.

Stauffer Chemical Company built the plant in 1969-1970 on land formerly occupied by Mountain Copper Company. The plant has been operating since April 1970, and consists of approximately 110 acres on three separate parcels. To the immediate northeast of the site, the State of California owns 12 acres of vacant land that is administered through the State Lands Commission (SLC). Shell Oil Martinez Refinery is west of the site, Peyton Slough is to the east, a large salt marsh is to the south, and Carquinez Strait is to the north. The Discharger has a 10 to 15 foot easement on the SLC property for the routing of outfall E-001 to Carquinez Strait.

Rhodia uses primarily spent acids from the nearby petroleum refineries, and molten sulfur as raw material to manufacture approximately 300,000 tons per year of various strengths and grades of sulfuric acid. Additionally, Rhodia produces an ammonia sulfate/bisulfate liquor from its final scrubber, which it sells as a fertilizer product.

There is some groundwater contamination at the site, as over the years large piles of copper smelting slag and cinders accumulated in the north and south areas. Due to their heavy weight, these waste piles subsided into the soft Bay mud. Under Board Order No. 91-166, the Discharger closed two evaporative ponds that used to hold metal-contaminated groundwater, in accordance with the requirements of the Toxic Pits Cleanup Act. Additionally, Board Order No. 97-121 requires the Discharger to extract groundwater from the cinder/slag burial area to prevent leachate from entering the Carquinez Strait.

2. Discharge Description

The proposed NPDES permit regulates the discharge of treated wastewater, stormwater runoff, and treated groundwater to Carquinez Strait, a water of the State and the United States. The U.S. Environmental Protection Agency (U.S. EPA) and the Board have classified the Discharger as a major discharger.

Two existing outfalls are located on the site. Outfall E-001 (located at latitude 38°02'18", longitude 122°07'01") is for the deepwater discharge of treated process wastewater and groundwater to Carquinez Strait. Outfall E-002 (located at latitude 38°01'57" and longitude 122°06'41") is for the discharge of untreated stormwater runoff from the western highland portion of the site to Peyton Slough, a tributary to Carquinez Strait.

Waste 001 consists of an average of 0.127 million gallons per day (MGD) of wastewater, with a maximum daily rate of 0.78 MGD during the rainy season. Waste influent to the onsite treatment plant consists of cooling tower blowdown, acidic process water, boiler blowdown, various scrubber and washdown waters, stormwater runoff associated with industrial activities, and effluent from an onsite groundwater treatment system known as the Process Effluent Purification (PEP) plant. The PEP is operated six months per year, and has a long term average flow rate of 0.032 MGD and a maximum daily flow rate of 0.144 MGD. Wastewater treatment includes neutralization, flocculation, pH adjustment, and settling. The generation of process wastewater is continuous, and the PEP

effluent is seasonal. Rhodia has the capability of discharging continuously with the use of a 630,000-gallon settling pond to meet the existing permit limitations.

3. Receiving Water Beneficial Uses

The beneficial uses of the Peyton Slough, Carquinez Strait and Suisun Bay receiving waters, as identified in the Board's June 21, 1995 *Water Quality Control Plan San Francisco Bay Basin (Region 2)* (the Basin Plan) (Table 2-7 on pp. 2-25), and based on known uses of the receiving waters in the vicinity of the discharge, are:

- Industrial Service Supply
- Navigation
- Water Contact Recreation
- Non-Contact Recreation
- Ocean Commercial and Sport Fishing
- Wildlife Habitat
- Preservation of Rare and Endangered Species
- Fish Migration
- Fish Spawning
- Estuarine Habitat

4. Receiving Water Salinity

The receiving waters for the subject discharge are the waters of Peyton Slough and Carquinez Strait, which are tidally influenced waterbodies, with significant fresh water inflows during the wet weather season. Furthermore, Carquinez Strait is specifically defined as estuarine under both the Basin Plan and California Toxics Rule (CTR) definitions. Therefore, the effluent limitations specified in this Order for discharges to Carquinez Strait are based on the lower of the marine and freshwater Basin Plan water quality objectives (WQOs) and saltwater CTR and National Toxics Rule (NTR) water quality criteria (WQC).

5. Receiving Water Hardness

Some WQOs and WQC are hardness dependent. Hardness data collected through the RMP are available for waterbodies in the San Francisco Bay Region. In determining the WQOs and WQC for this Order, the Board used a hardness value of 46 mg/L, which is the minimum hardness observed at the Pacheco River RMP Station during the period of 1993-2001. This represents the best available information for hardness of the receiving water after it has mixed with the discharge.

II. DESCRIPTION OF EFFLUENT

Table A below describes the quality of treated effluent (E-001). For conventional and non-conventional pollutants, data are from the Report of Waste Discharge submitted in April 2003; while for priority pollutants, data are from self-monitoring reports from 2000 through 2003

Table A. Effluent Characteristics at E-001

Constituents	Long-term Average	Maximum Daily
Chemical Oxygen Demand (COD)	17.9 mg/L 14.55 lb/day	35 mg/L 48.16 lb/day
Total Suspended Solids (TSS)	5.93 mg/L ^[1] 4.87 lb/day ^[1]	18.8 mg/L 15.96 lb/day
Oil and Grease (O&G)	1 mg/L ^[1] 0.59 kg/day ^[1]	1.1 mg/L 0.86 kg/day
pH	6.5 (minimum)	8.8 (maximum)
Temperature (winter) °C	13.8	18.9
Temperature (summer) °C	25.0	28.9
Arsenic (µg/L)	6.8 ^[2]	12
Cadmium (µg/L)	1.6 ^[2]	4
Chromium VI (µg/L)	5.7 ^[2]	14
Copper (µg/L)	11.8 ^[2]	31
Lead (µg/L)	All non detect (ND)	<2.0
Mercury (µg/L)	0.033 ^[3]	0.27
Nickel (µg/L)	19.14	37
Selenium (µg/L)	11.3 ^[2]	29.2
Silver (µg/L)	1.3 ^[2]	3
Zinc (µg/L)	13.9 ^[2]	48
Cyanide (µg/L)	All ND	<10

[1] To calculate average values, nondetects were replaced with ½ of the detection limit.

[2] Mercury values do not include the February 2000 datum because it is not an ultra-clean point.

Storm water self-monitoring data (outfall E-002) from 2000 through 2003 indicates that pH ranged from 6.7 to 8.6, and the median and maximum oil and grease concentrations were <2 mg/L and 3.7 mg/L, respectively.

III. GENERAL RATIONALE AND REGULATORY BASES

Water quality objectives, criteria, effluent limitations, and calculations contained in the proposed Order are based on:

- Sections 301 through 305, and 307 of the Federal *Water Pollution Control Act*, and amendments thereto, as applicable;
- The Regional Board's June 21, 1995 *Water Quality Control Plan San Francisco Bay Basin (Region 2)* (the Basin Plan);
- The State Board's March 2, 2000 *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Plan or SIP), and as subsequently approved by the Office of Administrative Law and the U.S. EPA;
- The U.S. EPA's May 18, 2000 *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (the California Toxics Rule – the CTR);

- The U.S. EPA's National Toxics Rule as promulgated [Federal Register Volume 57, 22 December 1992, page 60848] and subsequently amended (the NTR);
- The U.S. EPA's *Quality Criteria for Water* [EPA 440/5-86-001, 1986], and subsequent amendments, (the U.S. EPA Gold Book);
- Applicable Federal Regulations [40 CFR Parts 122 and 131];
- 40 CFR Part 131.36(b) and amended [Federal Register Volume 60, Number 86, 4 May 1995, pages 22229-22237];
- U.S. EPA's December 10, 1998 *National Recommended Water Quality Criteria* compilation [Federal Register Vol. 63, No. 237, pp. 68354-68364];
- U.S. EPA's December 27, 2002 *Revision of National Recommended Water Quality Criteria* compilation [Federal Register Vol. 67, No. 249, pp. 79091-79095]; and
- Regional Board staff's Best Professional Judgment (BPJ), as defined by the Basin Plan, involves consideration of many factors, including the following:
 - the Basin Plan;
 - U.S. EPA Region 9's February 1994 *Guidance For NPDES Permit Issuance*;
 - U.S. EPA's March 1991 *Technical Support Document for Water Quality-Based Toxics Control* (the TSD);
 - U.S. EPA's October 1, 1993 *Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria*;
 - U.S. EPA's July 1994 *Whole Effluent Toxicity (WET) Control Policy*;
 - U.S. EPA's August 14, 1995 *National Policy Regarding Whole Effluent Toxicity Enforcement*;
 - U.S. EPA's April 10, 1996 *Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods*;
 - U.S. EPA Regions 9 & 10's May 31, 1996 *Guidance for Implementing Whole Effluent Toxicity Programs* Final;
 - U.S. EPA's February 19, 1997 *Draft Whole Effluent Toxicity (WET) Implementation Strategy*.

IV. SPECIFIC RATIONALE

Several specific factors affecting the development of limitations and requirements in the proposed Order are discussed as follows:

1. Recent Plant Performance

Section 402(o) of the Clean Water Act (CWA) and 40 CFR § 122.44(l) require that water quality-based effluent limitations (**WQBELs**) in re-issued permits be at least as stringent as in the previous permit. The SIP specifies that interim effluent limitations, if required, must be based on current treatment facility performance or on previous permit limitations whichever is more stringent (unless anti-backsliding requirements are met). In determining what constitutes "recent plant performance", BPJ was used. Effluent monitoring data collected from 2000 through 2003 for inorganic priority pollutants, and from November 1999 through November 2003 for organic pollutants, are considered representative of recent plant performance.

2. Impaired Water Bodies on 303(d) List

On June 6, 2003, U.S. EPA approved a revised list of impaired waterbodies prepared by the State. The list (hereinafter referred to as the 2002 303(d) list) was prepared in accordance with Section 303(d) of the Federal Clean Water Act to identify specific waterbodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Carquinez Strait and Suisun Bay are listed as an impaired waterbodies. The pollutants impairing Carquinez Strait and Suisun Bay include mercury, nickel (Suisun Bay only), selenium, PCBs total, dioxins and furans, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs. Carquinez Strait and Suisun Bay are also impaired by exotic species. Copper, which was previously identified as impairing Suisun Bay, was not included as an impairing pollutant in the 2002 303(d) list and has been placed on the new Monitoring List.

3. Effluent Limitations

The SIP requires final effluent limitations for all 303(d)-listed pollutants to be based on total maximum daily loads (TMDLs) and associated wasteload allocations (WLAs). The SIP and U.S. EPA regulations also require that final concentration-based WQBELs be included for all pollutants having Reasonable Potential to cause or contribute to an exceedence of applicable water quality standards (having Reasonable Potential or RP). The SIP requires that where the discharger has demonstrated infeasibility to meet the final WQBELs, interim performance-based limitations (IPBLs) or previous permit limitations (whichever is more stringent) be established in the permit, together with a compliance schedule in effect until final effluent limitations are adopted. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control where interim limitations are established.

4. Dilution

The Board believes a conservative 10:1 dilution credit for discharges of non-bioaccumulative pollutants to San Francisco Bay is necessary for protection of beneficial uses. The basis for limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for derivation of the dilution credit:

- (1) A far-field background station is appropriate because the San Francisco Bay watershed, including the receiving waters, is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.

- (2) Due to the complex hydrology of the San Francisco Bay watershed, a mixing zone cannot be accurately established.
- (3) Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.
- (4) The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper and nickel).

The main justification for using a 10:1 dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges. The following gives more detailed rationale.

- (1) **Complex Estuarine System Necessitates Far-Field Background** - The SIP allows background to be determined on a discharge-by-discharge or water body-by-water body basis (SIP section 1.4.3). Consistent with the SIP, Board staff has chosen to use a water body-by-water body basis because of the uncertainties inherent in accurately characterizing ambient background in a complex estuarine system on a discharge-by-discharge basis.

With this in mind, the Yerba Buena Island Station fits the guidance for ambient background in the SIP compared to other stations in the RMP. The SIP states that background data are applicable if they are "representative of the ambient receiving water column that will mix with the discharge." Board Staff believe that data from this station are representative of water that will mix with the discharge from Outfall E-001. Although this station is located near the Golden Gate, it would represent the typical water flushing in and out in the Bay Area each tidal cycle. For most of the Bay Area, the waters represented by this station make up a large part of the receiving water that will mix with the discharge.

- (2) **Uncertainties Prevent Accurate Mixing Zones in Complex Estuarine Systems** - There are uncertainties in accurately determining the mixing zones for each discharge. The models that have been used by dischargers to predict dilution have not considered the three-dimensional nature of the currents in the estuary resulting from the interaction of tidal flushes and seasonal fresh water outflows. Saltwater is heavier than fresh water. Colder saltwater from the ocean flushes in twice a day generally under the warmer fresh river waters that flow out annually. When these waters mix and interact, complex circulation patterns occur due to the different densities of these waters. These complex patterns occur throughout the estuary but are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations change depending on the strength of each tide and the variable rate of delta outflow. Additionally, sediment loads to the Bay from the Central Valley also change on a longer-term basis. These changes can result in changes to the depths of different parts of the Bay making some areas more shallow and/or other areas more deep. These changes affect flow patterns that in turn can affect the initial dilution achieved by a discharger's diffuser.
- (3) **Dye studies do not account for cumulative effects from other discharges** - The tracer and dye studies conducted are often not long enough in duration to fully assess the long residence time of a portion of the discharge that is not flushed out of the system. In other words, some of the discharge, albeit a small portion, makes up part of the dilution water. So unless the dye studies are of long enough duration, the diluting effect on the dye measures only the initial dilution with "clean" dilution water rather than the actual dilution with "clean" dilution water plus some amount of original discharge that resides in the system. Furthermore, both models and dye studies that have been conducted have not considered the effects of discharges from other nearby

discharge sources, nor the cumulative effect of discharges from over 20 other major dischargers to San Francisco Bay system. While it can be argued the effects from other discharges are accounted for by factoring in the local background concentration in calculating the limitations, accurate characterization of local background levels are also subject to uncertainties resulting from the interaction of tidal flushing and seasonal fresh water outflows described above.

- (4) Mixing Zone Is Further Limited for Persistent Pollutants** - Discharges to the Bay Area waters are not completely-mixed discharges as defined by the SIP. Thus, the dilution credit should be determined using site-specific information for incompletely-mixed discharges. The SIP in section 1.4.2.2 specifies that the Regional Board "significantly limit a mixing zone and dilution credit as necessary... For example, in determining the extent of a mixing zone or dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are ... persistent." The SIP defines persistent pollutants to be "substances for which degradation or decomposition in the environment is nonexistent or very slow." The pollutants at issue here are persistent pollutants (e.g., copper, lead, nickel, silver, and zinc). The dilution studies that estimate actual dilution do not address the effects of these persistent pollutants in the Bay environment, such as their long-term effects on sediment concentrations."

5. Basis for Prohibitions

- a. Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, previous Order, and BPJ.
- b. Prohibitions A.2 (10:1 dilution): These prohibitions are based on the Basin Plan. The Basin Plan prohibits discharges not receiving a minimum initial dilution of 10:1 (Chapter 4, Discharge Prohibition No. 1).
- c. Prohibition A.3 (no discharge of toxic and deleterious substances): This prohibition is from Basin Plan.
- d. Prohibition A.4 (no discharge of treated wastewater in excess of 0.8 mgd): This prohibition is based on past treatment flows, and BPJ.

6. Basis for Effluent Limitations

Effluent guidelines requiring the application of best available technology economically achievable (BAT) for this facility have not been promulgated by the U.S. EPA. Technology-based limitations were therefore developed on a case-by-case basis using BPJ and treatment plant performance. For toxic and priority pollutants consisting of metals and organic chemicals, the Clean Water Act requires that NPDES permits include, where appropriate, WQBELs for those having Reasonable Potential of exceeding the WQOs/WQC in the receiving water body.

For the following conventional and non-conventional pollutants: total suspended solids (TSS), oil and grease (O&G), and settleable matter effluent limitations are from the previous permit. These effluent limits were developed using BPJ. For chemical oxygen demand (COD), this permit increases the concentration-based limit from 46 to 52 mg/L to reflect the Discharger's water conservation efforts. This is because the Discharger documented that it has reduced the amount of freshwater it uses to produce a ton of acid from 510 gallons in 1984 (the time the COD limit was developed) to about 450 gallons in 2002 and 2003. Since this represents about a 12% reduction in

water use relative to production, this permit increases the concentration limit for COD by this factor. The mass limitation for COD remains unchanged from the previous permit.

- a. Effluent Limitations B.1 (COD, TSS, O&G, and Settleable Matter): The U.S. EPA assisted the Regional Board in developing site-specific BPJ based, BAT level, effluent limitations for the plant based on a September 12, 1984 report, titled "Final development of BAT and BCT permit limitations for Stauffer Chemical Company" (the operating company prior to Rhodia). The methodology for developing the BPJ BAT effluent limitations was to match an industry with similar wastewater constituents and treatment processes to the plant. The report found the plant's wastewater composition to be similar to the metal finishing industry, and that the typical treatment for wastewater from this industry of precipitation and settling is the process in place at the site. Additionally, the report concluded that the wastewater treatment process used at the site is equivalent to BAT. Thus, current treatment plant performance should be considered in developing BPJ-based effluent limitations.

As mentioned above, the existing permit limitations for TSS, O&G, and settleable matter remained unchanged from the previous permit. However, to account for water conservation efforts, this permit increases the concentration-based COD limitation from 46 to 52 mg/L, as shown below:

<u>Constituents</u>	<u>Units</u>	<u>30-day Average</u>	<u>Daily Maximum</u>
COD	mg/l	--	52
TSS	mg/l	20	30
O&G	mg/l	--	5
Settleable Matter*	ml/l-hr	0.1	0.2

* effluent limitations for settleable matter are based on Table 4.2 of the Basin Plan.

Mass emission limits, 30-day average and maximum daily, were retained from the previous permit, which are based on the long-term average and maximum daily average dry-weather discharge flows, respectively.

30-day average

$$\text{TSS: } (20 \text{ mg/l}) \times (0.125 \text{ MGD}) \times (3.785 \text{ l/gal}) \times (10^{-6} \text{ kg/mg}) = 9.46 \text{ kg/d}$$

Daily Maximum

$$\text{TSS: } (30 \text{ mg/l}) \times (0.244 \text{ MGD}) \times (3.785 \text{ l/gal}) \times (10^{-6} \text{ kg/mg}) = 27.7 \text{ kg/d}$$

$$\text{COD: } (46 \text{ mg/l}) \times (0.244 \text{ MGD}) \times (3.785 \text{ l/gal}) \times (10^{-6} \text{ kg/mg}) = 42.5 \text{ kg/d}$$

$$\text{O\&G: } (5 \text{ mg/l}) \times (0.244 \text{ MGD}) \times (3.785 \text{ l/gal}) \times (10^{-6} \text{ kg/mg}) = 4.6 \text{ kg/d}$$

- b. Effluent Limitation B.2 (pH): This effluent limitation is in the previous permit, and is based on Chapter 4 of the Basin Plan (Effluent Limitation 3a).
- c. Effluent Limitation B.3 (Whole Effluent Acute Toxicity): The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community

ecology, or receiving water biota. These effluent toxicity limitations are necessary to ensure that this objective is protected. The whole effluent acute toxicity limitations for an eleven-sample median and an eleven-sample 90th percentile value are consistent with the previous permit and are based on the Basin Plan (Table 4-4, pg. 4-70). The previous Order required testing of two species (rainbow trout and three-spine stickleback). This Order requires the Discharger to switch to the U.S. EPA most recently promulgated testing method, currently the 5th edition by no later than September 1, 2005. The Discharger shall also test rainbow trout and fathead minnow concurrently to identify a more sensitive species, and use that single species for compliance monitoring if approved by the Executive Officer.

- d. Effluent Limitation B.4 (Whole Effluent Chronic Toxicity): The chronic toxicity objective/limitation is based on the Basin Plan's narrative toxicity objective on page 3-4.
- e. Effluent Limitation B.5 (Toxic Substances):

(1) Reasonable Potential Analysis

Code of Federal Regulations Title 40, Part 122.44(d)(1)(i) (40 CFR 122.44(d)(1)(i)) specifies that permits must include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the Reasonable Potential to cause, or contribute to an excursion above any State water quality standard" (have Reasonable Potential or RP). Thus, assessing whether a pollutant has RP is the fundamental step in determining whether or not a WQBEL is required. The following sections describe the RPA, and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

- i. *WQOs and WQC*: The RPA uses Basin Plan WQOs, including narrative toxicity objectives in the Basin Plan, and applicable WQC in the CTR/NTR, or site-specific objectives (SSOs) if available, after adjusting for site-specific hardness and translators, if applicable. The governing WQOs/WQC are shown in Attachment 1 of this Fact Sheet.
- ii. *Methodology*: The RPA uses the methods and procedures prescribed in Section 1.3 of the SIP. Board staff has analyzed the effluent and background data and the nature of facility operations to determine if the discharge shows Reasonable Potential with respect to the governing WQOs or WQC. Attachment 1 of this Fact Sheet shows the step-wise process described in Section 1.3 of the SIP.
- iii. *Effluent and background data*: The RPA is based on effluent data collected by the Discharger from January 2000 through December 2003 for inorganic priority pollutants and from November 1999 through November 2003 for organic priority pollutants. Water quality data collected from San Francisco Bay at the Yerba Buena Island monitoring station through the RMP in 1993 to 2001 were reviewed to determine the maximum observed background values. The RMP station at Yerba Buena Island located in the Central Bay has been sampled for most of the inorganic and some of the organic toxic pollutants; however, not all the constituents listed in the CTR were analyzed by the RMP during this time. On May 15, 2003, a group of several San Francisco Bay Region dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the *San Francisco Bay Ambient Water Monitoring Interim Report*. This study summarizes the monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP.

The RPA was conducted and the WQBELs were calculated using RMP data from 1993 through 2001 for inorganics and organics at the Yerba Buena Island, and additional data from the BACWA *Ambient Water Monitoring Interim Report* for the Yerba Buena Island RMP station.

- iv. *RPA* determination: The RPA results are shown below in Table B and Attachment 1 of this Fact Sheet. The pollutants that exhibit RP are cadmium, chromium (VI), copper, mercury, nickel, selenium, silver, bis(2-ethylhexyl)phthalate, 4,4'-DDE, dieldrin, and dioxin.

Table B. Summary of Reasonable Potential Results

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL ¹ (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL ¹ (µg/L)	RPA Results ²
1	Antimony	2	4300	1.8	N
2	Arsenic	12	36	2.46	N
3	Beryllium	1	NA	0.215	N
4	Cadmium	4	9.3	0.1268	Y
5a	Chromium (III)	NA	NA	NA	Uo,Ud, Ub
5b	Chromium (VI)	14	50	4.4	Y
6	Copper	31	3.73	2.45	Y
7	Lead	2.5	5.6	0.8	N
8	Mercury	0.27	0.025	0.0086	Y
9	Nickel	37	7.1	3.7	Y
10	Selenium	29.2	5.0	0.39	Y
11	Silver	3	2.3	0.0516	Y
12	Thallium	2	6.3	0.21	N
13	Zinc	48	58	4.4	N
14	Cyanide	10	1	0.4	N
15	Asbestos	NA	NA	NA	Uo, Ud, Ub
16	2,3,7,8-TCDD (Dioxin)	4.80E-07	0.00000014	0.00000009	N
	TCDD TEQ	4.80E-07	0.00000014	0.00000071	Y
17	Acrolein	18.17	780	0.5	N
18	Acrylonitrile	14.93	0.66	0.03	N
19	Benzene	0.3	71	0.05	N
20	Bromoform	0.38	360	0.5	N
21	Carbon Tetrachloride	0.18	4.4	0.06	N
22	Chlorobenzene	0.28	21000	0.5	N
23	Chlorodibromomethane	0.19	34	0.05	N
24	Chloroethane	0.32	NA	0.5	Uo
25	2-Chloroethylvinyl Ether	0.47	NA	0.5	Uo
26	Chloroform	0.52	NA	0.5	Uo
27	Dichlorobromomethane	0.15	46	0.05	N
28	1,1-Dichloroethane	0.25	NA	0.05	Uo
29	1,2-Dichloroethane	0.21	99	0.04	N
30	1,1-Dichloroethylene	0.3	3.2	0.5	N

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL ¹ (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL ¹ (µg/L)	RPA Results ²
31	1,2-Dichloropropane	0.12	39	0.05	N
32	1,3-Dichloropropylene	0.14	1700	NA	N
33	Ethylbenzene	0.12	29000	0.5	N
34	Methyl Bromide	0.67	4000	0.5	N
35	Methyl Chloride	0.37	NA	0.5	Uo
36	Methylene Chloride	1.1	1600	0.5	N
37	1,1,2,2-Tetrachloroethane	0.36	11	0.05	N
38	Tetrachloroethylene	0.5	8.85	0.05	N
39	Toluene	0.3	200000	0.3	N
40	1,2-Trans-Dichloroethylene	0.2	140000	0.5	N
41	1,1,1-Trichloroethane	0.18	NA	0.5	Uo
42	1,1,2-Trichloroethane	0.13	42	0.05	N
43	Trichloroethylene	0.36	81	0.5	N
44	Vinyl Chloride	0.25	525	0.5	N
45	Chlorophenol	0.36	400	1.2	N
46	2,4-Dichlorophenol	0.42	790	1.3	N
47	2,4-Dimethylphenol	0.34	2300	1.3	N
48	2-Methyl-4,6-Dinitrophenol	0.59	765	1.2	N
49	2,4-Dinitrophenol	0.78	14000	0.7	N
50	2-Nitrophenol	0.4	NA	1.3	Uo
51	4-Nitrophenol	0.9	NA	1.6	Uo
52	3-Methyl-4-Chlorophenol	0.34	NA	1.1	Uo
53	Pentachlorophenol	0.55	7.9	1	N
54	Phenol	0.28	4,600,000	1.3	N
55	2,4,6-Trichlorophenol	1.1	6.5	1.3	N
56	Acenaphthene	0.63	2700	0.0015	N
57	Acenaphthylene	0.57	NA	0.00053	Uo
58	Anthracene	0.5	110000	0.0005	N
59	Benzidine	3.79	0.00054	0.0015	N
60	Benzo(a)Anthracene	2	0.049	0.0053	N
61	Benzo(a)Pyrene	0.25	0.049	0.00029	N
62	Benzo(b)Fluoranthene	0.77	0.049	0.0046	N
63	Benzo(ghi)Perylene	2	NA	0.0027	Uo
64	Benzo(k)Fluoranthene	0.71	0.049	0.0015	N
65	Bis(2-Chloroethoxy)Methane	1	NA	0.3	Uo
66	Bis(2-Chloroethyl)Ether	0.64	1.4	0.3	N
67	Bis(2-Chloroisopropyl)Ether	2	170000	NA	N
68	Bis(2-Ethylhexyl)Phthalate	6.4	5.9	0.5	Y

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL ¹ (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL ¹ (µg/L)	RPA Results ²
69	4-Bromophenyl Phenyl Ether	0.62	NA	0.23	Uo
70	Butylbenzyl Phthalate	0.96	5200	0.52	N
71	2-Chloronaphthalene	0.87	4300	0.3	N
72	4-Chlorophenyl Phenyl Ether	0.97	NA	0.3	Uo
73	Chrysene	0.23	0.049	0.0024	N
74	Dibenzo(a,h)Anthracene	0.99	0.049	0.00064	N
75	1,2 Dichlorobenzene	0.5	17000	0.8	N
76	1,3 Dichlorobenzene	0.5	2600	0.8	N
77	1,4 Dichlorobenzene	0.5	2600	0.8	N
78	3,3-Dichlorobenzidine	0.81	0.077	0.001	N
79	Diethyl Phthalate	1.1	120000	0.24	N
80	Dimethyl Phthalate	0.75	2900000	0.24	N
81	Di-n-Butyl Phthalate	1	12000	0.5	N
82	2,4-Dinitrotoluene	0.8	9.1	0.27	N
83	2,6-Dinitrotoluene	1.1	NA	0.29	Uo
84	Di-n-Octyl Phthalate	0.88	NA	0.38	Uo
85	1,2-Diphenylhydrazine	2	0.54	0.0037	N
86	Fluoranthene	0.4	370	0.011	N
87	Fluorene	0.57	14000	0.00208	N
88	Hexachlorobenzene	0.84	0.00077	0.0000202	N
89	Hexachlorobutadiene	0.63	50	0.3	N
90	Hexachlorocyclopentadiene	0.38	17000	0.31	N
91	Hexachloroethane	0.62	8.9	0.2	N
92	Indeno(1,2,3-cd) Pyrene	0.55	0.049	0.004	N
93	Isophorone	0.54	600	0.3	N
94	Naphthalene	0.57	NA	0.0023	Uo
95	Nitrobenzene	0.6	1900	0.25	N
96	N-Nitrosodimethylamine	5	8.1	0.3	N
97	N-Nitrosodi-n-Propylamine	0.86	1.4	0.001	N
98	N-Nitrosodiphenylamine	0.67	16	0.001	N
99	Phenanthrene	2	NA	0.0061	Uo
100	Pyrene	2	11000	0.0051	N
101	1,2,4-Trichlorobenzene	0.78	NA	0.3	Uo
102	Aldrin	0.011	0.00014	NA	N
103	alpha-BHC	0.011	0.013	0.000496	N
104	beta-BHC	0.016	0.046	0.000413	N
105	gamma-BHC	0.011	0.063	0.0007034	N
106	delta-BHC	0.012	NA	0.000042	N
107	Chlordane	0.2	0.00059	0.00018	N
108	4,4'-DDT	0.01	0.00059	0.000066	N
109	4,4'-DDE	0.012	0.00059	0.00069	Y

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL ¹ (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL ¹ (µg/L)	RPA Results ²
110	4,4'-DDD	0.011	0.00084	0.000313	N
111	Dieldrin	0.011	0.00014	0.000264	Y
112	alpha-Endosulfan	0.01	0.0087	0.000031	N
113	beta-Endosulfan	0.011	0.0087	0.000069	N
114	Endosulfan Sulfate	0.012	240	0.0000819	N
115	Endrin	0.011	0.0023	0.000036	N
116	Endrin Aldehyde	0.012	0.81	NA	N
117	Heptachlor	0.011	0.00021	0.000019	N
118	Heptachlor Epoxide	0.011	0.00011	0.000094	N
119-125	PCBs	0.02	0.00017	NA	N
126	Toxaphene	0.39	0.0002	NA	N
	Tributyltin	NA	0.01	0.001	Ud
	Total PAHs	NA	15	0.052	Ud

1) Values for MEC or maximum background in bold are the actual detected concentrations, otherwise the values shown are the minimum detection levels.

NA = Not Available (there is not monitoring data for this constituent).

2) RP = Yes, if either MEC or Background > WQO/WQC.

RP = No, if both MEC or background < WQO/WQC or all effluent concentrations non-detect and background < WQO/WQC or no background available.

RP = Ud (undetermined due to lack of effluent monitoring data).

RP = Uo (undetermined if no objective promulgated).

RP = Ub (undetermined if no background data is available).

v. *Pollutants with no Reasonable Potential*: WQBELs are not included in the Order for constituents that do not have Reasonable Potential to cause or contribute to exceedance of applicable WQOs or WQC. However, monitoring for those pollutants is still required, under the provisions of the Board's August 6, 2001 Letter. If concentrations of these constituents are found to have increased significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to water quality in the receiving water.

vi. *Permit reopener*: The permit includes a reopener provision to allow numeric effluent limitations to be added for any constituent that in the future exhibits Reasonable Potential to cause or contribute to exceedance of a WQO or WQC. This determination, based on monitoring results, will be made by the Board.

(2) WQOs/WQC

The final WQBELs were developed for the toxic and priority pollutants that were determined to have Reasonable Potential to cause or contribute to exceedances of the WQOs or WQC. Final effluent limitations were calculated based on appropriate WQOs/WQC and the appropriate procedures specified in Section 1.4 of the SIP (See Attachment 2 of this Fact Sheet). For the purpose of the Proposed Order, final WQBELs refer to all non-interim effluent limitations. Table C below shows the WQOs or WQC used for each pollutant with Reasonable Potential.

Table C. WQOs/WQC for Pollutants with RP

Pollutant	Chronic WQO/WQC (µg/L)	Acute WQO/WQC (µg/L)	Human Health WQC (µg/L)	Basis of Lowest WQO /WQC Used in RP
Cadmium	0.62	1.6	--	BP
Chromium (VI)	11	16	--	BP
Copper	3.7	5.8	--	CTR
Mercury	0.025	2.1	0.051	BP
Nickel	7.1	140	4,600	BP
Selenium	5	20	--	NTR
Silver	--	1.1	--	BP
Bis(2-Ethylhexyl)Phthalate	--	--	5.9	CTR
4,4'-DDE	--	--	0.00059	CTR
Dieldrin	0.0019	0.71	0.00014	CTR
TCDD TEQ	--	--	1.4×10 ⁻⁸	CTR

(3) Feasibility Evaluation

The Discharger submitted an infeasibility to comply report on February 25, 2004, for copper, mercury, nickel, selenium, 4,4'-DDE, and dieldrin. For constituents that Board staff could perform a meaningful statistical analysis (i.e., copper, mercury, nickel, and selenium), it used self-monitoring data from 2000-2003 to compare the mean, 95th percentile, and 99th percentile with the long-term average (LTA), AMEL, and MDEL to confirm if it is feasible for the Discharger to comply with WQBELs. If the LTA, AMEL, and MDEL all exceed the mean, 95th percentile, and 99th percentile, it is feasible for the Discharger to comply with WQBELs. Table D below shows these comparisons in µg/L:

Table D. Summary of Feasibility Analysis

Constituent	Mean / LTA	95 th / AMEL	99 th / MDEL	Feasible to Comply
Copper	11.8 > 8.32	24.7 > 12.6	31.5 > 24.6	No
Mercury	0.0327 > 0.0049	0.08 > 0.014	0.16 > 0.043	No
Nickel	19.14 < 22.7	33.7 > 32.2	40.05 < 57.6	No
Selenium	9.87 > 2.67	21.41 > 4.1	31.5 > 8.2	No

For 4,4'-DDE and dieldrin, compliance with the final WQBELs cannot be determined at this time as the minimum levels (MLs) are higher than the final calculated WQBELs.

For dioxin compounds, all effluent data were non-detects. The detection limits are higher than the WQC of 0.014 pg/L. The SIP does not specify an ML for dioxin analysis. It is, therefore, not possible to determine an IPBEL for dioxin and the previous permit did not include a dioxin limit. As a result, this permit does not contain an interim limitation for dioxin. The final limitations for dioxins will be based on the WLA assigned to the Discharger in the TMDL.

Table E below summarizes the calculated WQBELs, and the feasibility to comply analysis for all pollutants with effluent limitations. The WQBELs calculation is attached as Attachment 2 of this Fact Sheet.

Table E. Final WQBELs and Feasibility to Comply

Pollutant	MDEL µg/L	AMEL µg/L	Feasible to Comply?
Cadmium	8.3	4.1	Yes
Chromium (VI)	118	57	Yes
Copper	24.7	12.6	No
Mercury	0.043	0.014	No
Nickel	57.6	32.2	No
Selenium	8.2	4.1	No
Silver	10.4	4.6	Yes
Bis(2-Ethylhexyl)Phthalate	106	53	Yes
4,4'-DDE	0.00118	0.00059	No
Dieldrin	0.00028	0.00014	No
TCDD TEQ	0.000000028	0.000000014	No

(4) Interim Concentration Limitations and Compliance Schedules

Interim effluent limitations were derived for those constituents (copper, mercury, nickel, selenium, 4,4'-DDE, and dieldrin) for which the Discharger has shown infeasibility of complying with the respective final limitations and has demonstrated that compliance schedules are justified based on the Discharger's source control and pollution minimization efforts in the past, and continued efforts in the present and future. The interim effluent concentration limitation for copper is based on the previous permit effluent limitation. The interim limitations for mercury, nickel, and selenium are based on recent treatment plant performance. Interim limitations were established for 4,4'-DDE and dieldrin based on their respective MLs specified in the SIP. These interim limitations are discussed in more detail below.

This permit establishes compliance schedules until September 1, 2009, for copper, selenium, 4,4'-DDE, and dieldrin; and until March 31, 2010 for mercury and nickel. These compliance schedules exceed the length of the permit. Therefore, in accordance with the SIP, the calculated final limitations are intended as a point of reference for the feasibility demonstration.

During the compliance schedules, interim limitations are included based on current treatment facility performance or on previous permit limitations, whichever is more stringent to maintain existing water quality. The Board may take appropriate enforcement actions if interim limitations and requirements are not met.

- i. **Copper** – Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for copper since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP

(AMEL of 13 $\mu\text{g/L}$ and MDEL of 25 $\mu\text{g/L}$) will be infeasible to meet. The SIP requires the interim numeric effluent limitation for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. Self-monitoring data from 2000-2003 indicate that effluent copper concentrations ranged from $<1 \mu\text{g/L}$ to 31 $\mu\text{g/L}$ (48 samples). Board staff calculated an interim performance based limitation (IPBL) of 38.8 $\mu\text{g/L}$ (99.87th percentile of the effluent data, based on a Weibull distribution), which is less stringent than the daily average limitation of 37 $\mu\text{g/L}$ contained in the previous permit. Therefore, the previous permit limitation of 37 $\mu\text{g/L}$ is established in this Order as the interim limitation, and will remain in effect until September 1, 2009, or until the Board amends the limitation based on additional data or SSOs.

- ii. **Mercury** – Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for mercury since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 0.014 $\mu\text{g/L}$ and MDEL of 0.043 $\mu\text{g/L}$) will be infeasible to meet. Self-monitoring data from 2000 through 2003 indicate that effluent mercury concentrations ranged from 0.0043 $\mu\text{g/L}$ to 0.27 $\mu\text{g/L}$ (15 ultra-clean samples). Board staff calculated an IPBL of 0.32 $\mu\text{g/L}$ (99.87th percentile of the effluent data, based on a lognormal distribution). This IPBL shall remain in effect until March 31, 2010, or until the Board amends the limitation based on a WLA in the TMDL for mercury. However, during the next permit reissuance, the Board may reevaluate the interim mercury limitation.
- iii. **Nickel** - Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for nickel since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 32 $\mu\text{g/L}$ and MDEL of 58 $\mu\text{g/L}$) will be infeasible to meet. Self-monitoring data from 2000-2003 indicate that effluent nickel concentrations ranged from 7.2 $\mu\text{g/L}$ to 37 $\mu\text{g/L}$ (16 samples). Board staff calculated an IPBL of 46 $\mu\text{g/L}$ (99.87th percentile of the effluent data, based on a Weibull distribution), which is more stringent than the daily average limitation of 53 $\mu\text{g/L}$ contained in the previous permit. Therefore, 46 $\mu\text{g/L}$ is established as the interim limitation. This IPBL shall remain in effect until March 31, 2010, or until the Board amends the limitation based on a WLA in the TMDL for nickel. However, during the next permit reissuance, the Board may reevaluate the interim nickel limitation.
- iv. **Selenium** - Further Discussion and Rationale for Interim Effluent Limitation: An interim effluent limitation is required for selenium since the Discharger has demonstrated, and the Board has verified that the final effluent limitations calculated according to the SIP (AMEL of 4.1 $\mu\text{g/L}$ and MDEL of 8.2 $\mu\text{g/L}$) will be infeasible to meet. Self-monitoring data from 2000-2003 indicate that effluent selenium concentrations ranged from $<5 \mu\text{g/L}$ to 29.2 $\mu\text{g/L}$ (16 samples). Board staff calculated an IPBL of 46 $\mu\text{g/L}$ (99.87th percentile of the effluent data, based on a lognormal distribution), which is more stringent than the daily average limitation of 50 $\mu\text{g/L}$ contained in the previous permit. Therefore, 46 $\mu\text{g/L}$ is established as the interim limitation, and will remain in effect until September 1, 2009, or until the Board amends the limitation based on a WLA in the TMDL for selenium.

- v. **4,4'-DDE and Dieldrin** – Further Discussion and Rationale for Interim Effluent Limitations: Interim effluent limitations are required for these pollutants because compliance with the final WQBELs (AMEL of 0.00059 µg/L and MDEL of 0.00118 µg/L for 4,4'-DDE and AMEL of 0.00014 µg/L and MDEL of 0.00028 µg/L for dieldrin) cannot be determined at this time as the MLs are higher than the final calculated WQBELs. Interim limitations are established at the respective MLs. The interim limitations are as follows; 4,4'-DDE is 0.05 µg/L and dieldrin is 0.01 µg/L. These interim limits shall remain in effect until September 1, 2009, or until the Board amends the limitation based on WLAs in the TMDL for 4,4'-DDE or dieldrin.

(5) Interim Performance-Based Mercury Mass Emission Limitation

This Order contains a mass emission limitation for mercury because the Regional Board has determined that there is no additional assimilative capacity for mercury in the San Francisco Bay. This determination is consistent with SIP Section 2.1.1 requirements that the Regional Board consider whether additional assimilative capacity exists for 303(d)-listed bioaccumulative pollutants. That determination also considered the fact that a fish consumption advisory currently exists to protect human health from elevated mercury concentrations in fish taken from San Francisco Bay.

The interim mercury mass-based effluent limitation is 0.0024 kilograms per month. This mass-based effluent limitation is based on facility flow and mercury concentration data collected for the period from May 2000 to November 2003, and is calculated as the 99.87th percentile of the 12-month moving average mass loading during this period (see Attachment 3 of this Fact Sheet for detailed calculation). It will maintain current loadings until a TMDL is established. The final mass-based effluent limitation will likely be based on the WLA derived from the mercury TMDL.

f. Comparison to Previous Permit Effluent Limitations

- (1) The effluent limitations for conventional and nonconventional pollutants are unchanged from the previous permit.
- (2) There were no effluent limitations prescribed for cadmium, chromium (VI), mercury, silver, bis(2-ethylhexyl)phthalate, 4,4'-DDE, or dieldrin in the previous permit.
- (3) The effluent limitations for lead and zinc have been discontinued because there is no demonstration of RP, and therefore, no WQBELs are required.

7. Basis for Receiving Water Limitations

- a. Receiving water limitations C.1 and C.2 (conditions to be avoided): These limitations are based on the previous permit and the narrative/numerical objectives contained in Chapter 3 of the Basin Plan, pages 3-2 – 3-5.
- b. Receiving water limitation C.3 (compliance with State Law): This requirement is in the previous permit, requires compliance with Federal and State law, and is self-explanatory.

8. Basis for Self-Monitoring Requirements

The SMP includes monitoring at outfall E-001 for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. This Order requires monthly monitoring for cadmium, chromium (VI or total), and silver to demonstrate compliance with final effluent limitations. For copper, mercury, nickel, and selenium, the Discharger will also perform monthly monitoring to demonstrate compliance with interim limitations. For bis(2-ethylhexyl)phthalate, 4,4'-DDE, and dieldrin, annual monitoring is required to demonstrate compliance with the interim limits. Twice per year monitoring for dioxin and furan compounds is required to provide information for TMDL and future effluent limitation development. In lieu of near field discharge specific ambient monitoring, it is generally acceptable that the Discharger participate in collaborative receiving water monitoring with other dischargers under the provisions of the Board's August 6, 2001 Letter and the RMP.

9. Basis for Provisions

- a. Provision E.1. (Permit Compliance and Rescission of Previous Waste Discharge Requirements): Time of compliance is based on 40 CFR 122. The basis of this Order superceding and rescinding the previous permit is on 40 CFR 122.46.
- b. Provision E.2 (Effluent Characterization Study): This provision is based on the Basin Plan and the SIP.
- c. Provision E.3 (Ambient Background Receiving Water Study): This provision is based on the Basin Plan and the SIP.
- d. Provision E.4 (Pollutant Prevention and Minimization Program): This provision is based on the Basin Plan, pages 4-25 – 4-28, and the SIP, Section 2.1.
- e. Provision E.5 (Storm Water Pollution Prevention Plan and Annual Report): This is based on the Basin Plan objectives, 40 CFR Part 122, Regional Board Resolution No. 74-10, and statewide storm water requirements for industrial facilities.
- f. Provision E.6 (Best Management Practices Program): This provision is based on the Clean Water Act, Section 304(e), and 40 CFR Part 122.44(k).
- g. Provision E.7 (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limitations for acute toxicity will be demonstrated. Conditions initially include the use of 96-hour static renewal bioassays, the use of rainbow trout and three-spine stickleback tested concurrently, and the use of approved test methods as specified. By November 1, 2004, the Discharger shall switch from the 3rd Edition to the 5th Edition U.S. EPA protocol, unless it demonstrates that such a switch is not feasible.
- h. Provision E.8 (Whole Effluent Chronic Toxicity): This provision establishes conditions and protocol by which compliance with the Basin Plan narrative WQO for toxicity will be demonstrated. Conditions include required monitoring and evaluation of the effluent for chronic toxicity and numerical values for chronic toxicity evaluation to be used as 'triggers' for initiating accelerated monitoring and toxicity reduction evaluation(s). These conditions apply to the discharges to San Francisco Bay and the numerical values for chronic toxicity evaluation are based on a minimum initial dilution ratio of 10:1. This provision also requires the Discharger to

conduct a screening phase monitoring requirement and implement toxicity identification and reduction evaluations when there is consistent chronic toxicity in the discharge. New testing species and/or test methodology may be available before the next permit renewal. Characteristics, and thus toxicity, of the process wastewater may also have been changed during the life of the permit. This screening phase monitoring is important to help determine which test species is most sensitive to the toxicity of the effluent for future compliance monitoring. The proposed conditions in the draft permit for chronic toxicity are based on the Basin Plan narrative WQO for toxicity, Basin Plan effluent limitations for chronic toxicity (Basin Plan, Chapter 4), U.S. EPA and SWRCB Task Force guidance, applicable federal regulations [40 CFR 122.44(d)(1)(v)], and BPJ.

- i. Provision E.9 (Regional Monitoring Program): This provision, which requires the Discharger to continue to participate in the RMP, is based on the previous permit and the Basin Plan.
- j. Provision E.10 (Optional Mass Offset): This option is provided to encourage the Discharger to further implement aggressive reduction of mass loads to San Francisco Bay.
- k. Provision E.11 (Copper and Nickel Translator Study and Schedule): This provision allows the Discharger to conduct an optional copper and nickel translator study, based on BPJ and the SIP. This provision is based on the need to gather site-specific information in order to apply a different translator from the default translator specified in the CTR and SIP. Without site-specific data, the default translator of 0.83 has been used with the CTR chronic criterion to obtain a translated total copper criterion of 3.7 µg/L.
- l. Provisions E.12 (Operations and Maintenance Manual and Reliability Report), E.13 (Contingency Plan Update), and E.14 (Annual Status Reports): These provisions are based on the Basin Plan, the requirements of 40 CFR 122, and the previous permit.
- m. Provision E.15 (303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review): Consistent with the SIP, the Discharger shall participate in the development of a TMDL or SSO for mercury, copper, nickel, selenium, 4,4'-DDE, and dieldrin. By January 31 of each year, the Discharger shall submit an update to the Board to document progress made on source control and pollutant minimization measures and development of TMDL or SSO. Regional Board staff shall review the status of TMDL development. This Order may be reopened in the future to reflect any changes required by TMDL development.
- n. Provision E.16 (New Water Quality Objectives): This provision allows future modification of the permit and permit effluent limitations as necessary in response to updated WQOs that may be established in the future. This provision is based on 40 CFR 123.
- o. Provision E.17 (Self-Monitoring Program): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are contained in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.44(i), 122.62, 122.63 and 124.5. The SMP is a standard requirement in almost all NPDES permits issued by the Board, including this Order. It contains definitions of terms, specifies general sampling and analytical protocols, and sets out requirements for reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains a sampling program specific for the facility. It defines the sampling stations and frequency, the pollutants to be monitored, and additional reporting requirements. Pollutants to

be monitored include all parameters for which effluent limitations are specified. Monitoring for additional constituents, for which no effluent limitations are established, is also required to provide data for future completion of RPAs for them.

- p. Provision E.18 (Standard Provisions and Reporting Requirements): The purpose of this provision is to require compliance with the standard provisions and reporting requirements given in this Board's document titled *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (the Standard Provisions), or any amendments thereafter. That document is incorporated in the permit as an attachment to it. Where provisions or reporting requirements specified in the permit are different from equivalent or related provisions or reporting requirements given in the Standard Provisions, the permit specifications shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.
- q. Provision E.19 (Change in Control or Ownership): This provision is based on 40 CFR 122.61.
- r. Provision E.20 (Permit Reopener): This provision is based on 40 CFR 123.
- s. Provision E.21 (NPDES Permit): This provision is based on 40 CFR 123.
- t. Provision E.22 (Order Expiration and Reapplication): This provision is based on 40 CFR 122.46(a).

V. WASTE DISCHARGE REQUIREMENT APPEALS

Any person may petition the State Water Resources Control Board to review the decision of the Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Board public hearing.

VI. ATTACHMENTS

Attachment 1: RPA Results for Priority Pollutants

Attachment 2: Calculation of Final WQBELs

Attachment 3: Calculation of Mercury Mass Limitation

Attachment 2
Rhodia Inc.
NPDES Permit Reissuance
Calculation of Final WOBELS

Unit is ug/L for all pollutants except for dioxins (pg/L)

PRIORITY POLLUTANTS	Cadmium	Chromium VI	Copper	Mercury	Nickel	Selenium	Silver	Dioxins	Bis(2-Ethylhexyl)Phthalate	4,4'-DDE	Dieldrin
Basis and Criteria type	BP fw	CTR - SW	BP SW (4-d, 1-hr avg)	BP SW (24-hr, inst. Max)	BP SW (inst. Max)	BP SW (inst. Max)	CTR HH	CTR HH	CTR HH	CTR HH	CTR HH
Lowest WQO	0.62	11	3.73	0.025	7.1	5.0	1.1	0.014	5.9	0.00059	0.00014
Translators											
Dilution Factor (D) (if applicable)	9	9	9	9	9	9	9	9	9	9	9
no. of samples per month	4	4	4	4	4	4	4	4	4	4	4
Aquatic life criteria analysis required? (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
HH criteria analysis required? (Y/N)	N	N	N	N	N	N	N	N	N	N	N
Applicable Acute WQO	1.63	16	5.78	2.1	140.0	20.0	1.1				
Applicable Chronic WQO	0.62	11	3.73	0.025	7.1	5.0		0.014	5.9	0.00059	0.00014
HH criteria				0.051	4.600			0.071	0.87	0.00693	0.000264
Background (max conc for Aquatic Life calc)	0.1268	4.4	2.45	0.0066	3.7	0.39	0.0683	0.03165	0.87	0.00011	0.00008
Background (avg conc for HH calc)				0.0037	2.29						
Is the pollutant Bioaccumulative(VN)? (e.g., Hg)	N	N	N	Y	Y	Y	N	Y	N	Y	Y
ECA acute	15.1588	120.4	35.75	2.1	1366.7	20	10.3853				
ECA chronic	5.0588	70.4	15.25	0.025	37.7	5	No Chronic WQO				
ECA HH				0.051	45.979			0.014	52.87	0.00059	0.00014
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	Y	N	N	N	N	N	N	Y	Y	Y	Y
avg of data points											
SD	4.02	6.27	11.838	0.034	19.614	15.964	2.40				
CV calculated	N/A	0.641	0.573	2.084	0.466	0.587	0.79	N/A	N/A	N/A	N/A
CV (Selected) - Final	0.600	0.641	0.573	2.084	0.466	0.587	0.79	0.60	0.60	0.60	0.60
ECA acute multi99	0.32	0.30	0.33	0.11	0.38	0.33	0.25				
ECA chronic multi99	0.52	0.51	0.54	0.20	0.60	0.53	0.44				
LTA acute	4.87	38.56	11.92	0.24	53.72	6.54	2.62				
LTA chronic	2.67	35.74	8.25	0.0049	22.68	2.67	2.62				
minimum of LTAs	2.67	35.74	8.25	0.0049	22.68	2.67	2.62				
AMEL multi65	1.55	1.59	1.53	2.84	1.42	1.54	1.74	1.55	1.55	1.55	1.55
AMEL multi99	3.11	3.29	3.00	8.79	3.96	3.06	3.96	3.11	3.11	3.11	3.11
AMEL (99 life)	4.14	58.90	12.59	0.01	32.24	4.11	4.56				
AMEL (99 life)	8.31	117.70	24.74	0.04	57.63	8.17	10.39	0.028	106.26784	0.00118	0.00028
AMEL/AMEL Multiplier	2.01	2.07	1.96	3.10	1.79	1.99	2.28	2.01	2.01	2.01	2.01
AMEL (human hbh)				0.051	459.79			0.014	52.97060	0.00059	0.00014
AMEL (human hbh)				0.158	822.07			0.028	106.26784	0.00118	0.00028
minimum of AMEL for Aq. life vs HH	4.14	58.90	12.59	0.014	32.24	4.11	4.56	0.014	52.97060	0.00059	0.00014
minimum of AMEL for Aq. Life vs HH	8.31	117.70	24.74	0.043	57.63	8.17	10.39	0.028	106.26784	0.00118	0.00028
Current limit in permit (30-d avg)				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Current limits in permit (daily maximum)				37	53	50	N/A	N/A	N/A	N/A	N/A
Final limit - Calculated AMEL	4.14	58.90	12.59	0.014	32.24	4.11	4.56	0.014	53.0	0.00059	0.00014
Final limit - Calculated AMEL	8.3	117.7	24.7	0.043	57.63	8.2	10.39	0.028	106.3	0.00118	0.00028
Max Eff Conc (MEC)	4	14	31	0.270	37	29.2	3.0	-0.48	6.4	-0.012	-0.011
Feasible to comply?	YES	YES	NO	NO	NO	NO	YES	NO	YES	NO	NO
Interim Limits			37	0.32	46	46	N/A	N/A	N/A	0.05	0.01

Note: Numbers in blue have formula in the cells - calculates values automatically

Attachment 3
Rhodia Inc.
NPDES Permit Reissuance
Calculation of Mercury Mass Limitation

Raw Data		
Date	Flow	Hg
Jan-00	0.157	
Feb-00	0.249	<0.2
Mar-00	0.235	
Apr-00	0.123	
May-00	0.107	0.04
Jun-00	0.091	
Jul-00	0.058	
Aug-00	0.072	0.27
Sep-00	0.068	
Oct-00	0.084	
Nov-00	0.092	0.012
Dec-00	0.053	
Jan-01	0.1	
Feb-01	0.197	0.00992
Mar-01	0.114	
Apr-01	0.071	
May-01	0.081	0.017
Jun-01	0.05	
Jul-01	0.064	
Aug-01	0.071	0.00965
Sep-01	0.058	
Oct-01	0.08	
Nov-01	0.07	0.00556
Dec-01	0.07	
Jan-02	0.193	
Feb-02	0.12	0.0177
Mar-02	0.083	
Apr-02	0.126	
May-02	0.08	0.0202
Jun-02	0.068	
Jul-02	0.078	
Aug-02	0.09	
Sep-02	0.112	0.0125
Oct-02	0.133	
Nov-02	0.102	
Dec-02	0.16	0.00731
Jan-03	0.181	
Feb-03	0.125	0.0193
Mar-03	0.177	
Apr-03	0.11	
May-03	0.131	0.0043
Jun-03	0.077	
Jul-03	0.079	
Aug-03	0.079	0.0047
Sep-03	0.108	
Oct-03	0.09	
Nov-03	0.095	0.041
Dec-03	0.142	

Mercury Mass Limit Calculation					
Date	Quarterly Average Flow (mgd)	Hg conc.(ug/L)	Monthly Mass Load (kg/month)	12-mo MA Mass Load (kg/month)	Ln (12-mo. MA mass load)
Jan-Mar-00	0.21366667	0.1	0.0024593		
Apr-Jun-00	0.107	0.04	0.00049263		
Jul-Sep-00	0.066	0.27	0.00205108		
Oct-Dec-00	0.07633333	0.012	0.00010543	0.0013	-6.6632
Jan-Mar-01	0.137	0.00992	0.00015643	0.0007	-7.2624
Apr-Jun-01	0.06733333	0.017	0.00013175	0.0006	-7.4001
Jul-Sep-01	0.06433333	0.00965	7.1456E-05	0.0001	-9.0596
Oct-Dec-01	0.07333333	0.00556	4.693E-05	0.0001	-9.1941
Jan-Mar-02	0.132	0.0177	0.00026892	0.0001	-8.9498
Apr-Jun-02	0.09133333	0.0202	0.00021235	0.0001	-8.8054
Jul-Sep-02	0.09333333	0.0125	0.00013428	0.0002	-8.7058
Oct-Dec-02	0.13166667	0.00731	0.00011078	0.0002	-8.6138
Jan-Mar-03	0.161	0.0193	0.00035765	0.0002	-8.4985
Apr-Jun-03	0.106	0.0043	5.2463E-05	0.0002	-8.7169
Jul-Sep-03	0.08866667	0.0047	4.7966E-05	0.0001	-8.8582
Oct-Dec-03	0.109	0.041	0.00051438	0.0002	-8.3220

Average			0.00032	-8.38845
Std Dev			0.00034	0.78030
99.87th %ile				0.0024 kg/month