CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

2375 Northside Drive, Suite 100, San Diego, CA 92108
(619) 516-1990 • Fax (619) 516-1994
http://www.waterboards.ca.gov/sandiego/

TENTATIVE ORDER R9-2016-0002
NPDES NO. CA0001350

WASTE DISCHARGE REQUIREMENTS FOR CABRILLO POWER I LLC, ENCINA POWER STATION, SAN DIEGO COUNTY DISCHARGE TO THE PACIFIC OCEAN

The following Discharger is subject to waste discharge requirements (WDRs) set forth in this Order:

Table 1. Discharger Information

Discharger	Cabrillo Power I LLC
Name of Facility	Encina Power Station
Facility Address	4600 Carlsbad Boulevard
	Carlsbad, CA 92008-4301
	San Diego County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Non-Contact Cooling Water, Low-volume Wastes, and Metal Cleaning Wastes	33º 8’ 17” N	117º 20’ 22” W	Pacific Ocean

Table 3. Internal Waste Streams[1, 2]

Discharge Point	Wastewater Discharge Description
001A	Waste Metal Cleaning Wastes
001B	Low-Volume Waste Seepage and Groundwater Pumping
001C	Low-Volume Waste Boiler Blowdown
001D	Low-Volume Waste Freshwater Reverse Osmosis (RO) Brine
001E	Low-Volume Waste Seawater RO Brine
001H	Low-Volume Waste Treatment Facility (LVWTF)

[1] Discharge Points 001F and 001G have been discontinued.

Table 4. Administrative Information

This Order was adopted on:	**March 9, 2016**
This Order shall become effective on:	**May 1, 2016**
This Order shall expire on:	**April 30, 2021**
The Discharger shall file a Report of Waste Discharge (ROWD) as an application for reissuance of WDRs in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**180 days prior to the Order expiration date**
The U.S. Environmental Protection Agency (USEPA) and the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board), have classified this discharge as follows:	**Major**

I, David W. Gibson, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, San Diego Region, on **March 9, 2016**.

TENTATIVE

David W. Gibson, Executive Officer

CONTENTS

TABLES

ATTACHMENTS

I. FACILITY INFORMATION

Cabrillo Power I LLC (Discharger) is the owner and operator of the Encina Power Station (Facility), a steam electric generating facility. The Facility is located in the City of Carlsbad, California, adjacent to the Agua Hedionda Lagoon on the Pacific Ocean.

The Facility is comprised of five steam turbine generators and one gas turbine generator for a total maximum generating capacity of 939 megawatts. Natural gas is the only fuel for power generation.

Additional information describing the Facility is summarized in Table 1 of this Order and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Discharger's permit application for the Facility.

II. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board), finds:

A. **Legal Authorities.** This Order serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (Water Code) (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this Facility to surface waters.

B. **Background and Rationale for Requirements.** The San Diego Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G are also incorporated into this Order.

C. **Provisions and Requirements Implementing State Law – Not Applicable.**

D. **Executive Officer Delegation of Authority**. The San Diego Water Board by prior resolution has delegated all matters that may legally be delegated to its Executive Officer to act on its behalf pursuant to Water Code section 13223. Therefore, the Executive Officer is authorized to act on the San Diego Water Board's behalf on any matter within this Order unless such delegation is unlawful under Water Code section 13223 or this Order explicitly states otherwise.

E. **Notification of Interested Parties.** The San Diego Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements (WDR) for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Fact Sheet (Attachment F).

F. **Consideration of Public Comment.** The San Diego Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED, that this Order supersedes Order R9-2006-0043 except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the San Diego Water Board from taking enforcement action for past violations of the previous Order. If any part of this Order is subject to a temporary stay of enforcement, unless otherwise specified, the Discharger shall comply with the analogous portions of the previous order, which shall remain in effect for all purposes during the pendency of the stay.

III. DISCHARGE PROHIBITIONS

A. The discharge of waste in a manner or to a location that has not been specifically described to the San Diego Water Board and for which valid WDRs are not in force are prohibited.

B. The discharge of oil or any residuary product of petroleum to Waters of the United States and/or State, except in accordance with waste discharge requirements or other provisions of the Clean Water Act or division 7 of the Water Code, is prohibited.

C. The discharge of polychlorinated biphenyl compounds (PCBs), such as those commonly used for transformer fluid is prohibited.

D. The total combined discharge of a wastewater flow volume, as determined on a 30-day running average basis through Discharge Point 001 to the Pacific Ocean in excess of 863.5 million gallons per day (MGD) is prohibited.

E. The discharge of wastewater in violation of any Discharge Prohibition contained in chapter 4 of the *Water Quality Control Plan for the San Diego Basin* (Basin Plan), incorporated by reference and as summarized in Attachment G of this Order, is prohibited.

F. The discharge of wastewater in violation of any Discharge Prohibition contained in the *California Ocean Plan* (Ocean Plan), incorporated by reference and as summarized in Attachment G of this Order, is prohibited.

G. The discharge of Once-Through-Cooling (OTC) wastewater that are not associated with power generating activities or critical system maintenance is prohibited unless otherwise permitted under the *Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (OTC Policy) is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described section II of the Monitoring and Reporting Program (MRP), Attachment E of this Order:

Table 5. Final Effluent Limits – Discharge Point No. 001 (Monitoring Location EFF-001)

Parameter	Units	Effluent Limitations					
		Average Monthly	Weekly Average	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median
Technology-Based Effluent Limitations							
pH	Standard Units	--	--	--	6.0	9.0	--
Turbidity	NTU	75	100	--	--	225	--
Total Residual Chlorine[1]	micrograms per liter (µg/L)	--	--	132	--	200	33
	pounds per day (lbs/day)[2]	--	--	396	--	600	99
Water Quality-Based Effluent Limitations							
Chronic Toxicity	Pass/Fail	--	--	[3]	--	--	--

1. The discharge of total residual oxidants used to control fouling within the main condenser cooling system, such as chlorine or bromine, from any single generating unit for more than two hours per day is prohibited unless the Discharger has demonstrated to the San Diego Water Board's satisfaction in advance of the discharge that a discharge lasting for more than two hours is required for macroinvertebrate control.
2. Mass emission rate (MER) effluent limitations, in pounds per day, were calculated based the following equation: MER (lb/day) = 0.00834 x Q x C x 2 hours/ day chlorination x 5 units / 24 hours/day, where Q is the maximum allowable flow rate (in million gallons per day (MGD)) and C is the concentration (in µg/L).
3. Compliance with the Maximum Daily Effluent Limitation for chronic toxicity shall be based on the procedures specified in section III.C of the MRP, Attachment E, of this Order.

b. Temperature Effluent Limitations for Units 1 through 4

i. Except during heat treatment operations, the temperature of the discharge through Discharge Point No. 001 to the Pacific Ocean shall not average more than 20°F (11.1°C) above that of the incoming lagoon water during any 24-hour period.

ii. Except during heat treatment operations, the discharge through Discharge Point No. 001 to the Pacific Ocean shall not at any time exceed 25°F (13.9°C) above that of the incoming lagoon water.

iii. During heat treatment operations, the temperature of the discharge through Discharge Point No. 001 to the Pacific Ocean shall not exceed 120°F (48.9°C). A maximum temperature of 120°F (48.9°C) in the discharge shall not be maintained for a duration exceeding 2 hours.

c. Temperature Effluent Limitations for Unit 5

The maximum temperature of the discharge through Discharge Point No. 001 to the Pacific Ocean shall not exceed, at any time, the natural temperature of the receiving water by more than 20ºF.

2. Final Effluent Limitations – Metal Cleaning Wastes (Discharge Point No. 001A)

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001A, with compliance measured at Monitoring Location INT-001A as described in section II of the MRP, Attachment E:

Table 6. Final Effluent Limits – Discharge Point No. 001A (Monitoring Location INT-001A)

Parameter	Units	Effluent Limitations				
		30-Day Average	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median
Technology-Based Effluent Limitations						
pH	standard units	--	--	6.0	9.0	--
Total Suspended Solids	mg/L	30	100	--	--	--
	lbs/day[1]	200	660	--	--	--
Oil and Grease	mg/L	15	20	--	--	--
	lbs/day[1]	100	130	--	--	--
Copper, Total	mg/L	1.0	1.0	--	--	--
	lbs/day[1]	7.0	7.0	--	--	--
Iron, Total	mg/L	1.0	1.0	--	--	--
	lbs/day[1]	7.0	7.0	--	--	--

1. Mass emission rate (MER) effluent limitations, in pounds per day, were calculated based the following equation: MER (lb/day) = 8.34 x Q x C, where Q is the maximum allowable flow rate (in million gallons per day (MGD)) and C is the concentration (in mg/L). The maximum chemical and non-chemical metal cleaning waste flow rate is 0.7971 MGD.

b. Compliance determinations for mass-based effluent limitations contained in Table 6 shall account for the metal cleaning waste flow rate on the day and time of sampling in accordance with the following equation:

$L_f = (Q_a/Q_m) L_t$; where

L_f = The mass-based effluent limitation to be used for the compliance determination.
Q_a = The total metal cleaning waste flowrate, in MGD, at the time of sampling.
Q_m = 0.7971 MGD, the maximum metal cleaning flow at Discharge Point 001A.
L_t = The maximum mass-based effluent limitation, in lbs/day, contained in Table 6.

3. Final Effluent Limitations – Low-Volume Wastes (Discharge Point Nos. 001B through 001E and 001H)

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point Nos. 001B through 001E and 001H, with

compliance measured from a composite sample collected from Monitoring Locations INT-001B through INT-001E and INT-001H, respectively, as described in section II of the MRP, Attachment E of this Order:

Table 7. Final Effluent Limits – Discharge Point Nos. 001B through 001F and 001H (Monitoring Locations INT-001B through INT-001F and INT-001H)

Parameter	Units	Effluent Limitations				
		30-Day Average	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Six-Month Median
Technology-Based Effluent Limitations						
pH	standard units	--	--	6.0	9.0	--
Total Suspended Solids	mg/L	30	100	--	--	--
	lbs/day[1]	725	2419	--	--	--
Oil and Grease	mg/L	15	20	--	--	--
	lbs/day[1]	363	484	--	--	--
Water Quality-Based Effluent Limitations						
Chromium (Hexavalent)	lbs/day1	--	3.2	--	--	0.80
Copper, Total	lbs/day[1]	--	4.0	--	--	0.45
Mercury, Total	lbs/day1	--	0.064	--	--	0.016
Cyanide, Total[2]	lbs/day[1]	--	1.6	--	--	0.40

1. Mass emission rate (MER) effluent limitations, in pounds per day, were calculated based the following equation: MER (lb/day) = 8.34 x Q x C, where Q is the maximum allowable flow rate (in million gallons per day (MGD)) and C is the concentration calculated using a dilution factor of 15.5 (in mg/L). The maximum combined low-volume waste flowrates from Discharge Point Nos. 001B through 001E and 001H is 2.9 MGD.
2. If the Discharger can demonstrate to the satisfaction of USEPA that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, compliance with effluent limitations may be evaluated using the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in Title 40 Code of Federal Regulations part 136 (40 CFR part 136). The Discharger shall submit documentation to the San Diego Water Board that the proposed analytical method is approved by the USEPA prior to using the method for effluent limitation compliance evaluations

b. Compliance determination for mass-based effluent limitations contained in Table 7 will account for the combined low-volume waste flow rate on the day of sampling; i.e. the actual limitation shall be determined for the period of sampling in accordance with the following equation:

$L_f = (Q_a/Q_m) L_t$; where

L_f = The mass-based effluent limitation to be used for compliance determination.

Q_a = The total combined low-volume waste flowrate, in MGD, at the time of sampling.
Q_m= 4.09 MGD, the maximum flow of low-volume waste at Discharge Points 001B through 001F and 001H.
L_t = The maximum mass-based effluent limitation, in lbs/day, contained in Table 6.

B. Cooling Water Intake Specifications

1. The Discharger shall maintain velocities at design levels in front of the intake structure and routinely clean the bar racks at the Facility. The Discharger shall rotate and clean intake screen assemblies as needed when the cooling water pumps are in operation, for the purpose of maintaining intake water velocities as close as practical to design levels.

2. The Discharger shall minimize once-through cooling water flow rates where possible when units are operating at reduced load or out of service, except as required to ensure equipment and personnel safety.

3. The Discharger shall avoid sudden increases in once-through cooling water flow rates whenever possible.

C. Land Discharge Specifications – Not Applicable

D. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitation

The receiving water limitations set forth below for ocean waters are based on water quality objectives contained in the Basin Plan and the Ocean Plan and are a required part of this Order. The discharge shall not cause or contribute to a violation of these limitations in the Pacific Ocean. Compliance with these receiving water limitations shall be determined from samples collected at stations representative of the area within the waste field where initial dilution is completed.

1. Thermal Characteristics (Thermal Plan)

a. Elevated temperature wastes from all Units shall comply with limitations necessary to assure protection of the beneficial uses and Areas of Special Biological Significance.

b. Elevated temperature wastes from Unit 5 shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

c. Elevated temperature wastes from all Units shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas.

d. The discharge of elevated temperature wastes from Unit 5 shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature increase limitation shall be maintained for at least 50 percent of the duration of any complete tidal cycle.

2. Bacterial Characteristics

a. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the San Diego Water Board (i.e., waters designated as REC-1), but including all kelp beds, the following bacterial objectives shall be maintained throughout the water column:

30-day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each site:

i. Total coliform density shall not exceed 1,000 per 100 mL;
ii. Fecal coliform density shall not exceed 200 per 100 mL; and
iii. Enterococcus density shall not exceed 35 per 100 mL.

Single Sample Maximum:

i. Total coliform density shall not exceed 10,000 per 100 mL;
ii. Fecal coliform density shall not exceed 400 per 100 mL;
iii. Enterococcus density shall not exceed 104 per 100 mL; and
iv. Total coliform density shall not exceed 1,000 per 100 mL when the fecal coliform/total coliform ratio exceeds 0.1.

b. The “Initial Dilution Zone” of wastewater outfalls shall be excluded from designation as kelp beds for purposes of bacterial standards. Adventitious assemblages of kelp plants on waste discharge structures (e.g., outfall pipes and diffusers) do not constitute kelp beds for purposes of bacterial standards.

c. At all areas where shellfish may be harvested for human consumption, as determined by the San Diego Water Board (i.e., waters designated as SHELL), the median total coliform density shall not exceed 70 per 100 ml throughout the water column, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

3. Physical Characteristics

a. Floating particulates and grease and oils shall not be visible.

b. The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.

c. Natural light shall not be significantly reduced at any point outside the initial dilution zone as a result of the discharge of waste.

d. The rate of deposition of inert solids and the characteristics of inert solids in the ocean sediments shall not be changed such that benthic communities are degraded.

4. Chemical Characteristics

a. The dissolved oxygen concentration shall not, at any time, be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste materials.

b. The pH shall not be changed, at any time, more than 0.2 units from that which occurs naturally.

c. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.

d. The concentration of substances set forth in chapter II, table 1 of the Ocean Plan, shall not be increased in marine sediments to levels that would degrade indigenous biota.

e. The concentration of organic materials in marine sediments shall not be increased to levels that would degrade marine life.

f. Nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota.

5. Biological Characteristics

a. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded.

b. The natural taste, odor, color of fish, shellfish, or other marine resources used for human consumption shall not be altered.

c. The concentration of organic materials in fish, shellfish, or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

6. Radioactivity

a. Discharge of radioactive waste shall not degrade marine life.

B. Groundwater Limitations – Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D.

2. The Discharger shall comply with the following provisions. In the event that there is any conflict, duplication, or overlap between provisions specified by this Order, the more stringent provision shall apply:

a. This Order expires on **April 30, 2021**, after which, the terms and conditions of this permit are automatically continued pending issuance of a new permit, provided that all requirements of USEPA's NPDES regulations at 40 CFR 122.6 and the State's regulations at California Code of Regulations title 23, division 3, chapter 9, article 3, section 2235.4 regarding the continuation of expired permits and waste discharge requirements are met.

b. A copy of this Order shall be posted at a prominent location at or near the treatment and disposal facilities and shall be available to operating personnel at all times.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

a. This Order may be reopened for modification to include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above an Ocean Plan Table 1 water quality objective. [40 CFR section 122.44(d)(1)]

b. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

i. Violation of any terms or conditions of this Order. [Water Code section 13381(a)]b]

ii. Obtaining this Order by misrepresentation or failure to disclose fully all relevant fact. [Water Code section 13381(b)]

iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge. [Water Code section 13381(c)]

c. If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under section 307(a) of the CWA for a toxic pollutant and that standard or prohibition is more stringent than any limitation on the pollutant in this Order, the San Diego Water Board may institute proceedings to modify or revoke and reissue the Order to conform to the toxic effluent standard or prohibition. [40 CFR section 122.44(b)(1)]

d. This Order may be reopened and modified, in accordance with the provisions set forth in 40 CFR parts 122 and 124, to include new Minimum Levels (MLs) which are established in the Ocean Plan. [40 CFR parts 122 and 124]

e. This Order may be re-opened and modified to revise effluent limitations as a result of future amendments to the Basin Plan or the Ocean Plan, or the adoption of a total maximum daily load allocation (TMDL) for the receiving water. [40 CFR section 122.62(a)(2)]

f. This Order may be re-opened and modified, revoked and, reissued or terminated for cause in accordance with the provisions of 40 CFR sections 122.44, 122.62 to 122.64, and 125.62. Causes for taking such actions include, but are not limited to, failure to comply with any condition of this Order and permit, and endangerment to human health or the environment resulting from the permitted activity.

g. This Order may be reopened and modified to revise limitations or provisions as a result of future updates or amendments to the Once-Through Cooling (OTC) Policy.

h. The San Diego Water Board or State Water Board may reopen this Order to suspend the date for the OTC Policy Compliance Schedule under the circumstances set forth in OTC Policy section 2.B(2).

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Initial Dilution Study

The Discharger shall perform a dilution study that considers current mixing characteristics of the effluent and receiving water to determine the initial dilution zone and the minimum probable initial dilution (as defined in Appendix I of the Ocean Plan and expressed as parts seawater per part wastewater) for the discharge associated with Discharge Point 001. Minimum initial dilution is the lowest average initial dilution within any single month of the year. Dilution estimates shall, at a minimum, be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure. The analysis shall include consideration of relevant State of California and USEPA polices and guidance pertaining to the establishment of mixing zones and dilution credits in receiving waters. The Discharger shall submit a study plan no later than March 1, 2019, describing the study objectives and organization and shall implement the plan unless otherwise directed in writing by the San Diego Water Board. The Discharger shall submit the results of the study to the San Diego Water Board by March 1, 2020, if the discharge has not terminated.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Construction, Operation and Maintenance Specifications

a. All waste treatment, containment, and disposal facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.

b. All waste treatment, containment, and disposal facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour storm event.

c. Collected screenings, sludges, and other solids removed from liquid wastes, shall be disposed of in accordance with all applicable requirements.

5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

6. Other Special Provisions -- Once-Through Cooling Policy (OTC Policy)

a. OTC Policy Compliance Schedule. The Discharger submitted an *Implementation Plan for Compliance with California Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling, Cabrillo Power I LLC, Encina Power Station* (Implementation Plan) on April 1, 2011. Further correspondence and amendment to the Implementation Plan were submitted by letters dated January 30, 2013, November 7, 2013, and April 23, 2015. The Facility consists of five natural gas fired steam turbine generating units (Units). According to the Implementation Plan, the Discharger will achieve Track 1 compliance by retiring all five Units by the compliance deadline of December 31, 2017. The Units will be replaced with the Carlsbad Energy Center Project (CECP) by December 31, 2017. Therefore, the Discharger is

required to comply with the following compliance schedule to achieve compliance with Track 1 of the OTC as set forth below:

Table 8. Schedule of Compliance with OTC Policy

Task	Compliance Date
1. Submit progress report on compliance actions (construction of the CECP and retirement of the Units).	July 1, 2016
2. Submit progress report on compliance actions (construction of the CECP and retirement of the Units).	July 1, 2017
3. Cease operation of the Units.	December 31, 2017

The final compliance date of December 31, 2017 may only be suspended in accordance with section 2.B(2) of the OTC Policy.

b. Immediate and Interim Requirements. The Discharger shall implement the following immediate and interim actions:

i. Any unit that is not directly engaged in power-generating activities or critical system maintenance shall cease intake flows unless it has been demonstrated to the State Water Board that a reduced minimum flow is necessary for operations.

ii. The Discharger shall implement measures to mitigate interim impingement and entrainment impacts until full compliance is achieved. If proposing to mitigate by providing funding to the Coastal Conservancy, working with the California Ocean Protection Council, for mitigation projects directed toward increases in marine life associated with the State's Marine Protected Areas within the Facility's local area, the funding shall be based on the amount determined by the State Water Board Chief Deputy Director.

7. Other Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order shall be determined as follows:

A. Compliance with Average Monthly Effluent Limitation (AMEL)

If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of noncompliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for the month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

B. **Compliance with Average Weekly Effluent Limitation (AWEL)**

If the average of daily discharges over a calendar week (Sunday through Saturday) exceeds the AWEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in seven days of noncompliance. The average of daily discharges over the calendar week that exceeds the AWEL for a parameter will be considered out of compliance for that week only. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

C. **Compliance with Maximum Daily Effluent Limitation (MDEL)**

The MDEL shall apply to flow weighted 24-hour composite samples, or grab, as specified in the MRP (Attachment E). If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for that parameter for that one day only within the reporting period. For any one day during which no sample is taken, no compliance determination can be made for that day.

D. **Compliance with Instantaneous Maximum Effluent Limitation**

The instantaneous maximum effluent concentration limitation shall apply to grab sample determinations. If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are higher than the instantaneous maximum effluent limitation would result in two instances of noncompliance with the instantaneous maximum effluent limitation).

E. **Compliance with 6-Month Median Effluent Limitation**

If the median of daily discharges over any 180-day period exceeds the 6-month median effluent limitation for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that 180-day period for that parameter. The next assessment of compliance will occur after the next sample is taken. If only a single sample is taken during a given 180-day period and the analytical result for that sample exceeds the 6-month median, the Discharger will be considered out of compliance for the 180-day period. For any 180-day period during which no sample is taken, no compliance determination can be made for the 6-month median limitation.

F. **Compliance with 30-Day Average Effluent Limitation**

If the arithmetic mean of daily discharges over any thirty consecutive day period exceeds the 30-day average effluent limitation, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that 30-day period for that parameter. The next assessment of compliance will occur after the next sample is taken. If only a single sample is taken during a given 30-day period and the analytical result for that sample exceeds the 30-day average effluent limitation, the Discharger will be considered out of compliance for the 30-day period. For any 30-day

period during which no sample is taken, no compliance determination can be made for the 30-day average effluent limitation.

G. **Chronic Toxicity**

The discharge is subject to determination of "Pass" or "Fail" from chronic toxicity tests using the Test of Significant Toxicity (TST) statistical t-test approach described in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010), Appendix A, Figure A-1 and Table A-1, and Appendix B, Table B-1. The null hypothesis (Ho) for the TST statistical approach is: Mean discharge Instream Waste Concentration (IWC) response ≤0.75 × Mean control response. A test result that rejects this null hypothesis is reported as "Pass". A test result that does not reject this null hypothesis is reported as "Fail". The relative "Percent Effect" at the discharge IWC is defined and reported as: ((Mean control response - Mean discharge IWC response) ÷ Mean control response)) × 100. This is a t-test (formally Student's t-Test), a statistical analysis comparing two sets of replicate observations - in the case of Whole Effluent Toxicity (WET), only two test concentrations (i.e., a control and IWC). The purpose of this statistical test is to determine if the means of the two sets of observations are different (i.e., if the IWC or receiving water concentration differs from the control (the test result is "Pass" or "Fail")). The Welch's t-test employed by the TST statistical approach is an adaptation of Student's t-test and is used with two samples having unequal variances.

The MDEL for chronic toxicity is exceeded and a violation will be flagged when a chronic toxicity test, analyzed using the TST statistical approach, results in "Fail" and the "Percent Effect" is greater than or equal to 50%.

An exceedance of the MDEL during routine monitoring is a violation. Any exceedances occurring during a required accelerated monitoring period and, if appropriate, a TRE period shall not constitute additional violations provided that (1) the Discharger proceeds with the accelerated monitoring and TRE (if required) in a timely manner; and (2) the accelerated monitoring and TRE are completed within one year of the initial exceedance. The San Diego Water Board has the discretion to impose additional violations and initiate an enforcement action for toxicity tests that result in a "Fail" after one year from the initial violation. Additionally, the Discharger's failure to initiate an accelerated monitoring schedule or conduct a TRE, as required by this Order, will result in all exceedances being considered violations of the MDEL and may result in the initiation of an enforcement action.

The chronic toxicity MDEL is set at the IWC for the discharge (6.5% effluent) and expressed in units of the TST statistical approach ("Pass" or "Fail", "Percent Effect"). All NPDES effluent compliance monitoring for the chronic toxicity MDEL shall be reported using the 6.5% effluent concentration and negative control, expressed in units of the TST. The TST hypothesis (Ho) (see above) is statistically analyzed using the IWC and a negative control. Effluent toxicity tests shall be run using a multi-concentration test design when required by *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (USEPA 2002, EPA-821-R-02-013). The San Diego Board's review of reported toxicity test results will include review of concentration-response patterns as appropriate (see Fact Sheet section IV.C.5). As described in the bioassay laboratory audit directives to the San Jose Creek Water Quality Laboratory from the State Water Resources Control Board dated August 7, 2014, and from the USEPA dated December 24, 2013, the Percent Minimum Significant Difference (PMSD) criteria only apply to compliance

reporting for the No Observed Effects Concentration (NOEC) and the sublethal statistical endpoints of the NOEC, and therefore are not used to interpret TST results. Standard Operating Procedures used by the toxicity testing laboratory to identify and report valid, invalid, anomalous, or inconclusive effluent (and receiving water) toxicity test measurement results from the TST statistical approach, including those that incorporate a consideration of concentration-response patterns, must be submitted to the San Diego Water Board (40 CFR section 122.41(h)). The San Diego Water Board will make a final determination as to whether a toxicity test result is valid, and may consult with the Discharger, USEPA, the State Water Board's Quality Assurance Officer, or the State Water Board's Environmental Laboratory Accreditation Program (ELAP) as needed. The San Diego Water Board may consider results of any Toxicity Reduction Evaluation / Toxicity Identification Evaluation (TRE/TIE) studies in an enforcement action.

ATTACHMENT A – ABBREVIATIONS AND DEFINITIONS

Part 1. Abbreviations

Abbreviation	Definition
40 CFR	Code of Federal Regulations, title 40
AMEL	Average Monthly Effluent Limitation
AWEL	Average Weekly Effluent Limitation
Basin Plan	Water Quality Control Plan for the San Diego Basin
BAT	Best Available Technology
BCT	Best Conventional Pollutant Control Technology
BMPs	Best Management Practices
BOD	Biochemical Oxygen Demand
BPT	Best Practicable Treatment Control Technology
BTA	Best Technology Available
CECP	Carlsbad Energy Center Project
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIWQS	California Integrated Water Quality System
CWA	Clean Water Act
DC	Direct Current
DDT	Dichlorodiphenyltrichloroethane
Discharger	Cabrillo Power I LLC
DMRs	Discharge Monitoring Reports
DNQ	Detected, but Not Quantified
DO	Dissolved Oxygen
°F	Degrees Fahrenheit
ELGs	Effluent Limitation Guidelines
Ho	Null Hypothesis
IWC	Instream Waste Concentration
lbs/day	Pounds per Day
LVW	Low-Volume Waste
LVWTF	Low-Volume Waste Treatment Facility
MDEL	Maximum Daily Effluent Limitation
MDL	Method Detection Limit
MEC	Maximum Effluent Concentration
MER	Mass Emission Rate
MGD	Million Gallons per Day
mg/L	Milligrams per Liter
ML	Minimal Level
MRP	Monitoring and Reporting Program
ND	Not Detected
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTU	Nephelometric Turbidity Unit
OAL	Office of Administrative Law
Ocean Plan	Water Quality Control Plan - Ocean Waters of California

Abbreviation	Definition
OTC	Once-Through Cooling
OTC Policy	California State Water Resources Control Board Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling
PCB	Polychlorinated Biphenyls
pCi/L	Picocuries per Liter
POTWs	Publicly-Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RL	Reporting Level
RMDs	Regulatory Management Decisions
RO	Reverse Osmosis
ROWD	Report of Waste Discharge
RP	Reasonable Potential
RPA	Reasonable Potential Analysis
San Diego Water Board	California Regional Water Quality Control Board, San Diego Region
SM	Standard Methods, Policy for Implementation of Toxics Standards for Inland Surface Waters, and Enclosed Bays, and Estuaries of California
SMR	Self-monitoring Report
SOU	Single Operational Upset
SPP	Spill Prevention Plan
SRP	Spill Response Plan
SSMP	Sanitary Sewer Management Plans
SSOs	Sanitary Sewer Overflows
State Implementation Plan / SIP	Policy for Implementation of Toxics Standards for Inland Surface Waters, and Enclosed Bays, and Estuaries of California
State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
TBELs	Technology-Based Effluent Limitations
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TRE	Toxicity Reduction Evaluation
TSS	Total Suspended Solids
TST	Test of Significant Toxicity
TTU	Temporary Treatment Unit
TUc	Chronic Toxicity Unit
µg/L	Micrograms per Liter
USEPA	U.S. Environmental Protection Agency
Water Code	California Water Code
WDRs	Waste Discharge Requirements
WET	Whole Effluent Toxicity
WLA	Waste Load Allocation
WMMP	Watercourse Monitoring and Management Plan
WQBELs	Water Quality-Based Effluent Limitations
WQOs	Water Quality Objectives

Part 2. Definitions of Common Terms

Areas of Special Biological Significance (ASBS)
Those areas designated by the State Water Resources Control Board (State Water Board) as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Chlordane
Shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

Chronic Toxicity
This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

DDT (Dichlorodiphenyltrichloroethane)
Shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

Degrade
Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ)
Sample results that are less than the reported Minimum Level, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dichlorobenzenes
Shall mean the sum of 1,2- and 1,3-dichlorobenzene.

Downstream Ocean Waters
Waters downstream with respect to ocean currents.

Dredged Material
Any material excavated or dredged from the navigable Waters of the U.S., including material otherwise referred to as "spoil."

Enclosed Bays
Indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

Endosulfan
The sum of endosulfan-alpha and -beta and endosulfan sulfate.

Estuaries and Coastal Lagoons are waters at the mouths of streams that serve as mixing zones for fresh and ocean waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and saltwater occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

Flow-weighted Composite Sample
The flow rate for each individual wastewater is determined for that day, and the relative amount/volume, in percent, of each individual waste stream in the total flow for that day is determined. Using the percentages of each individual waste stream in the total, the amount of each individual waste stream, to be composited in a five-gallon (18,927 mls) sample, is calculated. In the example below, on the day of sample collection, condenser overboard flow accounts for 69 percent of the total flow of the low-volume wastewaters that are sampled. 69

percent of five gallons equals 0.69 x 18,927 milliliters, which equals 13,060 milliliters. (There are 3,785 mLs per gallon and 18,927 mLs per five gallons.)

EXAMPLE CALCULATION

Low-volume Wastewater	Flow in MGD	Percent of Total Flow	mLs to be Composited
Condenser Overboard	6.5	69	13,060
Makeup Demineralizer System	0.58	6	1,136
Radwaste System	0.25	3	568
Steam Generator Blowdown	0.43	5	946
Polishing Demineralizer System	1.5	16	3,028
Concrete Cutting Cooling Water	0.1	1	189
Total:	9.45	100 %	18,927 mLs

Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

HCH (Hexachlorocyclohexane)
Shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

Initial Dilution
The process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and non-buoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the San Diego Water Board whichever results in the lower estimate for initial dilution.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Kelp Beds
For purposes of the bacteriological standards of the Ocean Plan and this Order, are significant aggregations of marine algae of the genera *Macrocystis* and *Nereocystis*. Kelp beds include the total foliage canopy of *Macrocystis* and *Nereocystis* plants throughout the water column.

Mariculture
The culture of plants and animals in marine waters independent of any pollution source.

Material
(a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of the Ocean Plan relating to waste disposal, dredging and the disposal of dredged material and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable Waters of the U.S. See also, DREDGED MATERIAL.

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant.

Method Detection Limit (MDL)
The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR part 136, Attachment B.

Minimum Level (ML)
The concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Natural Light
Reduction of natural light may be determined by the San Diego Water Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the San Diego Water Board.

Not Detected (ND)
Those sample results less than the laboratory's MDL.

Ocean Waters
The territorial marine Waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. If a discharge outside the territorial Waters of the State could affect the quality of the Waters of the State, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

PAHs (polynuclear aromatic hydrocarbons)
The sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls)
The sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

Reasonable Potential Analysis
Determining the reasonable potential for a discharged pollutant to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard.

Reported Minimum Level
The reported ML (also known as the Reporting Level or RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the ML's included in this Order, including an additional factor if applicable as discussed herein. The ML's included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the San Diego Water Board either from Appendix II of the Ocean Plan in accordance with section III.C.5.a. of the Ocean Plan or established in accordance with section III.C.5.b. of the Ocean Plan. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the reported ML.

Shellfish
Organisms identified by the California Department of Health Services as shellfish for public health purposes (i.e., mussels, clams and oysters).

Significant Difference
Defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

Six-Month Median Effluent Limitation
The highest allowable moving median of all daily discharges for any 180-day period.

State Water Quality Protection Areas (SWQPAs)
Non-terrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) that were previously designated by the State Water Board in Resolutions 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by the Ocean Plan.

TCDD Equivalents
The sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

Test of Significant Toxicity (TST)
A statistical approach used to analyze toxicity test data. The TST incorporates a restated null hypothesis, Welch's t-test, and biological effect thresholds for chronic and acute toxicity.

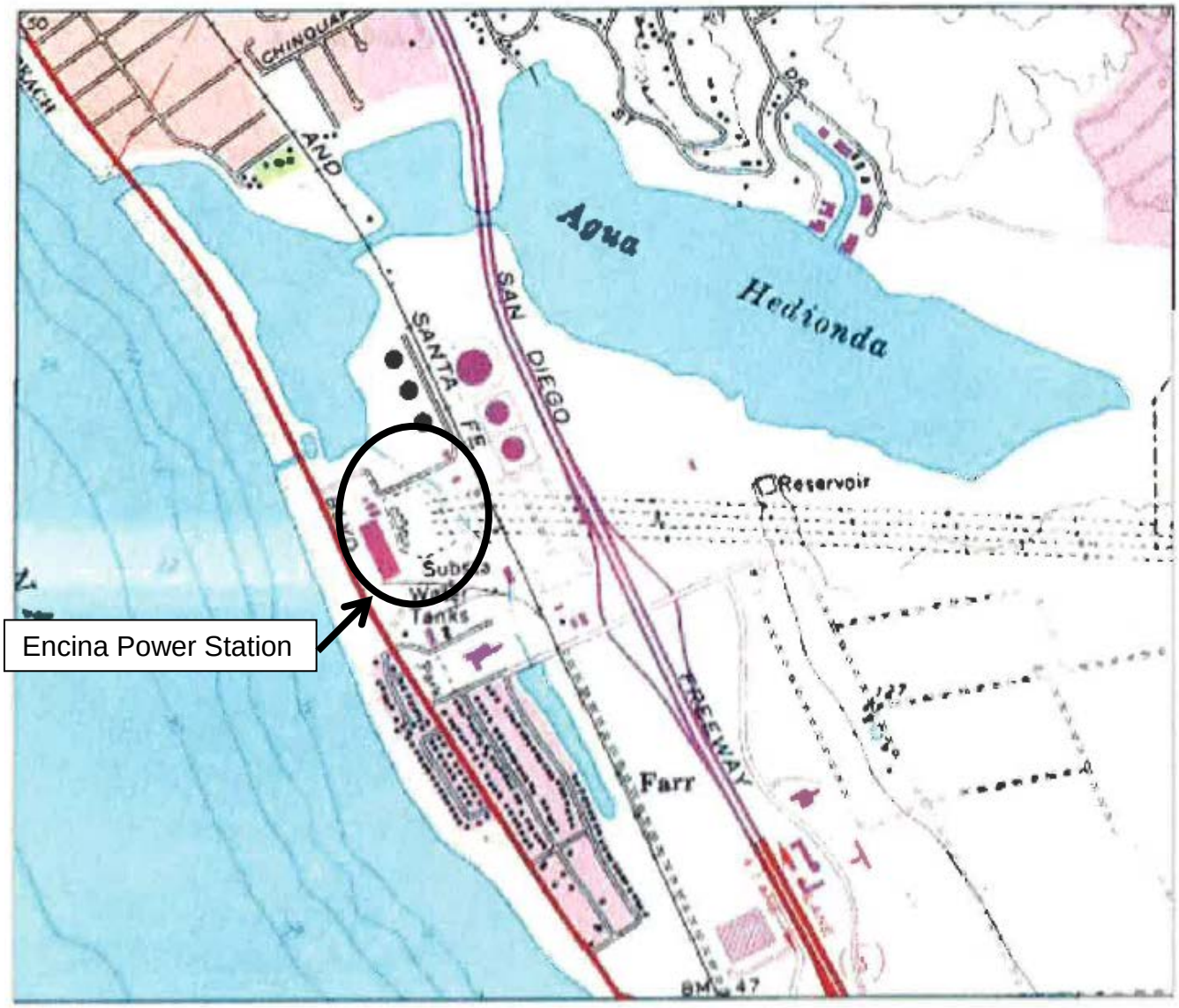
Toxicity Reduction Evaluation (TRE)
A study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

Waste
As used in the Ocean Plan and this Order, waste includes a Discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

Water Recycling
The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

ATTACHMENT B – MAPS

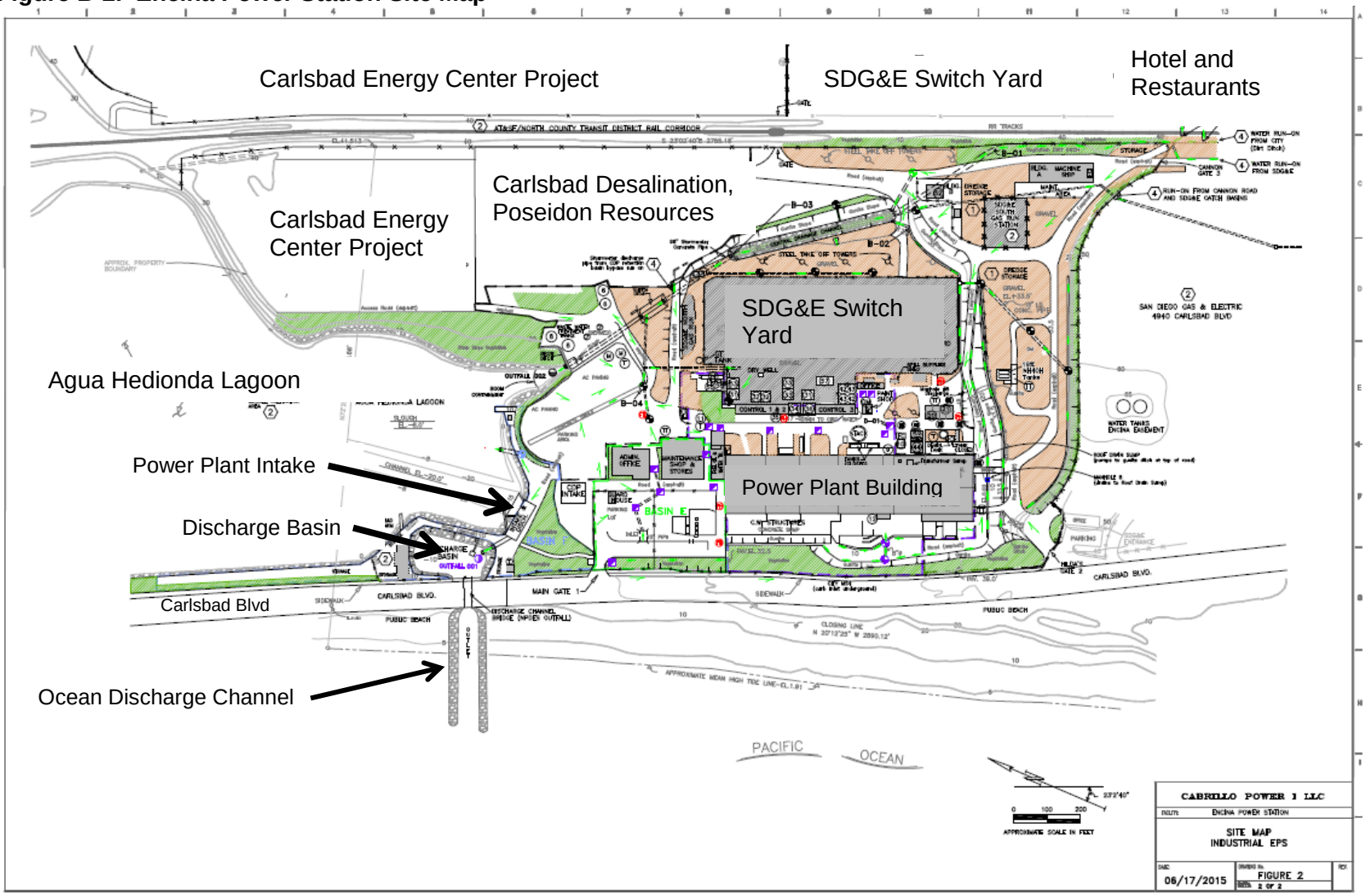
Figure B-1. Encina Power Station Location Map



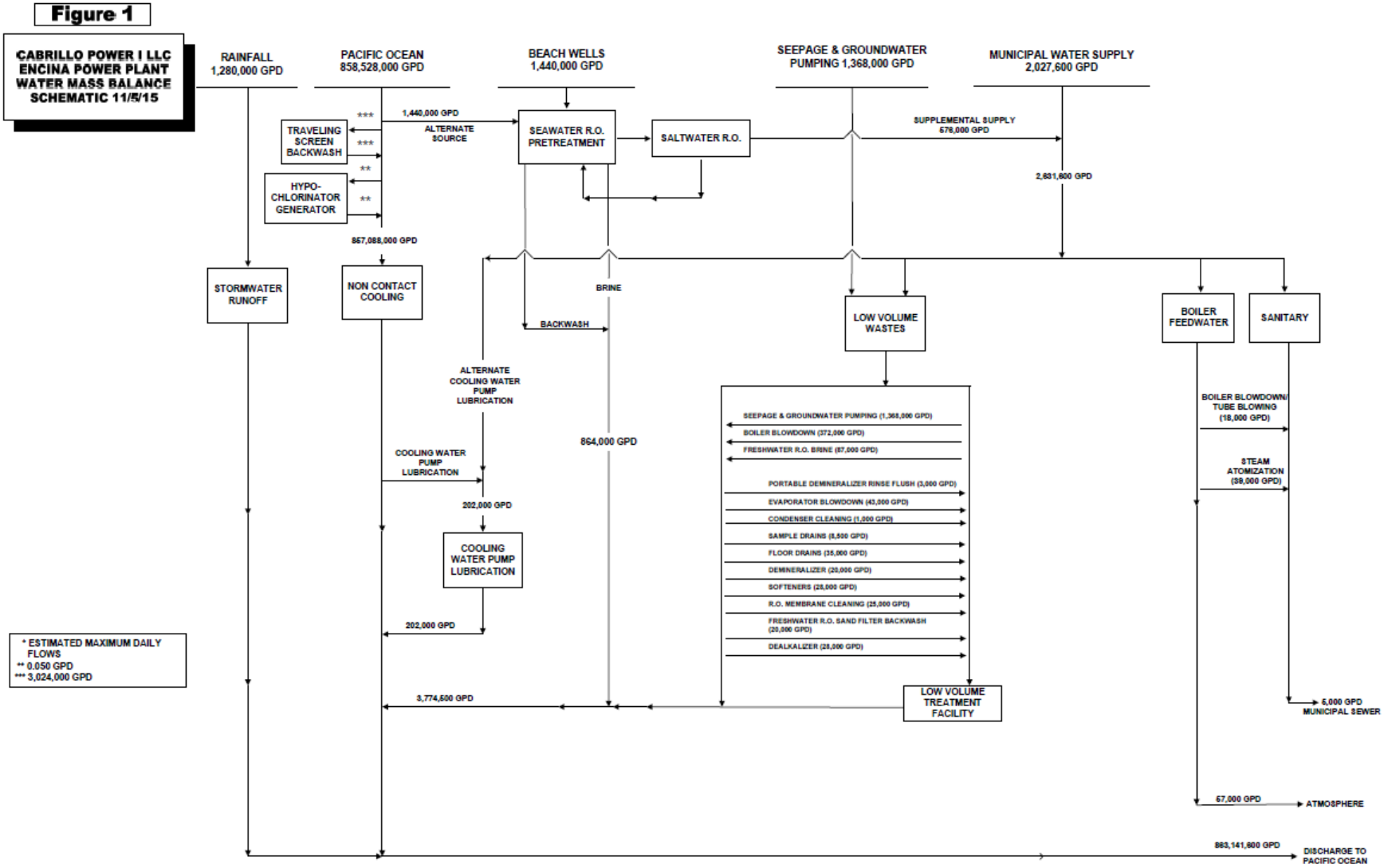
San Luis Rey, Calif. NE/4 Oceanside 15' Quadrangle

N3307.5 – W11715/7.5 1968 Photo revised 1975
AMS 2550 III NE – Series V895
United States Geological Service

Figure B-2. Encina Power Station Site Map



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

The Discharger must comply with all of the terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (Water Code) and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (Title 40 of the Code of Federal Regulations (40 CFR) section 122.41(a); Water Code sections 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.)

The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR section 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR section 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR section 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR section 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR section 122.41(g).)

iii. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR section 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the San Diego Water Board, State Water Board, U.S. Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. section 1318(a)(4)(b); 40 CFR section 122.41(i); Water Code, sections 13267, 13383) to:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C. section 1318(a)(4)(b)(i); 40 CFR section 122.41(i)(1); Water Code, sections 13267, 13383);

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. section 1318(a)(4)(b)(ii); 40 CFR section 122.41(i)(2); Water Code, sections 13267, 13383);

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C. section 1318(a)(4)(b)(ii); 40 CFR section 122.41(i)(3); Water Code, sections 13267, 13383); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C. section 1318(a)(4)(b); 40 CFR section 122.41(i)(4); Water Code, sections 13267, 13383.)

G. Bypass

1. Definitions

a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR section 122.41(m)(1)(i).)

b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR section 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR section 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the San Diego Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR section 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR section 122.41(m)(4)(i)(A));

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied

if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR section 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the San Diego Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR section 122.41(m)(4)(i)(C).)

4. The San Diego Water Board may approve an anticipated bypass, after considering its adverse effects, if the San Diego Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR section 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR section 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR section 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR section 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR section 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR section 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR section 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 CFR section 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR section 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR section 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR section 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR section 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR section 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the San Diego Water Board. The San Diego Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR sections 122.41(l)(3), 122.61.)

III. STANDARD PROVISIONS – MONITORING

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR section 122.41(j)(1).)

A. Monitoring results must be conducted according to test procedures approved under 40 CFR part 136 for the analyses of pollutants unless another method is required under 40 CFR subchapters N or O. In the case of pollutants for which there are no approved methods under 40 CFR part 136 or otherwise required under 40 CFR subchapters N or O, monitoring must be conducted according to a test procedure specified in this Order for such pollutants. (40 CFR sections 122.41(j)(4), 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the San Diego Water Board Executive Officer at any time. (40 CFR section 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR section 122.41(j)(3)(i));

2. The individual(s) who performed the sampling or measurements (40 CFR section 122.41(j)(3)(ii));

3. The date(s) analyses were performed (40 CFR section 122.41(j)(3)(iii));

4. The individual(s) who performed the analyses (40 CFR section 122.41(j)(3)(iv));

5. The analytical techniques or methods used (40 CFR section 122.41(j)(3)(v)); and

6. The results of such analyses. (40 CFR section 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR section 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR section 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR section 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the San Diego Water Board, State Water Board, or USEPA within a reasonable time, any information which the San Diego Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the San Diego Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR section 122.41(h); Water Code, sections 13267, 13383.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the San Diego Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR section 122.41(k).)

2. All permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 CFR section 122.22(a)(1).)

3. All reports required by this Order and other information requested by the San Diego Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR section 122.22(b)(1));

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR section 122.22(b)(2)); and

c. The written authorization is submitted to the San Diego Water Board and State Water Board. (40 CFR section 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the San Diego Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR section 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, 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 for knowing violations." (40 CFR section 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR section 122.41(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the San Diego Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR section 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR part 136, or another method

required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the San Diego Water Board. (40 CFR section 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR section 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR section 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR section 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR section 122.41(l)(6)(ii)):

a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR section 122.41(l)(6)(ii)(A).)

b. Any upset that exceeds any effluent limitation in this Order. (40 CFR section 122.41(l)(6)(ii)(B).)

3. The San Diego Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR section 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the San Diego Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR section 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR section 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 CFR section 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR section 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the San Diego Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 CFR section 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR section 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the San Diego Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR section 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

The San Diego Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13268, 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the San Diego Water Board as soon as they know or have reason to believe (40 CFR section 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 CFR section 122.42(a)(1)):

a. 100 micrograms per liter (µg/L) (40 CFR section 122.42(a)(1)(i));

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 CFR section 122.42(a)(1)(ii));

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (ROWD) (40 CFR section 122.42(a)(1)(iii)); or

d. The level established by the San Diego Water Board in accordance with section 122.44(f). (40 CFR section 122.42(a)(1)(iv).)

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" (40 CFR section 122.42(a)(2)):

a. 500 micrograms per liter (µg/L) (40 CFR section 122.42(a)(2)(i));

b. 1 milligram per liter (mg/L) for antimony (40 CFR section 122.42(a)(2)(ii));

c. Ten (10) times the maximum concentration value reported for that pollutant in the ROWD (40 CFR section 122.42(a)(2)(iii)); or

d. The level established by the San Diego Water Board in accordance with section 122.44(f). (40 CFR section 122.42(a)(2)(iv).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

CONTENTS

TABLES

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

Section 308 of the federal Clean Water Act (CWA) and sections 122.41(h), (j)-(l), 122.44(i), and 122.48 of title 40 of the Code of Federal Regulations (40 CFR) require that all National Pollutant Discharge Elimination System (NPDES) permits specify monitoring and reporting requirements. California Water Code (Water Code) sections 13267 and 13383 also authorize the San Diego Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. Pursuant to this authority, this Monitoring and Reporting Program (MRP) establishes conditions for Cabrillo Power I LLC (Discharger) to conduct routine or episodic self-monitoring of the discharges regulated under this Order at specified influent, internal, effluent, and receiving water monitoring locations. The MRP requires the Discharger to report the results to the San Diego Water Board with information necessary to evaluate discharge characteristics and compliance status.

The purpose of the MRP is to determine and ensure compliance with effluent limitations and other requirements established in this Order, assess treatment efficiency, characterize effluents, and characterize the receiving water and the effects of the discharge on the receiving water. The MRP also specifies requirements concerning the proper use, maintenance, and installation of monitoring equipment and methods, and the monitoring type intervals and frequency necessary to yield data that are representative of the activities and discharges regulated under this Order.

Each monitoring section contains an introductory paragraph summarizing why the monitoring is needed and the key management questions the monitoring is designed to answer. In developing the list of key management questions the San Diego Water Board considered four basic types of information for each question:

(1) Management Information Need – Why does the San Diego Water Board need to know the answer?

(2) Monitoring Criteria – What monitoring will be conducted for deriving an answer to the question?

(3) Expected Product – How should the answer be expressed and reported?

(4) Possible Management Actions – What actions will be potentially influenced by the answer?

The framework for this monitoring program has three components that comprise a range of spatial and temporal scales: 1. core monitoring, 2. regional monitoring, and 3. special studies.

(1) Core monitoring consists of the basic site-specific monitoring necessary to measure compliance with individual effluent limits and/or impacts to receiving water quality. Core monitoring is typically conducted in the immediate vicinity of the discharge by examining local scale spatial effects.

(2) Regional monitoring provides information necessary to make assessments over large areas and serves to evaluate cumulative effects of all anthropogenic inputs. Regional monitoring data also assists in the interpretation of core monitoring studies. In the event that a regional monitoring effort takes place during the permit cycle in which the MRP does not specifically address regional monitoring, the San Diego Water Board may allow relief from aspects of core monitoring components in order to encourage participation pursuant to section V of this MRP.

(3) Special studies are directed monitoring efforts designed in response to specific management or research questions identified through either core or regional monitoring programs. Often they are used to help understand core or regional monitoring results, where a specific environmental process is not well understood, or to address unique issues of local importance.

Pursuant to Water Code sections 13267 and 13383, this MRP establishes monitoring, reporting, and recordkeeping requirements that implement the federal and California laws and/or regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitoring discharge. All samples shall be taken at the monitoring points specified and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the San Diego Water Board. Samples shall be collected at times representative of "worst case" conditions with respect to compliance with the requirements of this Order.

B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurement is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±5 percent from true discharge rates throughout the range of expected discharge volumes.

C. Monitoring must be conducted according to U.S. Environmental Protection Agency (USEPA) test procedures approved at 40 CFR part 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*, as amended, or unless other test procedures are specified in this Order and/or in this MRP and/or by the San Diego Water Board.

D. Monitoring must be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR part 136 for the analysis of pollutants or pollutant parameters or as required under 40 CFR chapter 1, subchapter N or O. For the purposes of this paragraph, a method is sufficiently sensitive when:

1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, and the method ML is at or below the level of the most stringent applicable water quality criterion for the measured pollutant or pollutant parameter; or

2. The method has the lowest ML of the analytical methods approved under 40 CFR part 136 or required under 40 CFR chapter 1, subchapter N or O for the measured pollutant or pollutant parameter.

E. Conduct effluent and receiving water monitoring using US EPA-approved Method 1631E for the analysis of mercury, or US EPA-approved Method 1669 ultra-clean sampling technique shall be used for the collection of samples to be analyzed for mercury.

F. Laboratories analyzing monitoring samples shall be certified by the State Water Board's Division of Drinking Water (DDW) or by a laboratory approved by the San

Diego Water Board, in accordance with the provisions of Water Code section 13176, and must include quality assurance/quality control data with their reports. The laboratory must be accredited under the DDW Environmental Laboratory Accreditation Program (ELAP) to ensure the quality of analytical data used for regulatory purposes to meet the requirements of this Order. Additional information on ELAP can be accessed at:
http://www.waterboards.ca.gov/drinking_water/certlic/labs/index.shtml

G. Records of monitoring information shall include information required under Standard Provision, Attachment D, section IV.

H. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices.

I. The Discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. Duplicate chemical analyses must be conducted on a minimum of 10 percent of the samples. A similar frequency shall be maintained for analyzing spiked samples. When requested by USEPA or the San Diego Water Board, the Discharger will participate in the NPDES discharge monitoring report QA performance study. The Discharger should have a success rate equal or greater than 80 percent.

J. Analysis for toxic pollutants, including chronic toxicity, with effluent limitations shall be conducted in accordance with procedures stated in the Ocean Plan and this MRP.

K. The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Resources Control Board at the following address:

State Water Board Quality Assurance Program Officer
Office of Information Management and Analysis
State Water Resources Control Board
1001 I Street, Sacramento, CA 95814

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
Influent Monitoring Locations		
--	INF-001	Encina Power Station Intake Water – A location where a representative sample intake water to the Facility may be collected. 33^{o} 8’ 19” N; 117^{o} 20’ 18” W
--	INF-DESAL	Carlsbad Desalination Project Intake – The Carlsbad Desalination Project withdraws water from the cooling water discharge channel at Encina Power Station.
Effluent to the Pacific Ocean		

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
001	EFF-001	Combined Discharge – A location where a representative sample of the commingled effluent from the Facility to Discharge Point No. 001 can be obtained. This location shall be before withdrawal or discharge from the Carlsbad Desalination Project. 33° 08' 17" N, 117° 20' 22" W
001	EFF-DESAL	Carlsbad Desalination Project Discharge – The Carlsbad Desalination Project discharges water to the cooling water discharge channel at Encina Power Station.
001	EFF-CHANN	Discharge Channel – A location where a representative sample of the discharge to the ocean discharge channel including all discharges from Encina Power Station and the Carlsbad Desalination Project.
Internal Process Monitoring Locations		
001A	INT-001A	Metal Cleaning Waste – Metal cleaning, boiler chemical cleaning, hypochorinator chemical cleaning, air heater wash, boiler fireside wash, evaporator chemical cleaning, catalytic reduction wash -- Flow is monitored in the wastewater treatment tank area 33^{o} 8' 19" N, 117^{o} 20' 11" W
001B	INT-001B	Low-Volume Waste Seepage and Groundwater Pumping – Unit 4 flow is monitored in the basement of Unit 4 33^{o} 8' 11" N, 117^{o} 20' 11" W; Unit 5 flow is monitored in the basement of Unit 5 33^{o} 8' 10" N, 117^{o} 20' 11" W
001C	INT-001C	Low-Volume Waste Boiler Blowdown – Units 1 through 5 flow values are estimated based on valve flow rates. These valves are located within each unit's boiler equipment 33^{o} 8' 11" N, 117^{o} 20' 12" W
001D	INT-001D	Low-Volume Waste Freshwater Reverse Osmosis (RO) Brine - Flow is monitored at the RO area 33^{o} 8' 9" N, 117^{o} 20' 9" W
001E	INT-001E	Low-Volume Waste Seawater RO Brine – At a location where an accurate flow reading may be obtained. 33^{o} 8' 9" N, 117^{o} 20' 9" W
001H	INT-001H	Low-Volume Waste Treatment Facility (LVWTF) – Flow is monitored in the wastewater treatment tank area 33^{o} 8' 19" N, 117^{o} 20' 9" W.
Receiving Water		
--	A-10	Reference Area Station – At a location 7,000 feet upcoast (northerly) of the discharge channel and at a 10 foot depth (-10 ft MLLW): 33°09.210 N; 117°21.207 W
--	A-20	Reference Area Station – At a location 7,000 feet upcoast (northerly) of the discharge channel and at a 20 foot depth (-20 ft MLLW): 33°09.171 N; 117°21.278 W
--	A-30	Reference Area Station – At a location 7,000 feet upcoast (northerly) of the discharge channel and at a 30 foot depth (-30 ft MLLW): 33°09.099 N; 117°21.379 W
--	A-50	Reference Area Station – At a location 7,000 feet upcoast (northerly) of the discharge channel and 3,400 feet offshore: 33°08.979 N; 117°21.657 W
--	C-10	Dispersion Area Station – At a location 1,000 feet upcoast (northerly) of the discharge channel and 521 feet offshore: 33°08.400 N; 117°20.560 W

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	C-20	Dispersion Area Station – At a location 1,000 feet upcoast (northerly) of the discharge channel and 958 feet offshore: 33°08.373 N; 117°20.636 W
--	C-30	Dispersion Area Station – At a location 1,000 feet upcoast (northerly) of the discharge channel and 2,000 feet offshore: 33°08.314 N; 117°20.765 W
--	D-10	Dispersion Area Station – At a location even with the discharge channel and 585 feet offshore: 33°08.250 N; 117°20.493 W
--	D-20	Dispersion Area Station – At a location even with the discharge channel and 1,129 feet offshore: 33°08.219 N; 117°20.580 W
--	D-30	Dispersion Area Station – At a location even with the discharge channel and 1,600 feet offshore: 33°08.183 N; 117°20.675 W
--	D-50	Dispersion Area Station – At a location even with the discharge channel and 2,800 feet offshore: 33°08.114 N; 117°20.908 W
--	E-10	Dispersion Area Station – At a location 1,000 feet downcoast (southerly) of the discharge channel and 652 feet offshore: 33°08.105 N; 117°20.432 W
--	E-20	Dispersion Area Station – At a location 1,000 feet downcoast (southerly) of the discharge channel and 1,086 feet offshore: 33°08.077 N; 117°20.523 W
--	E-30	Dispersion Area Station – At a location 1,000 feet downcoast (southerly) of the discharge channel and 2,000 feet offshore: 33°08.046 N; 117°20.639 W

The North latitude and West longitude information in Table E-1 are approximate for administrative purposes.

III. CORE MONITORING REQUIREMENTS

A. Influent Monitoring Requirements

1. Monitoring Location INF-001 – Cooling Water Intake

Cooling water intake monitoring is the collection and analysis of samples or measurements of wastewater prior to the treatment processes. Cooling water intake monitoring of a process stream prior to entering the Facility is necessary to address the following questions:

(1) Is the Facility complying with permit conditions?

(2) Is compliance with temperature limitations being maintained?

The Discharger shall monitor the cooling intake water at INF-001 as follows:

Table E-2. Influent Monitoring – Cooling Intake Water

Parameter	Units	Sample Type	Minimum Sampling Frequency
Temperature (Average and Maximum Daily)[1]	degrees F	Recorder	Once every 2 Hours
Turbidity	NTU	Grab	Monthly
pH	standard units	Grab	Monthly

[1] Temperature shall be recorded at a minimum frequency of once every two hours. The average and maximum temperatures for each 24-hour period shall be reported. Insignificant figures shall be rounded to the nearest significant figures. The daily average difference (ΔT) and the maximum daily difference (ΔTm) between the intake and the discharge temperatures shall also be reported.

2. Monitoring Location INF-DESAL – Carlsbad Desalination Project Intake

Carlsbad Desalination Project intake monitoring is the reporting of flows withdrawn from the Encina Power Station cooling water discharge channel. Carlsbad Desalination Project intake monitoring is necessary to address the following question:

(1) What is the flow in the discharge channel to the ocean?

The Discharger shall monitor the Carlsbad Desalination Project intake at INF-DESAL as follows:

Table E-3. Influent Monitoring – Carlsbad Desalination Project Intake Water

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter, Estimate, or as obtained from the Carlsbad Desalination Project	Continuous

B. Effluent Monitoring Requirements

Effluent monitoring is the collection and analysis of samples or measurements of effluents, after all treatment processes, to determine and quantify contaminants and to demonstrate compliance with applicable effluent limitations, standards, and other requirements of this Order.

Effluent monitoring is necessary to address the following questions:

(1) Does the effluent comply with permit effluent limitations and other requirements of this Order, thereby ensuring that water quality standards are achieved in the receiving water?

(2) What is the mass of constituents that are discharged daily, monthly, or annually?

(3) Is the effluent concentration or mass changing over time?

(4) What is the volume of effluent being discharged from the Facility?

(5) What is the toxicity in the discharge as compared to the receiving water?

1. Monitoring Location EFF-001 (Discharge Point No. 001)

The Discharger shall monitor the discharge from the Facility to Discharge Point No. 001 at Monitoring Location EFF-001 as follows:

Table E-4. Effluent Monitoring – Monitoring Location EFF-001 (Discharge Point No. 001)

Parameter[2]	Units	Sample Type[1]	Minimum Sampling Frequency
Flow	MGD	Meter or Estimate	Continuous
Turbidity	NTU	Grab	Monthly
pH	standard units	Grab	Monthly
Total Chlorine Residual (during chlorination)[8]	µg/L	Grab	Monthly
Total Chlorine Residual (during no chlorination)[9]	µg/L	Grab	Annually
Chronic Toxicity (General)[10, 11]	Pass/Fail	Composite	Semiannually
Chronic Toxicity (Metal Cleaning)[10,12]	Pass/Fail	Composite	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF MARINE AQUATIC LIFE			
Arsenic	µg/L	Grab	Annually
Cadmium, Total Recoverable	µg/L	Grab	Annually
Chromium VI	µg/L	Grab	Annually
Copper, Total Recoverable	µg/L	Grab	Annually
Nickel, Total Recoverable	µg/L	Grab	Annually
Silver, Total Recoverable	µg/L	Grab	Annually
Lead, Total Recoverable	µg/L	Grab	Annually
Mercury, Total Recoverable	µg/L	Grab	Annually
Selenium, Total Recoverable	µg/L	Grab	Annually
Zinc, Total Recoverable	µg/L	Grab	Annually
Cyanide, Total (as CN)[3]	µg/L	Grab	Annually
Ammonia, Un-ionized (as Nitrogen)	mg/L	Grab	Annually
Phenolic compounds[4] (non-chlorinated)	µg/L	Grab	Annually
Chlorinated phenolics[5]	µg/L	Grab	Annually
Endosulfan[6]	µg/L	Grab	Annually
Endrin	µg/L	Grab	Annually
HCH[7]	µg/L	Grab	Annually
Radioactivity	pCi/L	Grab	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS			
Acrolein	µg/L	Grab	Annually
Antimony, Total Recoverable	µg/L	Grab	Annually
Bis (2-chloroethoxy) Methane	µg/L	Grab	Annually
Bis (2-chloroisopropyl) Ether	µg/L	Grab	Annually
Chlorobenzene	µg/L	Grab	Annually
Chromium (III), Total Recoverable	µg/L	Grab	Annually
Di-n-butyl Phthalate	µg/L	Grab	Annually
Dichlorobenzenes[13]	µg/L	Grab	Annually

Parameter[2]	Units	Sample Type[1]	Minimum Sampling Frequency
Diethyl Phthalate	µg/L	Grab	Annually
Dimethyl Phthalate	µg/L	Grab	Annually
4,6-dinitro-2-methylphenol	µg/L	Grab	Annually
2,4-dinitrophenol	µg/L	Grab	Annually
Ethylbenzene	µg/L	Grab	Annually
Fluoranthene	µg/L	Grab	Annually
Hexachlorocyclopentadiene	µg/L	Grab	Annually
Nitrobenzene	µg/L	Grab	Annually
Thallium, Total Recoverable	µg/L	Grab	Annually
Toluene	µg/L	Grab	Annually
Tributyltin	µg/L	Grab	Annually
1,1,1-trichloroethane	µg/L	Grab	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS			
Acrylonitrile	µg/L	Grab	Annually
Aldrin	µg/L	Grab	Annually
Benzene	µg/L	Grab	Annually
Benzidine	µg/L	Grab	Annually
Beryllium, Total Recoverable	µg/L	Grab	Annually
Bis (2-chloroethyl) Ether	µg/L	Grab	Annually
Bis (2-ethlyhexyl) Phthalate	µg/L	Grab	Annually
Carbon Tetrachloride	µg/L	Grab	Annually
Chlordane[14]	µg/L	Grab	Annually
Chlorodibromomethane (dibromochloromethane)	µg/L	Grab	Annually
Chloroform	µg/L	Grab	Annually
DDT[15]	µg/L	Grab	Annually
1,4-dichlorobenzene	µg/L	Grab	Annually
3,3'-dichlorobenzidine	µg/L	Grab	Annually
1,2-dichloroethane	µg/L	Grab	Annually
1,1-dichloroethylene	µg/L	Grab	Annually
Dichlorobromomethane	µg/L	Grab	Annually
Dichloromethane (Methylene Chloride)	µg/L	Grab	Annually
1,3-dichloropropene (1,3-Dichloropropylene)	µg/L	Grab	Annually
Dieldrin	µg/L	Grab	Annually
2,4-dinitrotoluene	µg/L	Grab	Annually
1,2-diphenylhydrazine	µg/L	Grab	Annually
Halomethanes[16]	µg/L	Grab	Annually
Heptachlor	µg/L	Grab	Annually
Heptachlor Epoxide	µg/L	Grab	Annually
Hexachlorobenzene	µg/L	Grab	Annually
Hexachlorobutadiene	µg/L	Grab	Annually
Hexachloroethane	µg/L	Grab	Annually
Isophorone	µg/L	Grab	Annually
N-nitrosodimethylamine	µg/L	Grab	Annually
N-nitrosodi-N-propylamine	µg/L	Grab	Annually
N-nitrosodiphenylamine	µg/L	Grab	Annually
PAHs[17]	µg/L	Grab	Annually
PCBs[18]	µg/L	Grab	Annually

Parameter[2]	Units	Sample Type[1]	Minimum Sampling Frequency
TCDD equivalents[19]	µg/L	Grab	Annually
1,1,2,2-tetrachloroethane	µg/L	Grab	Annually
Tetrachloroethylene (Tetrachloroethene)	µg/L	Grab	Annually
Toxaphene	µg/L	Grab	Annually
Trichloroethylene (Trichloroethene)	µg/L	Grab	Annually
1,1,2-trichloroethane	µg/L	Grab	Annually
2,4,6-trichlorophenol	µg/L	Grab	Annually
Vinyl Chloride	µg/L	Grab	Annually

1 A composite sample is defined as a combination of 24 aliquots of at least 100 mLs each, collected hourly over a 24-hour period. Each individual aliquot must consist of 4 samples taken at 15-minute intervals. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time off sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

2 As required under 40 CFR part 136, minimum levels (MLs) are specified in Appendix II of the Ocean Plan. The Discharger shall select MLs that are below the effluent limitation or performance goal. If no ML value is below the effluent limitation or performance goal, the Discharger shall select the lowest ML value and its associated analytical method.

3 If a Discharger can demonstrate to the satisfaction of USEPA that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations may be evaluated with the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR part 136. The Discharger shall submit documentation to the San Diego Water Board that the proposed analytical method is approved by the USEPA prior to using the method for monitoring purposes.

4 Non-chlorinated phenolic compounds represent the sum of 2,4-dimethylphenol, 4,6-Dinitro-2-methylphenol, 2,4-dinitrophenol, 2-methylphenol, 4-methylphenol, 2-Nitrophenol, 4-nitrophenol, and phenol.

5 Chlorinated phenolic compounds represent the sum of 4-chloro-3-methylphenol, 2-chlorophenol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.

6 Endosulfan represents the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

7 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (Lindane), and delta isomers of hexachlorocyclohexane.

8 The Total Chlorine Residual (during chlorination) samples shall be collected and analyzed for total chlorine residual at times when the concentrations of total chlorine residual in the combined discharge are greatest. On the day the samples are collected, the duration of chlorination and the time of sample collection shall be reported. The instantaneous chlorine residual limitation for intermittent discharges shall apply to this sample..

9 The Total Chlorine Residual (during no chlorination) sample should be taken when there is no chlorination occurring. The 6-month and daily maximum limits for continuous chlorine discharges shall apply.

10 Chronic toxicity monitoring shall be conducted in accordance with procedures section III.C of this MRP, Attachment E of this Order.

11 Sampling for general chronic toxicity tests should be performed on days where expected inputs from in-plant waste streams are maximized or immediately subsequent to changes in the character of the discharge.

12 During chemical metal cleaning processes, chronic toxicity testing shall be performed. Sampling shall occur at such time as to maximize the input from metal cleaning wastes. The sample shall consist of aliquots taken at least every hour that discharge of such waste occurs for a maximum of

24 hours. It is not necessary to perform toxicity testing during the discharge of Air Heater wash or Hypochlorinator wash waters.

[13] Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

[14] Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[15] DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

[16] Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

[17] PAHs shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[18] PCBs shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

[19] TCDD (Tetrachlorodibenzodioxin) Equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
octa CDF	0.001

2. Monitoring Location – Carlsbad Desalination Project Effluent (EFF-DESAL)

The Discharger shall monitor the discharge from the Carlsbad Desalination Project to Discharge Point No. 001 at Monitoring Location EFF-DESAL as follows:

Table E-5. Effluent Monitoring – Carlsbad Desalination Project Effluent

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter, Estimate, or as obtained from the Carlsbad Desalination Project	Continuous

3. Monitoring Location – Discharge Channel (EFF-CHANN)

The Discharger shall monitor the discharge from the Carlsbad Desalination Project to Discharge Point No. 001 at Monitoring Location EFF-DESAL as follows:

Table E-6. Effluent Monitoring – Discharge Channel

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter, Estimate, or Calculated	Continuous
Temperature (Average and Maximum Daily)[9]	°F	Recorder	Once every 2 Hours

4. Monitoring Location – Chemical and Non-Chemical Metal Cleaning Wastes (INT-001A).

The Discharger shall monitor Chemical and Non-Chemical Metal Cleaning Wastes at Discharge Point 001A as follows:

Table E-7. Effluent Monitoring – Chemical and Non-Chemical Metal Cleaning Wastes

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Flow	MGD	Meter or estimate	Continuous	Monthly
pH	Standard Units	Grab	Prior to discharge	Monthly
Total Suspended Solids	mg/L, lbs/day	Grab	Prior to discharge	Monthly
Oil and Grease	mg/L, lbs/day	Grab	Prior to discharge	Monthly
Iron, Total Recoverable	mg/L, lbs/day	Grab	Prior to discharge	Monthly
TABLE 1 PARAMETERS FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic	µg/L	Grab	Prior to discharge	Annually
Cadmium, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Chromium VI	µg/L	Grab	Prior to discharge	Annually
Copper, Total Recoverable	µg/L	Grab	Prior to discharge	Monthly
Nickel, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Silver, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Lead, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Mercury, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Selenium, Total Recoverable	µg/L	Grab	Prior to discharge	Annually

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Zinc, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Cyanide, Total (as CN) [3]	µg/L	Grab	Prior to discharge	Annually
Ammonia, Un-ionized (as Nitrogen)	mg/L	Grab	Prior to discharge	Annually
Phenolic compounds[4] (non-chlorinated)	µg/L	Grab	Prior to discharge	Annually
Chlorinated phenolics[5]	µg/L	Grab	Prior to discharge	Annually
Endosulfan[6]	µg/L	Grab	Prior to discharge	Annually
Endrin	µg/L	Grab	Prior to discharge	Annually
HCH[7]	µg/L	Grab	Prior to discharge	Annually
Radioactivity	pCi/L	Grab	Prior to discharge	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS				
Acrolein	µg/L	Grab	Prior to discharge	Annually
Antimony, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Bis (2-chloroethoxy) Methane	µg/L	Grab	Prior to discharge	Annually
Bis (2-chloroisopropyl) Ether	µg/L	Grab	Prior to discharge	Annually
Chlorobenzene	µg/L	Grab	Prior to discharge	Annually
Chromium (III), Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Di-n-butyl Phthalate	µg/L	Grab	Prior to discharge	Annually
Dichlorobenzenes[9]	µg/L	Grab	Prior to discharge	Annually
Diethyl Phthalate	µg/L	Grab	Prior to discharge	Annually
Dimethyl Phthalate	µg/L	Grab	Prior to discharge	Annually
4,6-dinitro-2-methylphenol	µg/L	Grab	Prior to discharge	Annually
2,4-dinitrophenol	µg/L	Grab	Prior to discharge	Annually
Ethylbenzene	µg/L	Grab	Prior to discharge	Annually
Fluoranthene	µg/L	Grab	Prior to discharge	Annually

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Hexachlorocyclopentadiene	µg/L	Grab	Prior to discharge	Annually
Nitrobenzene	µg/L	Grab	Prior to discharge	Annually
Thallium, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Toluene	µg/L	Grab	Prior to discharge	Annually
Tributyltin	µg/L	Grab	Prior to discharge	Annually
1,1,1-trichloroethane	µg/L	Grab	Prior to discharge	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS				
Acrylonitrile	µg/L	Grab	Prior to discharge	Annually
Aldrin	µg/L	Grab	Prior to discharge	Annually
Benzene	µg/L	Grab	Prior to discharge	Annually
Benzidine	µg/L	Grab	Prior to discharge	Annually
Beryllium, Total Recoverable	µg/L	Grab	Prior to discharge	Annually
Bis (2-chloroethyl) Ether	µg/L	Grab	Prior to discharge	Annually
Bis (2-ethlyhexyl) Phthalate	µg/L	Grab	Prior to discharge	Annually
Carbon Tetrachloride	µg/L	Grab	Prior to discharge	Annually
Chlordane[10]	µg/L	Grab	Prior to discharge	Annually
Chlorodibromomethane (dibromochloromethane)	µg/L	Grab	Prior to discharge	Annually
Chloroform	µg/L	Grab	Prior to discharge	Annually
DDT[11]	µg/L	Grab	Prior to discharge	Annually
1,4-dichlorobenzene	µg/L	Grab	Prior to discharge	Annually
3,3'-dichlorobenzidine	µg/L	Grab	Prior to discharge	Annually
1,2-dichloroethane	µg/L	Grab	Prior to discharge	Annually
1,1-dichloroethylene	µg/L	Grab	Prior to discharge	Annually
Dichlorobromomethane	µg/L	Grab	Prior to discharge	Annually

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Dichloromethane (Methylene Chloride)	µg/L	Grab	Prior to discharge	Annually
1,3-dichloropropene (1,3-Dichloropropylene)	µg/L	Grab	Prior to discharge	Annually
Dieldrin	µg/L	Grab	Prior to discharge	Annually
2,4-dinitrotoluene	µg/L	Grab	Prior to discharge	Annually
1,2-diphenylhydrazine	µg/L	Grab	Prior to discharge	Annually
Halomethanes[12]	µg/L	Grab	Prior to discharge	Annually
Heptachlor	µg/L	Grab	Prior to discharge	Annually
Heptachlor Epoxide	µg/L	Grab	Prior to discharge	Annually
Hexachlorobenzene	µg/L	Grab	Prior to discharge	Annually
Hexachlorobutadiene	µg/L	Grab	Prior to discharge	Annually
Hexachloroethane	µg/L	Grab	Prior to discharge	Annually
Isophorone	µg/L	Grab	Prior to discharge	Annually
N-nitrosodimethylamine	µg/L	Grab	Prior to discharge	Annually
N-nitrosodi-N-propylamine	µg/L	Grab	Prior to discharge	Annually
N-nitrosodiphenylamine	µg/L	Grab	Prior to discharge	Annually
PAHs[13]	µg/L	Grab	Prior to discharge	Annually
PCBs[14]	µg/L	Grab	Prior to discharge	Annually
TCDD equivalents[15]	µg/L	Grab	Prior to discharge	Annually
1,1,2,2-tetrachloroethane	µg/L	Grab	Prior to discharge	Annually
Tetrachloroethylene (Tetrachloroethene)	µg/L	Grab	Prior to discharge	Annually
Toxaphene	µg/L	Grab	Prior to discharge	Annually
Trichloroethylene (Trichloroethene)	µg/L	Grab	Prior to discharge	Annually
1,1,2-trichloroethane	µg/L	Grab	Prior to discharge	Annually

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency	Reporting Frequency
2,4,6-trichlorophenol	µg/L	Grab	Prior to discharge	Annually
Vinyl Chloride	µg/L	Grab	Prior to discharge	Annually

[1] Analytical test methods and MLs, as required under 40 CFR part 136, are specified in Appendix II of the Ocean Plan. The Discharger shall select MLs that are below the effluent limitation or performance goal. If no ML value is below the effluent limitation or performance goal, the Discharger shall select the lowest ML value and its associated analytical method.

[2] The Discharger shall calculate and report the mass emission rate (MER) of each sampled constituent unless otherwise specified. The MER shall be calculated using the following general formulas: Parameter Concentration (if expressed as mg/L) x Flow Limit (expressed as MGD) x 8.34 (conversion factor) = Mass as lbs/day. Parameter Concentration (if expressed as µg/L) x Flow Limit (expressed as MGD) x 0.00834 (conversion factor) = Mass- expressed as lbs/day.

[3] If a Discharger can demonstrate to the satisfaction of USEPA that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations may be evaluated with the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR part 136. The Discharger shall submit documentation to the San Diego Water Board that the proposed analytical method is approved by the USEPA prior to using the method for monitoring purposes.

[4] Non-chlorinated phenolic compounds represent the sum of 2,4-dimethylphenol, 4,6-Dinitro-2-methylphenol, 2,4-dinitrophenol, 2-methylphenol, 4-methylphenol, 2-Nitrophenol, 4-nitrophenol, and phenol.

[5] Chlorinated phenolic compounds represent the sum of 4-chloro-3-methylphenol, 2-chlorophenol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.

[6] Endosulfan represents the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

[7] HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (Lindane), and delta isomers of hexachlorocyclohexane.

[8] Chronic toxicity monitoring shall be conducted in accordance with procedures section III.C of this MRP, Attachment E of this Order.

[9] Dichlorobenzenes shall mean the sum of 1,2- and 1,3-dichlorobenzene.

[10] Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[11] DDT shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

[12] Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

[13] PAHs shall mean the sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene.

[14] PCBs shall mean the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

[15] TCDD (Tetrachlorodibenzodioxin) Equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
octa CDF	0.001

5. Low-Volume, Miscellaneous Wastewaters (INT-001B, INT-001C, INT-001D, INT-001E, and INT-001H)

For the purposes of monitoring, the following wastewaters are considered low-volume, miscellaneous wastewaters: seepage and groundwater pumping, boiler blowdown, freshwater reverse osmosis (RO) brine, seawater RO brine, and LVWTF wastewaters.

The flow rate used to determine the proportion of each waste stream in the composited sample shall be the actual (preferred) or estimated flow rate for the day and time on which samples are collected.

Mass emissions (lbs/day) are calculated by the following equation. The flow rate used for calculation shall be the flow rate of the individual waste stream at the time of sampling.

lbs/day = 8.34 x Ce x Q where:

Ce = the effluent concentration limit, mg/l

Q = flow rate, million gallons per day (MGD)

Reported values should result from individual grab samples of in-plant waste streams that are collected and composited on a flow-weighted basis. Measurements or estimates of flows of individual waste streams used as a basis for compositing shall be reported as well as the names of all waste streams sampled.

A composite sample shall be created from as many individual low-volume wastewaters as possible. Individual low-volume wastewaters that have no flow on the day of sample collection would, however, not be included in a composite sample.

The Discharger shall monitor Low-Volume Waste flows and analyze the flow-weighted composite sample as follows:

Table E-8. Effluent Monitoring – Combined Low-Volume, Internal Wastewaters (INT-001B through INT-001E and INT-001H)

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency[3]
Flow	MGD	Meter or Estimate	Monthly

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency[3]
pH	standard units	Flow Weighted Composite	Monthly
Total Suspended Solids	mg/L, lbs/day	Flow Weighted Composite	Monthly
Oil and Grease	mg/L, lbs/day	Flow Weighted Composite	Monthly
TABLE 1 PARAMETERS FOR PROTECTION OF MARINE AQUATIC LIFE			
Arsenic	µg/L	Grab	Annually
Cadmium, Total Recoverable	µg/L	Grab	Annually
Chromium VI[4]	µg/L	Grab	Semiannually
Copper, Total Recoverable	µg/L	Grab	Monthly
Nickel, Total Recoverable	µg/L	Grab	Annually
Silver, Total Recoverable	µg/L	Grab	Annually
Lead, Total Recoverable	µg/L	Grab	Annually
Mercury, Total Recoverable	µg/L	Grab	Semiannually
Selenium, Total Recoverable	µg/L	Grab	Annually
Zinc, Total Recoverable	µg/L	Grab	Annually
Cyanide, Total (as CN)[5]	µg/L	Grab	Monthly
Ammonia, Un-ionized (as Nitrogen)	mg/L	Grab	Annually
Phenolic compounds[6] (non-chlorinated)	µg/L	Grab	Annually
Chlorinated phenolics[7]	µg/L	Grab	Annually
Endosulfan[8]	µg/L	Grab	Annually
Endrin	µg/L	Grab	Annually
HCH[9]	µg/L	Grab	Annually
Radioactivity	pCi/L	Grab	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS			
Acrolein	µg/L	Grab	Annually
Antimony, Total Recoverable	µg/L	Grab	Annually
Bis (2-chloroethoxy) Methane	µg/L	Grab	Annually
Bis (2-chloroisopropyl) Ether	µg/L	Grab	Annually
Chlorobenzene	µg/L	Grab	Annually
Chromium (III), Total Recoverable	µg/L	Grab	Annually
Di-n-butyl Phthalate	µg/L	Grab	Annually
Dichlorobenzenes[10]	µg/L	Grab	Annually
Diethyl Phthalate	µg/L	Grab	Annually
Dimethyl Phthalate	µg/L	Grab	Annually
4,6-dinitro-2-methylphenol	µg/L	Grab	Annually
2,4-dinitrophenol	µg/L	Grab	Annually
Ethylbenzene	µg/L	Grab	Annually
Fluoranthene	µg/L	Grab	Annually
Hexachlorocyclopentadiene	µg/L	Grab	Annually
Nitrobenzene	µg/L	Grab	Annually
Thallium, Total Recoverable	µg/L	Grab	Annually
Toluene	µg/L	Grab	Annually
Tributyltin	µg/L	Grab	Annually
1,1,1-trichloroethane	µg/L	Grab	Annually
TABLE 1 PARAMETERS FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS			
Acrylonitrile	µg/L	Grab	Annually
Aldrin	µg/L	Grab	Annually

Parameter[1]	Units[2]	Sample Type	Minimum Sampling Frequency[3]
Benzene	µg/L	Grab	Annually
Benzidine	µg/L	Grab	Annually
Beryllium, Total Recoverable	µg/L	Grab	Annually
Bis (2-chloroethyl) Ether	µg/L	Grab	Annually
Bis (2-ethlyhexyl) Phthalate	µg/L	Grab	Annually
Carbon Tetrachloride	µg/L	Grab	Annually
Chlordane[11]	µg/L	Grab	Annually
Chlorodibromomethane (dibromochloromethane)	µg/L	Grab	Annually
Chloroform	µg/L	Grab	Annually
DDT[12]	µg/L	Grab	Annually
1,4-dichlorobenzene	µg/L	Grab	Annually
3,3'-dichlorobenzidine	µg/L	Grab	Annually
1,2-dichloroethane	µg/L	Grab	Annually
1,1-dichloroethylene	µg/L	Grab	Annually
Dichlorobromomethane	µg/L	Grab	Annually
Dichloromethane (Methylene Chloride)	µg/L	Grab	Annually
1,3-dichloropropene (1,3-Dichloropropylene)	µg/L	Grab	Annually
Dieldrin	µg/L	Grab	Annually
2,4-dinitrotoluene	µg/L	Grab	Annually
1,2-diphenylhydrazine	µg/L	Grab	Annually
Halomethanes[13]	µg/L	Grab	Annually
Heptachlor	µg/L	Grab	Annually
Heptachlor Epoxide	µg/L	Grab	Annually
Hexachlorobenzene	µg/L	Grab	Annually
Hexachlorobutadiene	µg/L	Grab	Annually
Hexachloroethane	µg/L	Grab	Annually
Isophorone	µg/L	Grab	Annually
N-nitrosodimethylamine	µg/L	Grab	Annually
N-nitrosodi-N-propylamine	µg/L	Grab	Annually
N-nitrosodiphenylamine	µg/L	Grab	Annually
PAHs[14]	µg/L	Grab	Annually
PCBs[15]	µg/L	Grab	Annually
TCDD equivalents[16]	µg/L	Grab	Annually
1,1,2,2-tetrachloroethane	µg/L	Grab	Annually
Tetrachloroethylene (Tetrachloroethene)	µg/L	Grab	Annually
Toxaphene	µg/L	Grab	Annually
Trichloroethylene (Trichloroethene)	µg/L	Grab	Annually
1,1,2-trichloroethane	µg/L	Grab	Annually
2,4,6-trichlorophenol	µg/L	Grab	Annually
Vinyl Chloride	µg/L	Grab	Annually

[1] Analytical rest methods and MLs as required under 40 CFR part 136, are specified in Appendix II of the Ocean Plan. The Discharger shall select MLs that are below the effluent limitation or performance goal. If no ML value is below the effluent limitation or performance goal, the Discharger shall select the lowest ML value and its associated analytical method.

[2] The Discharger shall calculate and report the mass emission rate (MER) for each sampled constituent unless otherwise specified. The MER shall be calculated using the following general

formulas: Parameter Concentration (if expressed as mg/L) x Flow Limit (expressed as MGD) x 8.34 (conversion factor) = Mass as lbs/day. Parameter Concentration (if expressed as µg/L) x Flow Limit (expressed as MGD) x 0.00834 (conversion factor) = Mass- expressed as lbs/day.

[3] The minimum frequency of monitoring for this constituent is automatically increased to twice the minimum frequency specified, if the analysis for any constituent yields a result higher than the applicable effluent limitation or performance goal specified in this Order. For example, semiannual monitoring will become quarterly monitoring. The increased minimum frequency of monitoring shall remain in effect until the results of a minimum of four consecutive analyses for this constituent are below all applicable effluent limitations or performance goals specified in this Order.

[4] The Discharger may, at their option, report total chromium instead of chromium VI.

[5] If a Discharger can demonstrate to the satisfaction of USEPA that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations may be evaluated with the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR part 136. The Discharger shall submit documentation to the San Diego Water Board that the proposed analytical method is approved by the USEPA and the State Water Board prior to using the method for monitoring purposes.

[6] Non-chlorinated phenolic compounds represent the sum of 2,4-dimethylphenol, 4,6-Dinitro-2-methylphenol, 2,4-dinitrophenol, 2-methylphenol, 4-methylphenol, 2-Nitrophenol, 4-nitrophenol, and phenol.

[7] Chlorinated phenolic compounds represent the sum of 4-chloro-3-methylphenol, 2-chlorophenol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.

[8] Endosulfan represents the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

[9] HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (Lindane), and delta isomers of hexachlorocyclohexane.

[10] Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

[11] Chlordane shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[12] DDT represents the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.

[13] Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

[14] PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenapthalene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[a,h]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

[15] PCBs represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

[16] TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
Octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

C. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity (WET) refers to the overall aggregate toxic effect of an effluent measured directly by an aquatic toxicity test(s). The control of WET is one approach this Order uses to control the discharge of toxic pollutants. WET tests evaluate 1) the aggregate toxic effects of all chemicals in the effluent including additive, synergistic, or antagonistic toxicity effects; 2) the toxicity effects of unmeasured chemicals in the effluent; and 3) variability in bioavailability of the chemicals in the effluent.

Monitoring to assess the overall toxicity of the effluent is required to answer the following questions:

(1) Does the effluent comply with permit effluent limitations for toxicity thereby ensuring that water quality standards are achieved in the receiving water?

(2) If the effluent does not comply with permit effluent limitations for toxicity, are unmeasured pollutants causing risk to aquatic life?

(3) If the effluent does not comply with permit effluent limitations for toxicity, are pollutants in combinations causing risk to aquatic life?

1. Monitoring Frequency for Chronic Toxicity

The Discharger shall conduct semiannual chronic toxicity monitoring of the combined discharge from Discharge Point No. 001 at Monitoring Location EFF-001 at specified in section III.B.1, Table E-4 of this Order.

2. Sample Volume and Holding Time

The total sample volume shall be determined by the specific toxicity test method that is used. Sufficient sample volume shall be collected to perform the required toxicity test. Sufficient sample volume shall also be collected during accelerated monitoring for subsequent Toxicity Identification Evaluation (TIE) studies, if necessary, at each sampling event. All toxicity tests shall be conducted as soon as possible following sample collection. No more than 36 hours shall elapse before the conclusion of sample collection and test initiation. The 36-hour sample holding time for test initiation shall be targeted. However, no more than 72 hours shall elapse before the conclusion of sample collection and test initiation.

3. Marine and Estuarine Species and Test Methods

The Discharger shall conduct a species sensitivity screening for chronic toxicity on a representative sample which shall include one vertebrate, one invertebrate, and one aquatic plant during the first required monitoring period. The species sensitivity screening samples shall also be analyzed for the parameters required for the discharge. The test species that exhibits the highest percent effect at the Instream Waste Concentration (IWC) during a species sensitivity screening (i.e. the most sensitive species) shall be utilized for routine monitoring during the permit cycle. The IWC for this discharge is 6.5 percent effluent.

The Discharger shall follow the methods for chronic toxicity tests as established in 40 CFR section 136.3. The USEPA method manuals referenced therein include *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition* (EPA-821-R-02-014). Additional methods for chronic toxicity monitoring are outlined in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving*

Waters to West Coast Marine and Estuarine Organisms, First Edition (EPA-600-R-95-136).

For discharges to marine and estuarine waters, the Discharger shall conduct a static renewal toxicity test with the topsmelt, *Atherinops affinis* (Larval Survival and Growth Test Method 1006.01); a static non-renewal toxicity test with the giant kelp, *Macrocystis pyrifera* (Germination and Growth Test Method 1009.0); and a static non-renewal toxicity test with the purple sea urchin, *Strongylocentrotus purpuratus* (Fertilization Test Method 1008.0 or Embryo-Larval Development Test Method), or the sand dollar, *Dendraster excentricus* (Fertilization Test Method 1008.0 or Embryo-Larval Development Test Method), or the red abalone, *Haliotis rufescens* (Embryo-Larval Development).

If laboratory-held cultures of the topsmelt, *Atherinops affinis*, are not available for testing, then the Discharger shall conduct a static renewal toxicity test with the inland silverside, *Menidia beryllina* (Larval Survival and Growth Test Method 1006.01), found in the third edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821/R-02/014, 2002; Table IA, 40 CFR part 136). Additional species may be used by the Discharger if approved by the San Diego Water Board.

4. **Compliance Determination**

The MDEL for chronic toxicity is exceeded and a violation will be flagged when a chronic toxicity test, analyzed using the TST statistical approach, results in "Fail" and the "Percent Effect" is greater than or equal to 50%.

The determination of "pass" or "fail" from a chronic toxicity test at the IWC of 6.5 percent effluent shall be determined using the TST approach described in the *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010).

The Discharger shall report the results of reasonable potential analyses, species sensitivity screenings, and routine toxicity tests to the San Diego Water Board as either a "pass" or a "fail" at the IWC, in accordance with the TST approach and provide the calculated percent effect at the IWC. The methodology for determining "pass", "fail", and "percent effect" is provided below.

Pass

A chronic toxicity test result that rejects the null hypothesis (Ho) below is reported as "pass" in accordance with the TST approach:

Ho: Mean response (6.5 percent effluent) ≤ 0.75 × Control mean response

Fail

A chronic toxicity test result that does not reject the null hypothesis (Ho) above is reported as "fail" in accordance with the TST approach.

Percent Effect

The percent effect at the IWC is calculated for each chronic toxicity test result using the following equation:

$$\% \text{ Effect at IWC} = \frac{\text{Mean Control Response - Mean IWC Response} * 100}{\text{Mean Control Response}}$$

5. **Chronic Toxicity MDEL Exceedance Follow-up Action**

A chronic toxicity test result during routine monitoring indicating a "fail" with a percent effect at or above 50% is an exceedance of the chronic toxicity MDEL. The Discharger shall implement corrective action to abate the source of the toxicity within 24 hours from the time the Discharger becomes aware of an MDEL exceedance, if the source of toxicity is known (e.g. operational upset). The Discharger shall also conduct an additional toxicity test within 14 days after receiving results of an exceedance.

6. **Accelerated Chronic Toxicity Testing Monitoring Schedule**

When the follow-up chronic toxicity test results in a "fail", the Discharger shall implement an accelerated chronic toxicity monitoring schedule of four samples (one every other week for 8 weeks). In preparation for the TRE process and associated reporting, these results shall also be reported using the EC25. If all of the additional tests result in a "pass" or a "fail" at a percent effect less than 25%, the Discharger may return to routine monitoring for the following monitoring period. If any one of the additional tests result in a "fail" and exhibit a percent effect equal to or greater than 25%, the Discharger shall implement an approved Toxicity Reduction Evaluation (TRE) Work Plan as set forth below in section III.C.8 of this MRP.

7. **Quality Assurance (QA)**

Quality assurance (QA) measures, instructions, and other recommendations and requirements are found in the test methods manual previously referenced. Additional requirements are specified below.

The discharge is subject to determination of "Pass" or "Fail" from a chronic toxicity test using the Test of Significant Toxicity (TST) statistical t-test approach described in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010), Appendix A, Figure A-1 and Table A-1 and Appendix B, Table B-1. The null hypothesis (Ho) for the TST statistical approach is: Mean discharge IWC response ≤0.75 × Mean control response. A test result that rejects this null hypothesis is reported as "Pass". A test result that does not reject this null hypothesis is reported as "Fail". The relative "Percent Effect" at the discharge IWC is defined and reported as: ((Mean control response - Mean discharge IWC response) ÷ Mean control response)) × 100. This is a t-test (formally Student's t-Test), a statistical analysis comparing two sets of replicate observations—in the case of TST, only two test concentrations (i.e., a control and IWC). The purpose of this statistical test is to determine if the means of the two sets of observations are different (i.e., if the IWC or receiving water concentration differs from the control (the test result is "Pass" or "Fail")). The Welch's t-test employed by the TST statistical approach is an adaptation of Student's t-test and is used with two samples having unequal variances.

The chronic toxicity MDEL is set at the IWC for the discharge (6.5 percent effluent) and expressed in units of the TST statistical approach ("Pass" or "Fail", "Percent Effect"). All NPDES effluent compliance monitoring for the chronic toxicity MDEL shall be reported using the 6.5 percent effluent concentration and negative control, expressed in units of the TST. The TST hypothesis (Ho) (see above) is statistically analyzed using the IWC and a negative control. Effluent

toxicity tests shall be run using a multi-concentration test design when required by *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (U.S. EPA 2002, EPA-821-R-02-014). The San Diego Board's review of reported toxicity test results will include review of concentration-response patterns as appropriate (see Fact Sheet discussion at IV.C.5). As described in the bioassay laboratory audit directives to the San Jose Creek Water Quality Laboratory from the State Water Resources Control Board dated August 7, 2014, and from the USEPA dated December 24, 2013, the Percent Minimum Significant Difference (PMSD) criteria only apply to compliance reporting for the no observed effect concentration (NOEC) and the sublethal statistical endpoints of the NOEC, and therefore are not used to interpret TST results. Standard Operating Procedures used by the toxicity testing laboratory to identify and report valid, invalid, anomalous, or inconclusive effluent (and receiving water) toxicity test measurement results from the TST statistical approach, including those that incorporate a consideration of concentration-response patterns, must be submitted to the San Diego Water Board (40 CFR section 122.41(h)). The San Diego Water Board will make a final determination as to whether a toxicity test result is valid, and may consult with the Discharger, USEPA, the State Water Board's Quality Assurance Officer, or the State Water Board's Environmental Laboratory Accreditation Program as needed. The Board may consider results of any Toxicity Reduction Evaluation (TRE) / TIE studies in an enforcement action.

a. This discharge is subject to a determination of "Pass" or "Fail" from a toxicity test at the IWC (for statistical flowchart and procedures, see *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document*, Appendix A, Figure A-1). The chronic IWC for the combined discharge at Discharge Point 001 is 6.5 percent effluent.

b. Effluent dilution water and control water should be prepared and used as specified in the test methods manual *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012, 2002); or, for *Atherinops affinis, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used.

c. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

d. All multi-concentration reference toxicant test results must be reviewed and reported according to USEPA guidance on the evaluation of concentration-response relationships found in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR part 136) (EPA 821-B-00-004, 2000).

e. If the effluent toxicity test does not meet all test acceptability criteria (TAC) specified in the referenced test method, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and

Estuarine Organisms (U.S. EPA 2002, EPA-821-R-02-014), then the Discharger must resample and re-test within 14 days.

f. Monthly reference toxicant testing is sufficient. All reference toxicant test results should be reviewed and reported using the EC25.

8. **Toxicity Reduction Evaluation (TRE)**

a. **TRE Work Plan Submittal**. The Discharger shall prepare and submit a TRE Work Plan to the San Diego Water Board no later than 90 days of the effective date of this permit. If the San Diego Water Board does not disapprove the work plan within 60 days, the work plan shall become effective.

b. **TRE Work Plan**. The TRE Work Plan shall be in conformance with the USEPA manual *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (EPA/600/2-88/070, 1989)* or most current version. This work plan shall describe the steps that the Discharger intends to follow if toxicity is detected. The TRE Work Plan shall also include the following information:

i. A description of the investigation and evaluation techniques that will be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency;

ii. A description of the Facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in the operation of the Facility; and

iii. If a TIE is necessary, an indication of the person who would conduct the TIEs (i.e., an in-house expert or an outside contractor).

c. **TRE Work Plan Implementation**. The Discharger shall implement the TRE Work Plan as required by section III.C.6 unless otherwise directed in writing by the San Diego Water Board. The Discharger shall comply with any additional conditions set by the San Diego Water Board. During the TRE Process, semiannual effluent monitoring shall resume and TST results ("Pass" or "Fail", "Percent Effect") for chronic toxicity tests shall be reported as effluent compliance monitoring results for the chronic toxicity MDEL. TRE work plan implementation shall include the following elements:

i. The Discharger shall immediately initiate a TRE using, according to the type of treatment facility, USEPA TRE manual, *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070, 1989), and, within 15 days, submit to the San Diego Water Board a Detailed TRE work plan, which shall follow the TRE work plan revised as appropriate for this toxicity event. It shall include the following information, and comply with additional conditions set by the San Diego Water Board:

(a) Further actions by the Discharger to investigate, identify, and correct the causes of toxicity.

(b) Actions the Discharger will take to mitigate the effects of the discharge and prevent the recurrence of toxicity.

(c) A schedule for these actions, progress reports, and the final report.

ii. Many recommended TRE elements parallel required or recommended efforts for source control, pollution prevention, and storm water control programs. TRE efforts should be coordinated with such efforts. As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the sources 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 toxicity evaluation parameters.

iii. The Discharger shall continue to conduct routine effluent monitoring for compliance determination purposes while the TRE and/or TIE process is taking place. Additional accelerated monitoring and TRE work plans are not required once a TRE is begun.

iv. The San Diego Water Board recognizes that toxicity may be episodic and identification of causes and reduction of sources of toxicity may not be successful in all cases. The TRE may be ended at any stage if monitoring finds there is no longer toxicity.

v. The San Diego Water Board may consider the results of any TRE/TIE studies in an enforcement action.

d. TRE Progress Reports. The Discharger shall prepare and provide written semiannual progress reports that (1) describe the actions that have been taken toward achieving compliance with the chronic toxicity MDEL for the previous six months; (2) describe all activities including, data collection and other field activities which are scheduled for the next year and provide other information relating to the progress of work; (3) identify any modifications to the compliance plans that the Discharger proposed to the San Diego Water Board or that have been approved by San Diego Water Board during the previous six months; and (4) include information regarding all delays encountered or anticipated that may affect the future schedule for completion of the actions required to attain compliance with the MDEL, and a description of all efforts made to mitigate those delays or anticipated delays. These progress reports shall be submitted to the San Diego Water Board semiannually by February 1 and August 1 each year following the adoption of this Order in accordance with the semiannual reporting schedule in Table E-3. Submission of these progress reports shall continue until compliance with the MDEL is achieved.

e. Toxicity Identification Evaluation (TIE). Based upon the magnitude and persistence of the chronic toxicity, the Discharger may initiate a TIE as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, the following USEPA manuals:

i. *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/600/6-91/003, 1991);

ii. *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080, 1993);

iii. *Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/081, 1993); and

iv. *Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996).

If a TIE is undertaken, the Discharger shall prepare and submit a work plan to the San Diego Water Board containing the following elements and comply with any conditions set by the Board:

i. Criteria for initiating a TIE on a sample;

ii. Roles and responsibilities of the team conducting the TIE;

iii. Study design, sample treatments, and chemical analysis;

iv. Data evaluation and communication;

v. Follow-up actions; and

vi. A schedule for completion of all activities and submission of a final report.

9. **Violations**

An exceedance of the MDEL during routine monitoring is a violation. Any exceedances occurring during a required accelerated monitoring period and, if appropriate, a TRE period shall not constitute additional violations provided that (1) the Discharger proceeds with the accelerated monitoring and TRE (if required) in a timely manner; and (2) the accelerated monitoring and TRE are completed within one year of the initial exceedance. The San Diego Water Board has the discretion to impose additional violations and initiate an enforcement action for toxicity tests that result in a "fail" after one year from the initial violation. Additionally, the Discharger's failure to initiate an accelerated monitoring schedule or conduct a TRE, as required by this Order, will result in all exceedances being considered violations of the MDEL and may result in the initiation of an enforcement action.

10. **Reporting of Toxicity Monitoring Results**

The Discharger shall submit in the monitoring reports:

a. The valid toxicity test results for the TST statistical approach, reported as "Pass" or "Fail" and "Percent Effect" at the chronic toxicity IWC for the discharge.

b. A full laboratory report for each toxicity test as an attachment to the monitoring report. The laboratory report shall contain the toxicity test results; the dates of sample collection and initiation of each toxicity test; and all

results for effluent parameters monitored concurrently with the toxicity test(s). All toxicity test (whether identified as valid or invalid) conducted during the monitoring period shall be reported. The report shall be prepared using the format and content of the test methods manual chapter called Report Preparation.

c. The actual test endpoint responses for the control (i.e., the control mean) and the IWC (i.e., the IWC mean) for each toxicity test to facilitate the review of test results and determination of reasonable potential for toxicity by the permitting authority.

d. Summary water quality measurements for each toxicity test (e.g., pH, dissolved oxygen, temperature, conductivity, hardness, salinity, chlorine, ammonia).

e. The statistical analysis used in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010) Appendix A, Figure A-1 and Table A-1, and Appendix B, Table B-1.

f. TRE/TIE results.

g. Statistical program (e.g., TST calculator, CETIS, etc.) output results, including graphical plots, for each toxicity test.

h. Any additional QA/QC documentation or any additional chronic toxicity-related information.

D. Land Discharge Monitoring Requirements – Not Applicable

E. Recycling Monitoring Requirements – Not Applicable

IV. RECEIVING WATER MONITORING REQUIREMENTS

The receiving water and sediment monitoring requirements set forth below are designed to measure the effects of the discharge on the receiving ocean waters. The overall receiving water monitoring program is intended to answer the following questions:

(1) Does the receiving water meet water quality standards?

(2) Are the receiving water conditions getting better or worse over time?

(3) What is the relative contribution of the Facility discharge to pollution in the receiving water?

Receiving water monitoring shall be conducted as specified below. The receiving water monitoring requirements may be modified by the San Diego Water Board at any time.

A. Dispersion and Reference Area Stations

1. The Discharger shall monitor the Pacific Ocean at Monitoring Locations A-10, A-20, A-30, A-50, C-10, C-20, C-30, D-10, D-20, D-30, D-50, E-10, E-20, and E-30 as specified in the following table:

Table E-9. Receiving Water Monitoring

Parameter[1]	Units	Sample Type	Minimum Sampling Frequency
Light Transmittance (Secchi Disk)	feet	--	Semiannually
Dissolved Oxygen	mg/L	Grab	Semiannually
pH	standard units	Grab	Semiannually
Thermal Plume[3]	--	--	Semiannually

[1] Required analytical test methods and MLs, as required under 40 CFR part 136, MLs are specified in Appendix II of the Ocean Plan. If no ML value is below the effluent limitation or performance goal, the Discharger shall select the lowest ML value and its associated analytical method.

[2] The thermal plume shall be characterized via infrared mapping on a semiannual basis.

2. The Discharger shall submit a Receiving Water Monitoring Report annually containing the following information

a. Analysis. An evaluation, interpretation and tabulation of the receiving water monitoring data specified in Table E- including interpretations and conclusions as to whether applicable Receiving Water Limitations in this Order have been attained at each sample station and a comparison of data from the reference station(s) with stations located in the area of the discharge.

b. Sample Location Map. The locations, type, and number of samples shall be identified and shown on a site map.

c. Methods and Equipment. A description of the methods and equipment used to obtain the data.

d. Environmental Data Exchange Network. A statement certifying that the monitoring data and results have been uploaded into the California Environmental Data Exchange Network (CEDEN).

V. REGIONAL MONITORING REQUIREMENTS

Regional ocean water monitoring provides information about the sources, fates, and effects of anthropogenic contaminants in the coastal marine environment necessary to make assessments over large areas. The large scale assessments provided by regional monitoring describe and evaluate cumulative effects of all anthropogenic inputs and enable better decision making regarding protection of beneficial uses of ocean waters. Regional monitoring data assists in the interpretation of core monitoring studies by providing a more accurate and complete characterization of reference conditions and natural variability. Regional monitoring also leads to methods standardization and improved quality control through intercalibration exercise. Regional monitoring, enables sharing of technical resources, trained personnel and associated costs. Focusing these resources on regional issues and developing a broader understanding of pollutants effects in ocean waters enables the development of more rapid and effective response strategies. Based on all of these considerations the San Diego Water Board supports regional approaches to monitoring ocean waters.

The Discharger shall, as directed by the San Diego Water Board, participate with other regulated entities, other interested parties, and the San Diego Water Board in development and implementation of new and improved monitoring and assessment programs for ocean

waters in the San Diego Region and discharges to those waters. These programs shall be developed and implemented so as to:

(1) Determine the status and trends of conditions in ocean waters in the San Diego Region with regard to beneficial uses, e.g.,

i. Are fish and shellfish safe to eat?

ii. Is water quality safe for swimming?

iii. Are ecosystems healthy?

(2) Identify the primary stressors causing or contributing to conditions of concern;

(3) Identify the major sources of the stressors causing or contributing to conditions of concern; and

(4) Evaluate the effectiveness (i.e., environmental outcomes) of actions taken to address such stressors and sources.

Development and implementation of new and improved monitoring and assessment programs for ocean waters will be guided by the following:

1. *Water Quality Control Plan Ocean Waters of California* (Ocean Plan);

2. San Diego Water Board Resolution No. R9-2012-0069, "*Resolution in Support of A Regional Monitoring Framework*;"

3. San Diego Water Board staff report entitled "*A Framework for Monitoring and Assessment in the San Diego Region*;" and

4. Other guidance materials, as appropriate.

A. Kelp Bed Canopy Monitoring

Kelp consists of a number of species of brown algae. Along the central and southern California coast, giant kelp (*Macrocystis pyrifera*) is the largest species colonizing rocky, and in some cases sandy, subtidal habitats. Giant kelp is an important component of coastal and island communities in southern California, providing food and habitat for numerous animals. Monitoring of the kelp beds is necessary to answer the following questions:

(1) What is the maximum areal extent of the coastal kelp bed canopies each year?

(2) What is the variability of the coastal kelp bed canopy over time?

(3) Are coastal kelp beds disappearing? If yes, what are factors that could contribute to the disappearance?

(4) Are new coastal kelp beds forming?

The Discharger shall participate with other Southern California ocean dischargers in an ongoing regional annual survey of coastal kelp beds in the Southern California Bight. The intent of these surveys is to provide an indication of the health of these kelp beds, recognizing that the extent of kelp bed canopies may change due to a variety of influences. Reports shall be produced and submitted annually.

Kelp beds shall be monitored annually by means of vertical aerial infrared photography to determine the maximum areal extent of the canopies of coastal kelp beds each year. Surveys shall be conducted as close as possible to when kelp bed canopies are at their greatest extent during the year. The entire San Diego Region

coastline, from the international boundary to the San Diego Region/Santa Ana Region boundary shall be photographed on the same day.

The maximum areal extent of kelp bed canopies each year shall be compared to that observed in previous years. Any significant losses that persist for more than one year shall be investigated by divers to document benthic and understory conditions.

The data, analyses, assessment, and images produced by the surveys shall be made available in a user-friendly format on a website that is readily available to the public. In addition to the kelp bed canopies, the images shall show onshore reference points, locations of all ocean outfalls and diffusers, artificial reefs, areas of known hard-bottom substrate (i.e., rocky reefs), and depth contours at intervals of 30-feet mean lower low water (MLLW).

The surveys shall be conducted on a "continuous improvement" basis, i.e., each year improvements shall be made in monitoring, analysis, assessment, and/or documentation. For example, these could include:

1. More sophisticated analysis of patterns, correlations, and cycles that may be related to the extent of kelp bed canopies; or

2. Projects to improve understanding of influences on kelp beds or of how the extent of the canopies of various kelp beds has changed since the early 20th century.

B. Southern California Bight Monitoring Program Participation Requirements

The Discharger may be required to participate in the Southern California Bight Regional Monitoring Program coordinated by the Southern California Coastal Water Research Project (SCCWRP) or any other regional program named by the San Diego Water Board Executive Officer, as directed by the San Diego Water Board Executive Officer pursuant to Water Code sections 13267, 13383, and 40 CFR section 122.48. The intent of the Southern California Bight Regional Monitoring Program is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled scientific resources of the Southern California Bight.

During these coordinated sampling efforts, the Discharger's receiving water sampling and analytical effort, as defined in section IV of this MRP, may be reallocated to provide a regional assessment of the impact of the discharge to the Southern California Bight. In that event, the Executive Officer may notify the Discharger in writing that the requirement to perform the receiving water sampling and analytical effort defined in section IV of this MRP is suspended for the duration of the reallocation. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and to determine cumulative impacts of various pollution sources. The level of resources in terms of sampling and analytical effort redirected from the receiving water monitoring program required under section IV of this MRP shall approximately equal the level of resources provided to implement the regional monitoring and assessment program, unless the Executive Officer and the Discharger agree otherwise. The specific scope and duration of the receiving water monitoring program reallocation and redirection shall be determined in writing by the Executive Officer in consultation with the Discharger.

VI. SPECIAL STUDIES REQUIREMENTS – NOT APPLICABLE

VII. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. The Discharger shall report all instances of noncompliance not reported under Attachment D, sections III through V, of this Order at the time monitoring reports are submitted.
3. The Discharger shall submit an Annual Report to the San Diego Water Board. The report shall contain graphical summaries of the monitoring data obtained during the previous year. In addition, the discharger shall discuss the compliance record and the corrective actions taken or planned which may be needed to bring the discharge into full compliance with the waste discharge requirements of this Order.

B. Self-Monitoring Reports (SMRs)

1. The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) program website (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS website will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through V. The Discharger shall submit monthly, quarterly, semiannual, annual SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. SMRs are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	1st of the second month following the monitoring period
Daily	Permit effective date	Daily, 12:00 AM through 11:59 PM	
Monthly	First day of calendar month following Permit effective date or on Permit effective date if on first day of month	First day of the calendar month through the last day of the calendar month	
Quarterly	Closest January 1, April 1, July 1, or October 1 following (or on) Permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	
Semiannually	Closest of January 1 or July 1 following (or on) Permit effective date	January 1 through June 30 July 1 through December 31	
Annual Report	Permit Effective Date	January 1 through December 31	

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Annual Regional Monitoring Report	Permit Effective Date	January 1 through December 31	October 1

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable reported ML (reported ML, also known as the Reporting Level, or RL) and the current method detection limit (MDL), as determined by the procedure in 40 CFR part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

   For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ. The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (± a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

   d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Compliance Determination.** Compliance with effluent limitations for reportable pollutants shall be determined using sample reporting protocols defined above and Attachment A. For purposes of reporting and administrative enforcement by the San Diego Water Board and State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the reportable pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported ML.

6. **Multiple Sample Data.** When determining compliance with a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses and the data set contains one or more reported determinations of DNQ or "Not Detected" (ND), the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

7. The Discharger shall submit SMRs in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

C. Discharge Monitoring Reports (DMRs)

1. The Discharger shall electronically submit DMRs using the State Water Board's CIWQS program website (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS website will provide additional information for DMR submittal in the event there will be a planned service interruption for electronic submittal.

2. DMRs must be signed and certified as required by the standard provisions (section V.B of Attachment D of this Order)

D. Other Reports

The following reports are required under Special Provisions (section VI.C of the Order), WET Testing Requirements (section III.C of the MRP, and the California Code of Regulations. These reports shall be submitted to the San Diego Water Board, signed and certified as required by the Standard Provisions (Attachment D). The reports shall be submitted to the San Diego Water Board, via the State Water Board's CIWQS Program Website or via email to SanDiego@waterboards.ca.gov.

Table E-11. Other Reports

Report	Location of Requirement	Due Date
Initial Dilution Study	Section VI.C.2.a of the Order	March 1, 2020, if applicable

Report	Location of Requirement	Due Date
Toxicity Reduction Evaluation (TRE) Work Plan	Section III.C.8.a of the MRP	Within 90 days of the effective date of this Order
Detailed TRE Work Plan	Section III.C.8.c.1 of the MRP	Within 15 days of triggering a TRE as described in section III.C.6 of the MRP
Report of Waste Discharge (ROWD) (for permit renewal)	Table 4 of this Order and Title 23, California Code of Regulations	180 days prior to this Orders expiration date
Once-Through Cooling (OTC) Water Progress Report	Section VI.C.6.a of the Order	July 1, 2016
Second OTC Progress Report	Section VI.C.6.a of the Order	July 1, 2017

ATTACHMENT F – FACT SHEET

CONTENTS

TABLES

ATTACHMENT F – FACT SHEET

As described in section II.B of this Order, the San Diego Regional Water Quality Control Board (San Diego Water Board) incorporates this Fact Sheet as findings of the San Diego Water Board supporting the issuance of this Order. This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	9 000000092
Discharger	Cabrillo Power I LLC
Name of Facility	Encina Power Station
Facility Address	4600 Carlsbad Boulevard Carlsbad, CA 92008-4301 San Diego County
Facility Contact, Title and Phone	Sheila Henika , P.E., Sr. Environmental Engineer, (760) 268-4018
Authorized Person to Sign and Submit Reports	Jerry L. Carter, Plant Manager, (760) 268-4011
Mailing Address	SAME
Billing Address	SAME
Type of Facility	Industrial, SIC Code No. 4911
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	No
Recycling Requirements	N/A
Facility Permitted Flow	863.5 million gallons per day (MGD)
Facility Design Flow	863.5 MGD
Watershed	Carlsbad
Receiving Water	Pacific Ocean
Receiving Water Type	Ocean waters

A. Cabrillo Power I LLC (Discharger) is the owner and operator of the Encina Power Station (Facility), a steam electric generating facility, located in the City of Carlsbad, California, adjacent to the Agua Hedionda Lagoon on the Pacific Ocean.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Pacific Ocean, a Water of the United States. The Discharger was previously regulated by Order R9-2006-0043 and National

Pollutant Discharge Elimination System (NPDES) Permit No. CA0001350 adopted on August 16, 2006 and expired on October 1, 2011. The terms and conditions of Order R9-2006-0043 were automatically continued and remained in effect until a new Waste Discharge Requirements (WDRs) and NPDES permit was adopted pursuant to this Order. Attachment B of this Order provides a map of the area around the Facility. Attachment C of this Order provides a flow schematic of the Facility.

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its WDR and NPDES permit on March 30, 2011. The application was deemed complete by the San Diego Water Board on March 26, 2014.

II. FACILITY DESCRIPTION

The Facility is a fossil-fueled steam electric power generating station comprised of five steam turbine generators and one gas turbine generator for a total maximum generating capacity of 939 megawatts. Table F-2 lists the generating capacity for each unit and the date the unit began operating. Natural gas is the only fuel used at the Facility for power generation. Fuel oil is no longer present at the Facility.

Table F-2. Facility Generating Capacity

Generating Unit	In-service Year	Net Generating Capacity megawatts
Unit 1	1954	107
Unit 2	1956	104
Unit 3	1958	110
Unit 4	1973	287
Unit 5	1978	315
Gas Turbine	1968	16

The Facility plant employs the once-through cooling method using seawater to cool the generating unit condensers. Operation of the generating units involves a closed cycle in which steam is produced in fossil-fuel-burning boilers. The steam from the boilers is passed through turbines to generate electricity and then condensed into a liquid by the cooling water system. The five steam turbine generator units (Units 1- 5) share the Facility's cooling water system. The single gas turbine generator at the site is air-cooled.

A. Description of Wastewater and Biosolids Treatment and Controls

The Facility discharges once-through (non-contact) cooling water, low-volume wastes, metal cleaning wastes, and storm water to the Pacific Ocean. Storm water is not regulated under this Order. The Discharger's ROWD indicates that a maximum of approximately 863.5 MGD of wastewater is discharged through Discharge Point 001. Internal discharge point designations (Discharge Points 001A through 001E and 001H) are based on the discrete location at which the in-plant waste stream (low-volume wastes, and metal cleaning wastes) discharges to the main cooling water waste stream at Discharge Point 001. The discharges from the Facility are composed of the cooling water and in-plant waste streams specified in Table F-3 below. Domestic wastewater is discharged to the municipal sewer system for treatment and disposal. Attachment C contains a water balance diagram describing the configuration and maximum flow rates for each waste stream. The Facility intermittently injects chlorine into the cooling water flow to minimize the formation of biological growth in the condenser tubes. The Facility also conducts a thermal tunnel recirculation process referred to as heat treatments at five to eight month intervals which increase

the temperature of the cooling water flow to remove encrusting organisms from the tunnel walls, traveling screens, and other parts of the cooling water system.

Table F-3. Internal Waste Streams

Discharge Point	Wastewater Discharge Description	Estimated Maximum Flows (MGD)*
001	Once-through (non-contact) cooling water	857.3
	(a) Condenser cooling	
	(b) Cooling water pump lubrication and seal water	
	(c) Cooling water pump lubrication and seal water pretreatment backwash	
	(d) Salt water heat exchanger	
	(e) Traveling screen backwash water	
	(f) Tunnel and forebay cleaning	
	(g) Hypochlorinator bearing cooling water	
001A	Metal Cleaning Wastes	0.7971
	(a) Boiler chemical cleaning	
	(b) Air heater wash	
	(c) Boiler fireside wash	
001B	Seepage and Groundwater Pumping	1.368
001C	Boiler Blowdown	0.372
001D	Freshwater Reverse Osmosis (RO) Brine	0.087
001E	Seawater RO Brine	0.864
001F	Fuel Line/Tank Hydrotests - Discontinued	0
001G	Poseidon Pilot Desalination Plant - Discontinued	0
001H	Low-Volume Waste Treatment Facility (LVWTF)	0.2115
	(a) Sand filter backwash	
	(b) RO membrane cleaning	
	(c) Demineralizer regenerants	
	(d) Condenser cleaning	
	(e) Floor drains	
	(f) Sample drains	
	(g) Portable demineralizer rinse flush	
	(h) Evaporator blowdown	
	(i) Softeners	
	(j) Salt water heat exchanger drains	

* Based on reported flows in ROWD (U.S. Environmental Protection Agency (USEPA) Form 2C).

1. Cooling Water System and Associated Wastes (Discharge Point 001)

The Facility employs the once-through cooling method using Pacific Ocean seawater from the outer lagoon portion of Agua Hedionda Lagoon to cool the condensers of the generating units. The seawater enters the lagoon from the Pacific Ocean through an open channel at the northwestern end of the lagoon approximately 3,000 feet north of the Facility. Seawater for the Facility cooling water system is drawn into an intake structure located within the outer lagoon portion of Agua Hedionda Lagoon, located approximately 2,200 feet from the ocean inlet to the lagoon. Variations in the water surface level due to tide are from a low of -5.07 feet to a high of +4.83 feet (elevation 0 = mean sea level, or msl). The intake structure is located approximately 525 feet in front of the generating units. The mouth of the intake structure is 49 feet wide. Booms can be situated in the lagoon across the front of the intake structure to screen floating

debris. Water passes through metal trash racks (vertical bars spaced 3-1/2 inches apart) to screen large debris. The intake forebay tapers into two 12-foot wide intake tunnels. From these tunnels, water enters one of four 6-foot wide conveyance tunnels. Cooling water flowing into conveyance tunnels 1 and 2/3 passes through two vertical traveling screens to prevent fish, grass, kelp, and debris from entering intakes 1, 2, and 3. Conveyance tunnels 4 and 5 carry cooling water to intakes 4 and 5, respectively. Vertical traveling screens are located at the intakes of pump 4 and pump 5.

Each pump intake consists of two circulating water pump cells and one or two service pump cells. During normal operation, one circulating water pump serves each half of the condenser (i.e., when a unit is on line, both pumps are in operation). Seven vertical traveling screens remove any fish or debris that has passed through the trash racks. The screens are conventional through-flow, vertically rotating, single entry single exit, band-type screens and are mounted in the screen wells of the intake channel. Each screen consists of a series of baskets or screen panels attached to a chain drive. The screening surface is made of 3/8-inch stainless steel mesh panels, with the exception of the Unit 5 screens, which have 5/8-inch square openings. The screens rotate automatically when the buildup of debris on the screen face causes the water level behind the screen to drop below that of the water in front of the screen and a predetermined pressure differential is reached. The screens rotate at a speed of 3 feet per minute, making one complete revolution in approximately 20 minutes. A screen wash system, using sea water from the intake tunnel, washes the debris from the traveling screen into a debris trough. Accumulated organic debris is discharged to Discharge Point 001.

The condensers are a shell-and-tube arrangement in which heat is transferred from the turbine exhaust steam to the circulating cooling water. Units 1, 2, and 3 have two-pass condensers (water enters the bottom, passes through the condenser twice, and exits the top). The tubing, made of aluminum-brass, has a 30-foot length and a 1-inch outside diameter. The condensers for Units 4 and 5 are a single-pass design. The tubing is copper-nickel with a 36-foot length and 1 and 1/8-inch outside diameter.

Wastewater discharges associated with the operation of the cooling water system discharge directly to Discharge Point 001 without additional treatment.

a. Cooling Water Pump Lubrication and Seal Water Pretreatment Backwash

The circulating water pumps have bronze bearings that are sealed and lubricated with either filtered seawater or fresh water. Where filtered seawater is used for this purpose, automatic backwash filters are used to prevent sand and shells from clogging the system's strainers. Backwash water is discharged directly to the cooling water system.

b. Salt Water Heat Exchanger Cooling Water and Seal Water

Once-through cooling (OTC) water is used for cooling the Facility equipment in addition to condensing steam. Cooling of the Facility equipment is accomplished through use of auxiliary heat exchangers that use saltwater to cool "service water" that is piped through-out the Facility to cool the Facility equipment. There are four heat exchanger systems and each system uses two individual heat exchangers. Normally, only one heat exchanger is used

per system at a time; however, under certain operating conditions both heat exchangers in a system may operate at the same time. The OTC water from the heat exchangers is discharged directly to the OTC water discharge tunnel.

The saltwater condenser leaks intermittently and infrequently. When the leaks occur, they can cause significant operating problems and an increase in the frequency of boiler chemical cleanings for the Facility. The Discharger uses alfalfa (or other acceptable materials approved by the San Diego Water Board) to temporarily seal leaks to allow the unit to operate until it can be removed from service for repair.

c. Traveling Screen Backwash Water

Traveling screens are used to remove small debris from the cooling water stream that could otherwise interfere with the heat exchange process in the condenser tubing. As each screen is rotated, a high-pressure spray washes any accumulated debris off the screen face into debris baskets. Water for the high-pressure spray is pumped from the OTC water flow to the spray heads. The water that removes the debris drains through the baskets and screen panels and re-enters the OTC water flow. Organic debris removed from the screens is discharged to the discharge channel.

d. Tunnel and Forebay Cleaning

Over time, sediment from the Agua Hedionda Lagoon and shells from encrusting organisms that grow on the tunnel walls can accumulate in the Facility's cooling water intake tunnels and forebays to an extent that it threatens to restrict the flow of the cooling water supply to the units during low tide conditions. Cleaning of the cooling water tunnels and pump forebays is conducted periodically to remove the accumulated debris. Because tunnel/forebay cleaning is normally conducted during a unit overhaul, only the tunnel or forebay for the unit undergoing overhaul is usually cleaned at a given time. Tunnel/forebay cleaning for an individual unit is not usually conducted more than once every year. Water from the tunnel/forebay being cleaned is pumped to the cooling water discharge tunnel. Materials cleaned from the tunnels and forebay are discharged to either the cooling water discharge tunnel or to the cooling water discharge pond.

e. Hypochlorinator Direct Current (DC) Rectifier Cooling Water

The Facility produces its own sodium hypochlorite for use in chlorination of the cooling water system. Make-up water is drawn from the cooling water and passed through the DC rectifier. The product is then used for the intermittent chlorination of the condensers and heat exchangers. A small stream of once- through non-contact cooling water is used to cool the DC rectifier and is discharged to the cooling water system. This cooling stream runs continuously when the rectifier is in operation, but does not discharge when the rectifier is off. With all cooling water pumps in operation, the hypochlorinator generator runs approximately 85-100 percent of the time during the day.

2. Metal Cleaning Wastes (Discharge Point 001A)

Metal cleaning was not conducted during the duration of Order R9-2006-0043. By discontinuing fuel oil usage for power generation the need for fire side air heater and boiler wash cleanings was reduced. With the primary use of natural gas for power generation, the need for boiler side chemical cleanings was also reduced. Despite these operational changes, there is still a potential for metal cleaning.

All wastewaters from metal cleanings and washings are collected in temporary receiving tanks. Wastewaters are then neutralized, flocculated, chemically precipitated and filtered to remove metals and solids through a Temporary Treatment Unit (TTU) and routed to wastewater tanks, where they are held for testing prior to discharge. When the metal cleaning effluent is deemed compliant with all applicable effluent limitations, the treated wastewater is discharged to the OTC system.

Discharges normally occur daily during the processing of wastewater from metal cleanings and washes. The sludge generated by the treatment process is dewatered using a filter press and disposed of in a landfill permitted to receive such wastes. Metal cleaning wastes are generated from the following processes:

a. Chemical Cleaning

Boiler tube waterside cleanings are performed using either a dilute acid solution or an organic chelant-based cleaning solution. The boiler to be cleaned is drained of the water it contains and filled with fresh water, then fired to heat the water and metal up to temperature. When the required temperature is attained, a "fast drain" is done and the warm water is pumped back into the boiler with the chemicals mixed into the water during pumping. At this point, the boiler is allowed to sit for six hours with the cleaning solution inside. The temperature is monitored so that if the system cools too quickly it can be drained sooner. After the cleaning solution has been given time to work on the deposits, another fast drain is done and the cleaning job is checked to ensure that the deposits have been removed. A rinse cycle follows and samples are taken during the draining. Usually a second and a third rinse is done. The third volume of water contains citric acid. The final volume in the cleaning operation contains phosphate and sodium hydroxide as neutralizing agents. Cleanings are conducted to remove deposits that inhibit heat transfer and increase the danger of boiler tube failure. Cleaning solutions, passivation wastewater, and rinses are collected in temporary metal cleaning wastewater receiving tanks. Wastewater is processed through the TTU and held for testing in the treated wastewater tanks prior to discharge. Once the discharge is approved, the treated wastewater is discharged to the Facility's OTC water system. Discharges normally occur daily during the process of a cleaning and are normally discharged over a period of 2 to 4 weeks.

b. Air Heater Wash

Air heater and air pre-heater fireside washes are performed to remove soot and accumulated combustion by-products from metal surfaces in order to maintain efficient heat transfer. These washes are accomplished by spraying high-pressure city supply water against the surfaces to be cleaned. The wastewater generated contains an assortment of dissolved and suspended solids with loadings and constituents that are dependent upon the Facility's fuel and metals from the corrosion of the heater. These washwaters are

collected in temporary metal cleaning wastewater receiving tanks. Wastewater is processed through the TTU and held in the treated wastewater tanks for testing prior to discharge. Once the discharge is approved, the treated wastewater is discharged to the Facility's OTC water system. Discharges normally occur daily during the processing of wastewater of a wash and are normally discharged over a period of 2 to 4 weeks.

c. Boiler Wash

Boiler tube fireside washes are performed to remove soot and accumulated combustion by-products from metal surfaces in order to maintain efficient heat transfer. These washes are accomplished by spraying high-pressure city supply water against the surfaces to be cleaned. Wastewater thus generated contains an assortment of dissolved and suspended solids with loadings and constituents that are dependent upon the Facility's fuel and metals from the corrosion of the boiler. These washwaters are collected in temporary metal cleaning wastewater receiving tanks. Wastewater is processed through the TTU and held in the treated wastewater tanks for testing prior to discharge. Once the discharge is approved, the treated wastewater is discharged to the Facility's OTC water system. Discharges normally occur daily and are normally discharged over a period of 2 to 4 weeks.

d. Hypochlorinator Chemical Cleaning - Discontinued

Cleaning of the hypochlorinator electrolytic cells is conducted approximately once every 6 weeks to remove mineral scale. Wastewaters from the cleaning are discharged to the sanitary sewer and are no longer discharged to the OTC water system and thus not covered by this Order.

3. Low-Volume Wastes (Discharge Points 001B through 001H)

a. Seepage and Groundwater Pumping (Discharge Point 001B)

The basements of Units 4 and 5 are more than 16 feet below sea level. As a result, they are subject to seepage of groundwater. In order to prevent flooding of these basements, sumps were installed to collect the groundwater. Pumps automatically discharge the sump contents directly to the OTC system.

b. Boiler Blowdown (Discharge Point 001C)

The boilers at the Facility require high-quality water to operate at optimal conditions. The high-quality water is prepared for use in the boilers from municipal water through one of several pretreatment systems (RO/demineralization or water softening/evaporation). Despite the pretreatment systems employed, the dissolved solids concentration of boiler water increases over time. To reduce the dissolved solids content, the boiler is "blown down" (i.e., a valve is opened on the steam discharge line to release boiler water with elevated concentrations of dissolved solids). At the same time, make-up water treated through the pretreatment system is added to the boiler. Blowdown discharges are intermittent and infrequent under normal unit operating conditions, and are determined largely by boiler water

chemistry. Blowdown also occurs during unit start-up and in the event of condenser leaks. In order to meet monitoring requirements, boilers in operation are blown down monthly to collect appropriate samples. The blow down line for each unit is routed directly to the cooling water intake tunnel on the cooling water deck.

c. Freshwater Reverse Osmosis (RO) Brine (Discharge Point 001D)

Municipal water used in the boilers to generate steam must first be pretreated to produce demineralized water. As a first step in the RO /demineralization water purification process, the municipal water goes through a RO pretreatment process to remove dissolved solids. The RO removes the dissolved solids and discharges them as "brine" composed of approximately 25% of the incoming water and the rejected solids. This brine is discharged through a line that is routed directly to the OTC water system. Discharge of the brine normally occurs intermittently during boiler operation.

d. Seawater RO Brine and Backwash (Discharge Point 001E)

It is anticipated that, in the event of a fresh water shortage, a RO unit may be used to produce water for Facility operational purposes from seawater. Depending on the suspended solids loading of the source water it may need to be pretreated to remove suspended solids prior to the RO unit. This system has not yet been installed. It is anticipated, however, that when it is operational the pretreatment discharges would occur intermittently throughout the day and be combined with the brine prior to discharge to the OTC system. It is anticipated that the proposed seawater RO unit would produce "brine" composed of approximately 60 percent of the incoming water and the rejected solids. This brine would be discharged through a line that is routed directly to the OTC water system.

It is anticipated that the membranes of the proposed RO unit would require occasional cleaning to remove mineral deposits from the membrane surface. The cleaning frequency is anticipated to be approximately once every six months. However, the cleaning frequency is ultimately dependent upon the membrane fouling rate. Wastewaters generated by the cleaning process would be routed to the Low-Volume Waste Treatment Facility (LVWTF) for treatment and subsequent discharge to the OTC water system.

e. Fuel Line/Tank Hydrotests (Discharge Point 001F) - Discontinued

The Facility no longer uses Residual Fuel Oil for boiler fuel. The discharge of fuel line/tank hydrotest water no longer occurs and is not regulated by this Order.

f. Pilot Desalinization Plant (Discharge Point 001G) - Discontinued

In September of 2002, the San Diego Water Board approved the installation and operation of the seawater desalination pilot plant as proposed by Poseidon Resources. The prior Order No. R9-2006-0043 for the Facility has allowances for seawater desalination discharges from Poseidon Resources' desalination pilot plant. In January 2003, Poseidon initiated seawater desalination operations and testing in accordance with the conditions set forth by the San Diego Water Board by letter dated September 24, 2004. By

letter dated July 8, 2013, the Discharger requested San Diego Water Board authorization to install and operate a replacement desalination plant at the same location. The San Diego Water Board authorized installation and operation of the replacement plant by letter dated July 23, 2013. Both waste streams and product streams from the pilot desalination plant were routed directly to the Facility cooling water discharge pond on a continuous basis. By letter dated July 28, 2014, the Discharger reported the removal of the replacement pilot plant and the discontinuation of the discharge at Discharge Point 001G.

g. Low-Volume Waste Treatment Facility (LVWTF) (Discharge Point 001H)

The LVWTF treats all of the Facility's low-volume wastewaters, except for RO brine, boiler blowdown, seawater RO pretreatment backwash and groundwater dewatering flows from Units 4 and 5 basement subdrain systems at Discharge Points 001B through 001F which are discharged directly to the OTC water system. The LVWTF is comprised of two 100 percent capacity wastewater treatment trains. Each train is comprised of a low-volume waste (LVW) Surge & Equalization Tank to accommodate the various intermittent wastewater flows and flow rates from the Facility and an Oil/Solids Coalescer and Separator Unit. Effluent from the LVWTF is discharged to the Facility's OTC water system. Discharges from the LVWTF occur intermittently throughout the day based upon the wastewater flow rate from the Facility. The following contributing waste streams discharge to the LVWTF:

i. **Freshwater RO Sand Filter Backwash:** Water passed through the freshwater RO membranes is pretreated through sand filters to remove suspended solids and debris to prevent premature fouling of the membranes. The sand filters require periodic backwashing to maintain their effectiveness. The frequency of backwashes is dependent on the load of suspended solids present in the municipal water. Wastewaters generated by the backwash process are routed through a self-neutralization tank prior to discharge to the LVWTF.

ii. **RO Membrane Cleaning:** The membranes in the RO unit require occasional cleaning to remove mineral deposits from the membrane surface. Membrane cleaning frequency is dependent upon the membrane fouling rate. Wastewaters generated by the cleaning process are routed through the self-neutralization tank prior to being routed to the LVWTF for treatment and subsequent discharge to the OTC water system.

iii. **Demineralizer:** Demineralizers are used as the second and final step in the Facility's primary boiler makeup water treatment process (i.e., RO/demineralization). The demineralizers polish boiler water first treated in the freshwater RO system. Over time, demineralizer resins become exhausted and need to be regenerated using an acid/caustic process. Regenerants flushed from system are routed to the LVWTF. Demineralizer resin regeneration occurs periodically based on the Facility operations and the demand for make-up water.

iv. **Condenser Cleaning:** Periodic manual cleaning of the condenser tubes is conducted to maintain optimal heat transfer of the cooling system and prevent localized pitting of the tube material. Manual cleaning is conducted using a high pressure air/water stream shot through the tubes and/or metal or plastic scrapers pushed through the tubes using water pressure. Cleanings are periodic and are conducted more frequently during the summer when water temperatures are higher and there is faster growth of fouling organisms. Cleaning wastes are discharged to the LVWTF.

v. **Floor Drains:** Floor drains are located throughout the Facility and, in addition to being used for routing LVW streams to the LVWTF, are used to collect miscellaneous wastewaters from the Facility's operating equipment. Wastewater that enters the floor drains collect in sumps. Once a sump reaches a preset level, the water is pumped to the LVWTF.

vi. **Sample Drains:** The Facility must maintain the quality of water it uses in different systems (e.g., boiler water) within certain parameters for operations. This is accomplished by the use of online automatic samplers/analyzers and discrete samples to evaluate water quality. Many of these sample streams run continuously. Some of this water is recovered for reuse in the Facility, while the rest is discharged to the LVWTF.

vii. **Portable Demineralizer Rinse Flush:** Under certain circumstances (e.g., the Facility's demineralizer is out of service for maintenance, unit startups after overhaul) a portable demineralizer(s) is brought on-site to provide demineralized water to the Facility. Prior to using water produced by the portable unit, it is run until the water it is producing meets the Facility's specifications. This "rinse flush" water is discharged to the Facility's low-volume waste system that goes to the LVWTF for treatment and subsequent discharge to the OTC water system. Use of the portable units is very infrequent. The rinse flush may last approximately 1 to 2 hours at the beginning of each use of the unit.

viii. **Evaporator Blowdown:** Evaporators are an integral component of the alternate boiler make-up water pre-treatment system (i.e., water softening/evaporation). When the total dissolved solids in the evaporator increase to preset levels, a portion of the evaporator water is discharged to the LVWTF to flush out high mineral-content water. When in use, blow down discharges occur intermittently throughout the day. Although the evaporators are not routinely used, they remain an integral part of the Facility’s alternative water make-up system.

ix. **Water Softeners:** Water softening is another integral component of the Facility's alternate boiler make-up water pre-treatment system (i.e., water softening/evaporation). Municipal water is pre-treated through a softener prior to being routed to an evaporator. Periodically, the water softener requires regeneration using a brine solution made from salt. Regeneration wastes are routed to the LVWTF. Although water

softening is not routinely used at this time, it remains an integral part of the Facility's alternative water make-up system. When in use, regenerations are done periodically (approximately once per day) at a frequency that is based upon actual Facility operations and demand for make-up water.

x. **Salt Water Heat Exchanger Drains.** In addition to condensing steam, OTC water is used to remove heat from the Facility mechanical operations and equipment. Leaks that occur from the heat exchangers are treated and discharged as LVW.

4. Storm Water (Discharge Point 001I)

Storm water is discharged from areas of the facility called Basins A through F as described below:

Basin A: Basin A is an area that is no longer part of the Facility which had Fuel Oil Tank Nos. 4, 5, 6, 7 and adjacent access road, vacant land, and storage areas located in the north east corner of the site. This area will be part of the Carlsbad Energy Center Project.

Basin B: Basin B is an area of the Facility which has a vacant storage area, switching yard, paved areas, waste water treatment facility, dredge equipment, RO, machine shop, and hazardous materials storage area.

Basin C: Basin C is an area that is no longer part of the Facility which had Fuel Oil Tank Nos. 1, 2 and 3. This area will be part of the Carlsbad Energy Center Project.

Basin D: Basin D is an area of the Facility which has gas turbine, main transformers, paint booth, and sodium hypochlorite tanks.

Basin E: Basin E is an area of the Facility which has an employee parking area, administrative buildings, and a maintenance building.

Basin F: Basin F is an area of the Facility which has a dredge dock, access road to dock structure at Carlsbad Aquafarm, Poseidon Resources water intake structure, and previous Poseidon Resources pilot desalination plant.

Storm water flows from Basins A through F is discharged under the authority of either the State Water Board's *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity, Excluding Construction Activity* (NPDES No. CAS000001) (Statewide Industrial Storm Water Permit) or the City of Carlsbad storm water program. These storm water discharges are not covered under this Order.

5. Chlorination

Intermittent chlorine treatment is used to minimize the formation of biological growth, which accumulates in the condenser tubes if control measures are not employed. Sodium hypochlorite is generated on-site, as needed, through electrolytic conversion of sodium chloride naturally present in seawater.

Seawater from the intake is pumped through each of the two hypochlorinators, which are comprised of electrolytic cell modules arranged in series. The sodium hypochlorite produced is fed into a holding tank where it is diluted with intake water. Hypochlorination is conducted for approximately five minutes per hour per unit on a timed cycle by injecting the diluted sodium hypochlorite into the intake channel immediately upstream of the circulating and salt water pumps for each unit. This method results in a minimal chlorine residual in the cooling water discharged to the Pacific Ocean. Periodic cleanings using nitric and hydrochloric acid are required to remove accumulated mineral scale from the hypochlorinators. Wastes from the cleanings are routed to the LVWTF.

6. Heat Treatment

Encrusting organisms in the early stages of development are small enough to pass through the traveling screens and enter the intake tunnels and condenser tubing. These organisms can attach themselves to the tunnel walls, traveling screens, and other parts of the cooling water system. If not removed, the encrusting organisms grow and accumulate at a rate of approximately 1,000 cubic yards over a 6-month period. These accumulations restrict the flow of cooling water into and through the condensers, causing a rise in the condenser operating temperature and the OTC water discharge temperature. Although intermittent chlorination is practiced at the Facility, only the condensers and salt water heat exchangers are chlorinated. Due to the ability of encrusting organisms to withstand intermittent exposure to chlorine, effective control of biofouling would require continuous chlorination of the entire intake system. This is not viable due to the large volume of chlorine or bromide required. Consequently, thermal tunnel recirculation treatment procedures, or heat treatments are conducted periodically at five to eight week intervals, or as determined by the decision flow chart depicted in the Heat Treatment Decision Diagram in Attachment H of this Order. In addition to preventing the disruption of cooling water flows, heat treatment helps maintain a lower temperature rise across the condenser, thereby improving efficiency and reducing normal cooling water discharge temperatures.

Heat treatment is performed by restricting the flow of cooling water from the Agua Hedionda Lagoon and recirculating the condenser discharge water through the conveyance tunnels and condensers until the inlet temperature is increased to the effective treatment temperature. Recirculation of the cooling water is accomplished through a cross-over tunnel located approximately 120 feet from the discharge, adjacent to the intake tunnel. The temperature is raised to 105^{o}F and maintained at that heat soak temperature for approximately two hours. This temperature and duration have proven effective at killing and removing encrusting organisms.

Each time the cooling water passes through the condensers, it picks up additional heat rejected from the steam cycle – as much as 15^{o}F per pass. Because the cooling water continues to circulate and the generating units continue to operate, the post-condenser temperature in the discharge channel can reach 120^{o}F. To maintain the optimal treatment temperature of 105^{o}F during the heat soak phase, additional lagoon water is blended into the cooling water system and a corresponding volume of water is discharged to the Pacific Ocean.

The heat treatment duration of two hours represents the total duration of the process once the cooling water has reached the optimal treatment temperature of 105°F; this does not include the time required to reach the target temperature or return to normal operations. The total time for heat treatment, including temperature buildup and cool-down is approximately seven to nine hours. Because the cooling water discharge is restricted during the heat treatment in order to recirculate the heated effluent, the Facility's discharge flow rate is reduced to approximately 7 to 45 percent of its full flow rate during normal operations.

B. Discharge Points and Receiving Waters

Cooling water from the condensers from all five steam generating units and in-plant waste streams (metal cleaning and low-volume wastes) flow into a common discharge tunnel. The concrete discharge tunnel (15 feet wide) runs along the east side of the inlet conveyance tunnels, past the traveling screen structures, then crosses under the inlet tunnels and runs parallel to the west side of the conveyance tunnels. The Poseidon Resources (Channelside) LLC, Carlsbad Desalination Project withdraws water for desalination and discharges brine into this discharge channel. The cooling water and brine flows into a discharge pond before discharging into a riprap-lined channel, a surface jet discharge, and then into the Pacific Ocean (Discharge Point 001). The coordinates for Discharge Point 001 are 33º 8' 17" N, 117º 20' 22" W.

The waters and beaches along the area of coast surrounding the Facility provide excellent opportunities for water-related recreational activities, which include sightseeing, sunbathing, swimming, surfing, diving, fishing, camping, picnicking, bird watching and boating.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

1. Effluent limitations contained in the existing Order for discharges from Discharge Point 001 (the Combined Discharge at Monitoring Location M-001) and representative monitoring data from the term of the previous Order are as follows:

Table F-4. Historic Effluent Limitations and Monitoring Data for the Combined Discharge (Discharge Point 001)

Parameter	Units	Effluent Limitations					Combined Discharge Monitoring Data (January 2009 - March 2015)				
		Daily Max	Monthly Average	Weekly Average	Instant. Max	6-Month Median	Highest Daily Max	Highest Monthly Average	Highest Weekly Average	Highest Instant. Max	Highest 6-Month Median
pH	SU	Within the limits of 6.0 to 9.0 at all times					7.91-8.21				
Turbidity	NTU	--	75	100	225	--	--	3.6	3.6	3.6	--
Total Chlorine Residual	µg/L	132	--	--	200	33	60	--	--	60	26
Chronic Toxicity	TUc	16.5	--	--	--	--	>33	--	--	--	--

2. Effluent limitations contained in the existing Order for discharges from Discharge Point 001A (Metal cleaning wastewater at Monitoring Location M-001A) and representative monitoring data from the term of the previous Order are as follows:

Table F-5. Historic Effluent Limitations and Monitoring Data for Metal Cleaning Wastes (Discharge Point 001A)

Parameter	Units	Effluent Limitations		Metal Cleaning Wastes Monitoring Data (January 2009 - March 2015)	
		30-Day Avg.	Daily Max.	Highest 30-Day Average	Highest Daily Max
Total Suspended Solids (TSS)	mg/L	30	100	No Discharge	No Discharge
Oil and Grease	mg/L	15	20	No Discharge	No Discharge
Copper, Total	mg/L	1.0	1.0	No Discharge	No Discharge
Iron, Total	mg/L	1.0	1.0	No Discharge	No Discharge

3. Effluent limitations contained in the existing Order for discharges from Discharge Points 001B through 001H (the LVW at Monitoring Locations M-001B through M-001H) and representative monitoring data from the term of the previous Order are as follows:

Table F-6. Historic Effluent Limitations and Monitoring Data for Low-Volume Wastes (Discharge Points 001B – 001H)[1]

Parameter	Units	Effluent Limitations			Low-Volume Wastewaters Monitoring Data (January 2009 - March 2015)		
		Daily Maximum	30-Day Average	Six-Month Median	Highest Daily Maximum	Highest 30-Day Average	Highest Six-Month Median
pH	SU	Within the limits of 6.0 to 9.0 at all times			6.21 - 8.09		
Total Suspended Solids (TSS)	mg/L	--	100	30	--	60	28
	lbs/day	--	3,200	950	--	12.1	12.1
Oil and Grease	mg/L	--	20	15	--	9.9	9.9
	lbs/day	--	630	480	--	8.26	8.26
Chromium (Hexavalent)	lbs/day	4.5	--	1.1	0.005	--	0.005
Copper	lbs/day	5.7	--	0.63	0.65	--	0.65
Mercury	lbs/day	0.089	--	0.022	0.00009	--	0.00009
Nickel	lbs/day	11	--	2.8	0.009	--	0.009

1 The Monitoring and Reporting Program (MRP in Attachment E of the previous Order) required that individual grab samples of each low-volume waste stream (i.e., Discharge Points 001B through 001H) be composited on a flow-weighted basis.

D. Compliance Summary

The following violations were reported by the Discharger during the term of the previous Order.

Table F-7. Summary of Permit Violations during the Previous Permit Term

Date	Violation Type	Description

Date	Violation Type	Description
08/24/2006	Chronic Toxicity	Discharger reported 16.67 TUc that exceeds daily maximum chronic toxicity limit of 16.5. This is a violation of Effluent Limitation IV.B.1.
02/22/2010	Deficient Reporting	The required hold time for the turbidity analysis (EPA Method 180.1) on the Discharge Point 001 sample taken February 22, 2010, was not met. This is a violation of the MRP section I.C.
07/03/2012	Deficient Monitoring	Sample could not be collected from Discharge Point 001G due to a faulty pump. This is a violation of MRP section IV.C.1.
01/18/2013	Deficient Monitoring	The Poseidon Resources Desalination Pilot Plant (Discharge Point 001G) operated in the month of January 2013. However, a water quality monitoring sample was not taken for this discharge. The flow monitoring is included in this report. This is a violation of MRP section IV.C.1.
10/13/2014	Chronic Toxicity	The Chronic Toxicity Daily Maximum limit is 16.5 TUc and reported value was 33.3 TUc at M-001. This is a violation of Effluent Limitation IV.B.1.

E. Planned Changes

The Facility is subject to the *California State Water Resources Control Board Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (OTC Policy). The Discharger has opted to comply with Track 1 of the OTC Policy. Under this approach, the Facility will cease OTC flow for power plant operations on or before December 31, 2017 per Milestone 23 of the OTC Policy.

Discharges to Discharge Point 001 subject to this Order that would remain after December 31, 2017 are the LVW flows defined by 001B, 001H, and 001I. These LVW discharge flows would continue until such time as these flows are no longer required to maintain site integrity during demolition of the Facility.

The Discharger reports that Poseidon Resources Corporation will use the Facility's intake structure and pumps under the Poseidon Resources Corporation NPDES Permit No. CA0109223 until they have installed their own water intake system.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order serves as WDRs pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this Facility to surface waters.

B. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code.

C. State and Federal Laws, Regulations, Policies, and Plans

1. Water Quality Control Plan. The San Diego Water Board adopted the *Water Quality Control Plan for the San Diego Basin* (Basin Plan) on September 8, 1994 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean. The Basin Plan was subsequently approved by the State Water Board on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the San Diego Water Board and approved by the State Water Board. Requirements in this Order implement the Basin Plan.

Beneficial uses applicable to the Pacific Ocean are as follows:

Table F-10. Basin Plan Beneficial Uses

Discharge Points	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Industrial service supply (IND); navigation (NAV); contact water recreation (REC-1); non-contact water recreation (REC-2); commercial and sport fishing (COMM); preservation of biological habitats of special significance (BIOL); wildlife habitat (WILD); rare, threatened, or endangered species (RARE); marine habitat (MAR); aquaculture (AQUA); migration of aquatic organisms (MIGR); spawning, reproduction, and/or early development (SPWN); and shellfish harvesting (SHELL)

2. Thermal Plan and Clean Water Act Section 316(a). The State Water Board adopted the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) on January 7, 1971, and amended this plan on September 18, 1975. The Thermal Plan contains the following temperature objectives for coastal waters:

a. Existing discharges (Units 1 – 4)

Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance.

b. New discharges (Unit 5)

i. Elevated temperature wastes shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

ii. Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of natural temperature in these areas.

iii. The maximum temperature of thermal waste discharges shall not exceed the natural temperature of receiving waters by more than 20°F.

iv. The discharge of elevated temperature wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

v. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

Pursuant to the Thermal Plan, elevated temperature wastes from Units 1-4 are classified as existing discharges. The waste from Unit 5, which was constructed after May 18, 1972, is classified as a new discharge.

Section 316 (a) of the CWA requires compliance with State water quality standards for the discharge of thermal effluent. In 1973, SDG&E (the previous owner of Facility) conducted a thermal effects study as required by the Thermal Plan. The study concluded that the existing discharges from Units 1-3 caused no prior appreciable harm to the aquatic communities of the coastal waters of the Pacific Ocean. The Discharger further predicated that the increased discharge from Unit 4 would not cause significant changes in the existing conditions or beneficial uses.

On March 6, 1975, under provisions of section 316 (a) of the CWA, San Diego Gas & Electric (SDG&E) applied for an exception for the Unit 5 discharge from the new source performance standards contained in the Thermal Plan and power plant regulations in effect in 1975, specifically:

a. **Thermal Plan Objective 3.B.(1).** Elevated temperature waste shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

b. **Thermal Plan Objective 3.B.(4).** The discharges of elevated wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond the 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any tidal cycle.

c. USEPA Power Plant regulations in effect in 1974 at 40 CFR section 423.15(L) provided that there should be no discharge of heat from the main condensers except:

i. Heat many be discharged in blowdown from recirculated cooling water systems provided the temperature at which the blowdown is discharged does not exceed at any time the lowest temperature of recirculated cooling water prior to the addition of the make-up water.

ii. Heat may be discharged in blowdown from cooling ponds provided the temperature at which the blowdown is discharged does not exceed at any time the lowest temperature of the recirculated cooling water prior to the addition of the make-up water.

On July 16, 1976 the U.S Court of Appeals for the Fourth Circuit remanded certain provisions (including the thermal limitation discussed above) of the power

plant regulations in effect in 1974 for further consideration. USEPA has not promulgated a new heat discharge limitation for power plants to date.

SDG&E initiated a study in 1975 for the purpose of making a demonstration under section 316 (a) of the CWA and in support of its application for the exceptions to the Thermal Plan discussed above. As a part of its application for such exceptions under the Thermal Plan, SDG&E proposed alternative thermal discharge limitations that would 1) allow discharges from Unit 5 to be made in the same "across the beach" channel used for the thermal discharges from Units 1-4, and 2) allow for an alternative to the surface water temperature limitation. SDG&E's study was undertaken to demonstrate the proposed alternatives would ensure the protection and propagation of the beneficial uses of the receiving waters, including a balanced, indigenous population of shellfish, fish, and wildlife.

SDG&E submitted the results of the 316(a) study to the San Diego Water Board in 1981. SDG&E concluded that the additional discharge from the Unit 5, when added to the discharges from Units 1- 4, had not resulted in "appreciable harm" to the balanced indigenous communities of the receiving waters, or in adverse effects on the beneficial uses of the coastal waters in the vicinity of the Facility discharge.

SDG&E submitted a supplemental 316 (a) Summary Report in 1990. This report provided additional data for the period from 1981 to 1990 and amended the original request based on actual operating experience.

Prior to the adoption of Order 94-59, and based upon a review of the findings of the 316(a) demonstration studies, the San Diego Water Board and USEPA concluded that additional information was needed to determine if the thermal discharge from the Facility will allow the propagation of a balanced indigenous community and will ensure the protection of beneficial uses of the receiving water. Order 94-59 required SDG&E to conduct an additional study to supplement its demonstration of compliance with section 316 (a). SDG&E submitted this supplemental study on August 8, 1997. The supplemental study concludes that no adverse effects of the present operation have been observed or are predicted. Cabrillo Power resubmitted the 1997 report in February 2004.

In July 2005, Tetra Tech Inc., under contract to USEPA and on behalf of the San Diego Water Board, reviewed the supplemental study and concluded that the report did not provide the information necessary to determine if the thermal discharge from the Facility would allow for the propagation of a balanced, indigenous population and will ensure the protection of beneficial uses of water.

Order No. R9-2006-0043, section VII.C. (Special Provisions) stated that within 90 days of adoption, the Discharger was to submit a plan and time schedule to address the comments on the 1997 Encina Power Plant Supplemental 316 (a) Assessment Report contained in the July 8, 2005 Tetra Tech, Inc. memorandum. This plan was submitted by Cabrillo Power I LLC to the San Diego Regional Water Quality Control Board on November 13, 2006.

An exception for new source performance standards contained in the Thermal Plan and power plant regulations for discharges from Unit 5 have not been granted. The Order implements all applicable Thermal Plan and USEPA thermal requirements.

3. California Ocean Plan. The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan)

in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, 2005, 2009, and 2012. The State Water Board adopted the latest amendment on October 16, 2012, and it became effective on August 19, 2013. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the state to be protected as summarized below:

Table F-8. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
Discharge Point 001	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting.

In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

4. **Antidegradation Policy.** Federal regulations at 40 CFR section 131.12 require that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The San Diego Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 CFR section 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 CFR section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

6. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, section 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. section 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state, including protecting rare and endangered species. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

7. **OTC Policy & Clean Water Act Section 316(b) – Impingement and Entrainment**

CWA section 316(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect the Best Technology Available (BTA) for minimizing adverse environmental impacts related to entrainment (drawing

organisms into the cooling water system) and impingement (trapping organisms against the intake screens).

On May 4, 2010 the State Water Board adopted a *Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling* (OTC Policy). The administrative record for the OTC Policy was approved by the Office of Administrative Law (OAL) on September 27, 2010. The OTC Policy became effective on October 1, 2010.

The OTC Policy establishes technology-based standards to implement federal Clean Water Act section 316(b) and reduce the harmful effects associated with cooling water intake structures on marine and estuarine life. The OTC Policy applies to existing power plants that currently have the ability to withdraw water from the State's coastal and estuarine waters using a single-pass system, also known as OTC. Closed-cycle wet cooling has been selected as the best technology available (BTA).

The OTC Policy requires compliance under two alternatives:

a. Track 1, where an owner or operator of an existing power plant must reduce intake flow rate at each unit, at a minimum, to a level commensurate with that which can be attained by a closed-cycle wet cooling system. A minimum 93 percent reduction in intake flow rate for each unit is required for Track 1 compliance, compared to the unit's design intake flow rate. The through-screen intake velocity must not exceed 0.5 foot per second. The installation of closed cycle dry cooling systems meets the intent and minimum reduction requirements of this compliance alternative,

or

b. Track 2, where an owner or operator of an existing power plant demonstrates to the State Water Board's satisfaction that compliance with Track 1 is not feasible, the owner or operator of an existing power plant must reduce impingement mortality and entrainment of marine life for the Facility, on a unit-by-unit basis, to a comparable level to that which would be achieved under Track 1, using operational or structural controls, or both.

The Discharger has chosen Track 1 to come into OTC compliance. The Discharger will achieve Track 1 compliance by retiring Units 1, 2, 3, 4 and 5 by the OTC Policy compliance deadline of December 31, 2017. The Carlsbad Energy Center LLC, a wholly owned subsidiary of NRG Energy, Inc.(NRG), intends to replace Units 1-5 with the Carlsbad Energy Center Project (CECP) on the eastern portion of the Facility. The CECP will be a simple cycle generating facility using six natural gas-fired combustion turbines with a 632 megawatt nominal output of air-cooled combined cycle electrical generation. By letter to the State Water Board dated April 23, 2015, the Discharger reiterated its intent to retire Units 1, 2, 3, 4, and 5 when the new CECP comes on-line or by December 31, 2017, whichever is sooner. The OTC Policy established a time schedule for compliance for all of the Facility's Units (1, 2, 3, 4, and 5) by December 31, 2017. Therefore, a time schedule is included in the provisions of this Order to require compliance with the OTC Policy deadline date.

D. Impaired Water Bodies on CWA 303(d) List

Under section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on

these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On October 11, 2011 the USEPA gave final approval to California's 2010 section 303(d) List of Water Quality Limited Segments. This 303(d) list does not include the Pacific Ocean shoreline in the vicinity of the Facility discharge point.

E. Other Plans, Polices and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the U.S. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations (CFR): 40 CFR section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

A. Discharge Prohibitions

1. **Discharge Prohibition III.A** (Discharge of wastes in a manner or to a location not specifically described or regulated by this Order is prohibited).

   This prohibition is retained from Order R9-2006-0043 and allows the Discharger to discharge waste only in accordance with the requirements of this Order. It is based on sections 301 and 402 of the federal CWA and section 13263 of the Water Code.

2. **Discharge Prohibition III.B** (Discharge of oil or other residuary petroleum products, except as authorized by waste discharge requirements contained in this Order or by provision of Division 7 of the CWC is prohibited).

   This prohibition is a restatement of a similar prohibition contained in Order R9-2006-0043.

3. **Discharge Prohibition III.C** (Discharge of polychlorinated biphenyl compounds (PCBs) is prohibited).

   This prohibition is a restatement of the applicable effluent limitations guidelines for steam electric power plants at 40 CFR section 423.13(a).

4. **Discharge Prohibition III.D** (A total discharge volume in excess of 863.5 MGD at Discharge Point 001 is prohibited).

   This provision is retained from Order R9-2006-0043, and reflects the maximum possible discharge from the Facility as described by the Discharger in its application materials for renewal of its WDRs.

5. **Discharge Prohibition III.E** (The discharge of wastewater not in compliance with the Basin Plan Waste Discharge Prohibitions, incorporated in this Order as fully set forth herein, and summarized in Attachment G, is prohibited).

   This prohibition is required by chapter 4 of the Basin Plan. The discharge prohibitions in the Basin Plan are applicable to any person, as defined by section

13050(c) of the Water Code, who is a citizen, domiciliary, or political agency or entity of California whose activities in California could affect the quality of waters of the State within the boundaries of the San Diego Region.

6. **Discharge Prohibition III.F** (The discharge of wastewater not in compliance with the Discharge Prohibitions contained in the Ocean Plan, incorporated in this Order as fully set forth herein, and summarized in Attachment G, is prohibited).

   This prohibition is required by the Ocean Plan which specifies the Ocean Plan is applicable in its entirety to point source discharges to the ocean.

7. Discharge Prohibition III.G (The discharge of Once-Through-Cooling (OTC) wastewater that are not associated with power generating activities or critical system maintenance is prohibited unless otherwise permitted under the Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Policy) is prohibited.).

   This prohibition is required by the OTC Policy which specifies that owners and operators of existing facilities that are not engaging directly in power-generating activities, or critical system maintenance, shall cease intake flows, unless the State Water Board determines that a reduced minimum flow is necessary for operations.

B. Technology-Based Effluent Limitations (TBELs)

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on *Effluent Limitations Guidelines and Standards for the Steam Electric Point Source Category* in 40 CFR part 423.

The CWA requires that technology-based effluent limitations (TBELs) be established based on several levels of controls:

a. Best practicable treatment control technology (BPT) represents the average of the best existing performance by well-operated facilities within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

b. Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

c. Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including Biochemical oxygen demand (BOD), Total Suspended Solids (TSS), fecal coliform, pH, and oil and grease. The BCT standard is established after considering a two-part reasonableness test. The first test compares the relationship between the costs of attaining a reduction in effluent discharge and the resulting benefits. The second test examines the cost and level of reduction of pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or

category of industrial sources. Effluent limitations must be reasonable under both tests.

d. New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires USEPA to develop effluent limitations guidelines (ELGs) and standards representing application of BPT, BAT, BCT, and NSPS. Section 402(a)(1) of the CWA and 40 CFR section 125.3 authorize the use of best professional judgment (BPJ) to derive TBELs on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the San Diego Water Board must consider specific factors outlined in 40 CFR section 125.3.

2. Applicable Technology-Based Effluent Limitations

a. National Effluent Limitation Guidelines (ELGs) and Standards

Pursuant to section 306(b)(1) of the CWA, USEPA has established standards of performance for the steam electric power point source category (40 CFR section 423.10). Standards of performance for existing facilities (instead of new source performance standards) are applicable to all units of the Facility because their construction was completed or commenced prior to publication of regulations on November 19, 1982, which proposed standards of performance for the industry. The following are applicable technology based standards of performance (BPT and BAT) applicable to the Facility based on the effluent limitations guidelines for existing sources at 40 CFR Part 423. The guidelines do not include standards of performance based on BCT.

i. Standards of Performance Based on BPT

(a) The pH of all discharges, except OTC water, shall be within the range of 6.0 – 9.0 [40 CFR section 423.12(b)(1)].

(b) Low-volume wastes are defined as those wastewater sources for which specific limitations are not established by the effluent limitations guidelines at 40 CFR part 423. The quantity of pollutants discharged from low-volume waste sources shall not exceed the quantity determined by multiplying the flow of the low-volume waste sources times the concentration as specified in Table F-9 [40 CFR section 423.12(b)(3)].

Table F-9. Effluent Limitation Guidelines for Low-volume Wastes

Pollutant	Daily Maximum (mg/L)	30 Day Average (mg/L)
Total Suspended Solids	100	30
Oil and Grease	20	15

(c) The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal

cleaning wastes times the concentration as specified in Table F-10 [40 CFR section 423.12(b)(5)]:

Table F-10. Effluent Limitation Guidelines for Metal Cleaning Waste

Pollutant	Daily Maximum (mg/L)	30 Day Average (mg/L)
Total Suspended Solids	100	30
Oil and Grease	20	15
Iron, Total Recoverable	1.0	1.0
Copper, Total Recoverable	1.0	1.0

(d) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration-based limitations instead of the mass-based limitations required above consistent with 40 CFR section 423.12(b)(11).

ii. Standards of Performance Based on BAT

(a) There shall be no discharge of PCBs such as those commonly used for transformer fluid [40 CFR section 423.13(a)].

(b) The quantity of pollutants discharged in OTC water from each discharge point shall not exceed the quantity determined by multiplying the flow of OTC water from each discharge point times the concentration as specified in Table F-11 [40 CFR section 423.13(b)(1)]:

Table F-11. Effluent Limitation Guidelines for Total Residual Chlorine

Pollutant	Maximum Concentration (mg/L)
Total Residual Chlorine	0.2

(c) Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the Discharger demonstrates to the permitting authority that discharge for more than two hours per day is required for macroinvertebrate control [40 CFR section 423.13(b)(2)]. The duration of each chlorination cycle shall not exceed 25 minutes.

(d) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration-based limitations instead of the mass-based limitations required above consistent with 40 CFR section 423.12(b)(11).

b. Ocean Plan TBELs

The Ocean Plan prescribes TBELs for grease and oil, suspended solids, settleable solids, turbidity and pH in Table 2 which apply to industrial discharges for which effluent limitations have not been established pursuant to sections 301, 302, 304, or 306 of the Clean Water Act. Compliance with the Table 2 effluent limitations is the minimum level of treatment acceptable

under the Ocean Plan and defines reasonable treatment and waste control technology applicable to industrial discharges.

As described above, discharges from the Facility are subject to effluent limitations guidelines for existing sources at 40 CFR part 423. Although the TBELs contained in Table 2 of the Ocean Plan are not applicable to the combined discharge from the Facility, effluent limitations for pH and turbidity in the combined cooling water discharge have been retained from Order R9-2006-0043 to ensure compliance with receiving water limitations for natural light and pH.

c. Final TBELs Included in the Order

The effluent limitations guidelines for existing sources at 40 CFR part 423 serve as the applicable TBELs for the OTC waters (Discharge Point 001), the metal cleaning wastes (Discharge Point 001A), and the low-volume wastes (Discharge Points 001B through 001E and 001H) discharged from the Facility.

Under BAT requirements, the discharge of PCBs in the effluent is prohibited. This limitation is being retained from the Order R9-2006-0043 as a Discharge Prohibition which prohibits the discharge of PCBs.

Order R9-2006-0043 included effluent limitations for pH and turbidity for the combined discharge from the Facility (Discharge Point 001) based on the TBELs contained in Table 2 of the Ocean Plan. As described above, discharges from the Facility are subject to effluent limitations guidelines for existing sources at 40 CFR part 423 and the TBELs contained in Table 2 of the Ocean Plan, including the effluent limitations for pH and turbidity, are not required for the Facility. These effluent limitations have been retained from Order R9-2006-0043 to ensure compliance with receiving water limitations for natural light and pH.

As described in section II.A of this Fact Sheet, there are several metal cleaning waste streams that could be generated as part of the operations at the Facility. All of the metal cleaning waste streams are directed to the metal cleaning treatment facility prior to ultimate discharge through Discharge Point 001. The discharge volume of each of the metal cleaning waste streams is variable based on the operations at the Facility, and therefore the frequency and volume of metal cleaning wastes discharged through the metal cleaning treatment facility are also variable. In order to ensure compliance with the applicable ELGs for metal cleaning wastes, Order R9-2006-0043 included concentration-based effluent limitations for TSS, oil and grease, copper, and iron, as well as floating mass-based effluent limitations based on the actual flow of the metal cleaning waste streams at the time of sampling. This Order carries forward these same TBELs for discharges from the metal cleaning treatment facility (Discharge Point 001A). In addition, and in accordance with 40 CFR section 423.12(b)(1), effluent limitations for pH are included in the Order for discharges from the metal cleaning treatment facility (Discharge Point 001A).

As described in section II.A of this Fact Sheet, there are several low-volume waste streams generated as part of the operations at the Facility. Several of the low-volume waste streams are discharged without treatment at Discharge Points Nos. 001B through 001E, and several others (including evaporator blowdown, sample and floor drains, demineralizers, softeners, condenser cleaning, sand filter backwash, portable demineralizer rinse flush, RO membrane cleaning, and salt water heat exchanger drains) are directed to the low-volume waste treatment facility prior to ultimate discharge through Discharge Point No. 001. The discharge volume of each of the low-volume waste streams is variable based on the operations at the Facility, and therefore the frequency and volume of the low-volume wastes discharged are also variable. In order to ensure compliance with the applicable ELGs for low-volume wastes, Order R9-2006-0043 included concentration-based effluent limitations for TSS and oil and grease, as well as floating mass-based effluent limitations based on the actual flow of the low-volume waste streams at the time of sampling. This Order carries forward these same TBELs for low-volume discharges (Discharge Points 001B through 001E and 001H). In addition, and in accordance with 40 CFR section 423.12(b)(1), the effluent limitations for pH in Order R9-2006-0043 are retained for the low-volume waste discharges.

d. Storm Water Management

In Water Quality Order 97-03-DWQ, the State Water Board adopted *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity, Excluding Construction Activity* (NPDES No. CAS000001) (Statewide Industrial Storm Water Permit). On March 15, 1999, the Discharger submitted a Notice of Intent to obtain coverage, effective May 22, 1999, for the Facility under the General Industrial Storm Water Permit (Order 97-03-DWQ). The best management practices (BMPs) contained in the Discharger's Storm Water Pollution Prevention Plan represent the BMPs required pursuant to Provision 3 of Order 97-03-DWQ. The previous Order No. R9-2006-0043 regulated storm water from Basins D and E while storm water from Basins A, B, C, and F were regulated by the Statewide Industrial Storm Water Permit.

The Statewide Industrial Storm Water Permit was reissued on April 1, 2014 by the State Water Board and became effective on July 1, 2015. For consistency of regulation, all storm water from the Facility is now regulated by the Statewide Industrial Storm Water Permit (NPDES No. CAS000001). This Order will no longer regulate discharges of storm water.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

CWA section 301(b) and 40 CFR section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) of 40 CFR requires that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable

potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the Ocean Plan.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the Basin Plan. The beneficial uses applicable to the coastal waters of the Pacific Ocean contained in the Basin Plan are summarized in section III.C.1 of this Fact Sheet. The Basin Plan includes both narrative and numeric water quality objectives applicable to the receiving waters.

b. For all Ocean Waters of the State, the Ocean Plan establishes the beneficial uses summarized in section III.C.3 of this Fact Sheet. The Ocean Plan also includes water quality objectives for the ocean receiving water for bacterial characteristics, physical characteristics, chemical characteristics, biological characteristics, and radioactivity. Table 1 of the Ocean Plan establishes numeric water quality objectives that are applicable to all discharges within the jurisdiction of the Ocean Plan.

As described further in section IV.C.3 below, and in accordance with the Ocean Plan requirements, a reasonable potential analysis (RPA) was conducted for the Facility's discharges to the Pacific Ocean using available data from April 2009 through March 2015. Constituents that were reported in detectable concentrations in the effluent were compared to the applicable water quality objectives from Table 1 of the Ocean Plan. These criteria were used in conducting the RPA for this Order. The Pacific Ocean background concentrations that were used in the RPA were obtained from Table 3 of the Ocean Plan.

c. The Thermal Plan establishes water quality objectives for discharges of thermal and elevated temperature waste to "coastal and interstate waters" and "enclosed bays and estuaries". Thermal waste is defined as "cooling water and industrial process water used for the purpose of transporting heat". Elevated temperature waste is defined as "liquid, solid, or gaseous material including thermal waste discharge at a temperature higher than the natural temperature of receiving water". The Discharger continues to discharge thermal waste and elevated temperature waste. Effluent limitations for thermal wastes and elevated temperature waste have been implemented consistent with the requirements of the Thermal Plan as

discussed in section III.C.2 of this Fact Sheet (Attachment F to this Order) and consistent with BPJ as follows:

i. Temperature Effluent Limitations for Units 1 through 4

(a) Except during heat treatment operations, the temperature of the discharge through Discharge Point No. 001 to the Pacific Ocean shall not average more than 20°F (11.1°C) above that of the incoming lagoon water during any 24-hour period. (Thermal Plan)

(b) Except during heat treatment operations, the discharge through Discharge Point No. 001 to the Pacific Ocean shall not at any time exceed 25°F (13.9°C) above that of the incoming lagoon water. (BPJ)

(c) During heat treatment operations, the temperature of the discharge through Discharge Point No. 001 to the Pacific Ocean shall not exceed 120°F (48.9°C). A maximum temperature of 120°F (48.9°C) in the discharge shall not be maintained for a duration exceeding 2 hours. (BPJ)

ii. Temperature Effluent Limitations for Unit 5

The maximum temperature of the discharge through Discharge Point No. 001 to the Pacific Ocean shall not exceed, at any time, the natural temperature of the receiving water by more than 20ºF. (Thermal Plan)

3. Determining the Need for WQBELs

Order No. R9-2006-0043 contained effluent limitations based on Table 1 pollutants from the Ocean Plan section III.C.8.d. For this Order, the need for effluent limitations based on water quality objectives in Table 1 of the 2012 Ocean Plan was re-evaluated. The Ocean Plan describes compliance determination for Table 1 pollutants for dischargers which use a large volume of ocean water for OTC and states:

"Due to the large total volume of powerplant and other heat exchange discharges, special procedures must be applied for determining compliance with Table 1 objectives on a routine basis. Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimal probable initial dilution of the combined effluent (in-plant waste streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 3. The mass emission limits will then serve as requirements applied to all inplant waste streams taken together which discharge into the cooling water flow, except that limits for total chlorine residual, acute (if applicable per section (3)(c)) and chronic toxicity and instantaneous maximum concentrations in Table 1 shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water. The Table 1 objective for radioactivity shall apply to the undiluted combined final effluent."

Consistent with the requirements of the Ocean Plan for dischargers which use a large volume of ocean water for OTC, water quality-based effluent concentration

limitations have been established, applicable to the combined discharge through Discharge Point No. 001 for total chlorine residual, chronic toxicity, and for all toxic chemicals requiring instantaneous maximum limitations for protection of marine aquatic life. In addition, mass emission limitations, applicable to the combined flow of low-volume, in-plant wastes, are established for pollutants requiring 6-month median and daily maximum limitations for protection of marine aquatic life and for pollutants requiring average monthly effluent limitations for protection of human health.

Maximum mass emission limitations for toxics in the combined low-volume, in-plant discharges are based on the total maximum low-volume in-plant waste stream flows (cooling water volumes are not factored into the calculations). The mass emission limitations calculations utilized a combined low-volume flow of 2.9025 MGD in conjunction with a dilution factor of 15.5:1 and the water quality objectives listed in Table 1 of the Ocean Plan.

The need for effluent limitations based on water quality objectives in Table 1 of the Ocean Plan was re-evaluated for all pollutants for the combined discharge and the low-volume wastes. Determining the reasonable potential for a discharged pollutant to exceed an objective, was done in accordance with the following: 40 CFR section 122.44(d); *USEPA Technical Support Document for Water Quality-based Toxics Control* (TSD; EPA/505/2-90-001, 1991); and the Ocean Plan which was adopted by the State Water Board on October 16, 2012.

The statistical approach combines knowledge of effluent variability with the uncertainty due to a limited number of effluent data to estimate a maximum effluent value at a high level of confidence. This estimated maximum effluent value is based on a lognormal distribution of daily effluent values. Projected receiving water values (based on the estimated maximum effluent value or the reported maximum effluent value and minimum probable initial dilution) can then be compared to the appropriate objective to determine the potential for an exceedance of that objective and the need for an effluent limitation. According to the Ocean Plan, the RPA can yield three endpoints:

(1) Endpoint 1, an effluent limitation is required and monitoring is required;

(2) Endpoint 2, an effluent limitation is not required and the San Diego Water Board may require monitoring; and

(3) Endpoint 3, the RPA is inconclusive, monitoring is required, and an existing effluent limitation may be retained or a permit reopener clause is included to allow inclusion of an effluent limitation if future monitoring warrants the inclusion.

The implementation provisions for Table 1 in section III.C of the Ocean Plan specify that the minimum initial dilution is the lowest average initial dilution within any single month of the year. Dilution estimates are to be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure. Before establishing a dilution credit for a discharge, it must first be determined if, and how much, receiving water is available to dilute the discharge.

The minimum initial dilution factor (Dm) determined for use in Order R9-2006-0043 was 15.5 to 1. This 15.5 to 1 dilution factor has been used for the discharges from this Facility since 1985. No additions or modifications to the

Facility have occurred during the previous permit term and there is no information or study indicating that the basis for the Dm of 15.5 to 1 in 1985 analysis of dilution is no longer valid in the vicinity of the discharge. Therefore, the Dm of 15.5 to 1 will be retained from Order R9-2006-0043 and applied to WQBELs established herein. Because of the age of the dilution analysis, section VI.C.2 of this Order requires the Discharger to conduct a dilution study and to submit the results no later than March 1, 2020. If the cooling water discharge is not terminated, and the actual dilution ratio is found to be different and necessary, the new Dm will be used in the next permit cycle if the discharge has not terminated.

Conventional pollutants were not considered as part of the RPA. TBELs for these pollutants are included in this Order as described in section IV.B of this Fact Sheet.

Using the RPcalc 2.2 software tool developed by the State Water Board for conducting reasonable potential analyses, the San Diego Water Board conducted a RPA for the constituents listed in Table 1 of the Ocean Plan. The Discharger is required to monitor for these constituents as stated in the MRP (Attachment E) in order to gather data for use in reasonable potential analyses for future permit reissuances.

a. Discharge Point 001 (Combined Discharge)

Effluent data representing the combined discharge from the Facility (Discharge Point 001) provided in the Discharger's ROWD and monitoring reports from April 2009 through March 2015 were used in the RPA. A minimum probable initial dilution of 15.5 to 1 was considered in this evaluation. A summary of the RPA results is provided below:

Table F-12. Summary of RPA Results – Discharge Point 001 (Combined Discharge)

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]
Protection of Marine Aquatic Life						
Arsenic	µg/L	13	3.8	8[4]	3[5]	2
Cadmium, Total Recoverable	µg/L	13	<0.5	1[4]	0	3
Chromium, Total Recoverable	µg/L	13	1.9	2[4]	0	3
Copper, Total Recoverable	µg/L	13	2.2	3[4]	2[5]	2
Lead, Total Recoverable	µg/L	13	0.18	2[4]	0	3
Mercury, Total Recoverable	µg/L	13	0.13	0.04[4]	0.0005[5]	3
Nickel, Total Recoverable	µg/L	13	<2.5	5[4]	0	3
Selenium, Total Recoverable	µg/L	13	61	15[4]	0	2
Silver, Total Recoverable	µg/L	13	<0.5	0.7[4]	0.16[5]	3
Zinc, Total Recoverable	µg/L	13	<60	20[4]	8[5]	3
Cyanide (as CN)	µg/L	13	11	1[4]	0	3
Residual Chlorine	µg/L	2395	60	31.6[6]	0	2
Ammonia-N	µg/L	12	340	600[4]	0	2
Acute Toxicity	Tua	--	--	0.3[7]	0	--
Chronic Toxicity	TU_c	24	>33	1[7]	0	1
Phenolic compounds (non-chlorinated) [11]	µg/L	13	<1.5	30[4]	0	3

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]
Chlorinated phenolics[12]	µg/L	13	<2.7	1[4]	0	3
Endosulfans	µg/L	13	<0.04	0.009[4]	0	3
Endrin	µg/L	13	<0.06	0.002[4]	0	3
HCH	µg/L	13	<0.03	0.004[4]	0	2
Radioactivity	µg/L	--	--	[8]	0	--
Protection of Human Health – Noncarcinogens						
Acrolein	µg/L	1	<100	220[9]	0	3
Antimony	µg/L	1	<100	1,200[9]	0	3
Bis(2-chloroethoxy)methane	µg/L	1	<5.3	4.4[9]	0	3
Bis(2-chloroisopropyl)ether	µg/L	1	<5.7	1,200[9]	0	3
Chlorobenzene	µg/L	1	<5	570[9]	0	3
Chromium III	µg/L	--	--	190,000[9]	0	--
di-n-butyl phthalate	µg/L	1	<1.9	3,500[9]	0	3
Dichlorobenzenes	µg/L	1	<5	5,100[9]	0	3
Diethyl phthalate	µg/L	1	<1.9	33,000[9]	0	3
Dimethyl phthalate	µg/L	1	<1.6	820,000[9]	0	3
4,6-Dinitro-2-methylphenol	µg/L	1	<24	220[9]	0	3
2,4-Dinitrophenol	µg/L	1	<42	4.0[9]	0	3
Ethylbenzene	µg/L	1	<5	4,100[9]	0	3
Fluoranthene	µg/L	1	<2.2	15[9]	0	3
Hexachlorocyclopentadiene	µg/L	1	<10	58[9]	0	3
Nitrobenzene	µg/L	1	<1.9	4.9[9]	0	3
Thallium	µg/L	1	<500	2[9]	0	3
Toluene	µg/L	1	<5	85,000[9]	0	3
Tributyltin	µg/L	1	<0.00115	0.0014[9]	0	3
1,1,1-Trichloroethane	µg/L	1	<5	540,000[9]	0	3
Protection of Human Health – Carcinogens						
Acrylonitrile	µg/L	1	<50	0.10[9]	0	3
Aldrin	µg/L	1	<0.04	0.000022[9]	0	3
Benzene	µg/L	1	<5	5.9[9]	0	3
Benzidine	µg/L	1	<10	0.000069[9]	0	3
Beryllium	µg/L	1	<0.01	0.033[9]	0	3
Bis(2-chloroethyl)ether	µg/L	1	<5.7	0.045[9]	0	3
Bis(2-ethylhexyl)phthalate	µg/L	1	<2.5	3.5[9]	0	3
Carbon tetrachloride	µg/L	1	<5	0.90[9]	0	3
Chlordane	µg/L	1	<1	0.000023[9]	0	3
Chlorodibromomethane	µg/L	1	<5	8.6[9]	0	3
Chloroform	µg/L	1	<5	130[9]	0	3
DDT	µg/L	1	<0.04	0.00017[9]	0	3
1,4-Dichlorobenzene	µg/L	1	<5	18[9]	0	3
3-3'-Dichlorobenzidine	µg/L	1	<16	0.0081[9]	0	3
1,2-Dichloroethane	µg/L	1	<5	28[9]	0	3
1,1-Dichloroethylene	µg/L	1	<5	0.9[9]	0	3

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]
Dichlorobromomethane	µg/L	1	<5	6.2[9]	0	3
Dichloromethane	µg/L	1	<25	450[9]	0	3
1,3-Dichloropropene	µg/L	2[10]	<5	8.9[9]	0	3
Dieldrin	µg/L	1	<0.02	0.00004[9]	0	3
2,4-Dinitrotoluene	µg/L	1	<5.7	2.6[9]	0	3
1,2-Diphenylhydrazine	µg/L	1	<10	0.16[9]	0	3
Halomethanes	µg/L	1	<5	130[9]	0	3
Heptachlor	µg/L	1	<0.03	0.00005[9]	0	3
Heptachlor epoxide	µg/L	1	<0.83	0.00002[9]	0	3
Hexachlorobenzene	µg/L	1	<1.9	0.00021[9]	0	3
Hexachlorobutadine	µg/L	1	<0.9	14[9]	0	3
Hexachloroethane	µg/L	1	<1.6	2.5[9]	0	3
Isophorone	µg/L	1	<2.2	730[9]	0	3
N-Nitrosodimethylamine	µg/L	1	<10	7.3[9]	0	3
N-Nitrosodi-n-propylamine	µg/L	1	<10	0.38[9]	0	3
N-Nitrosodiphenylamine	µg/L	1	<10	2.5[9]	0	3
PAHs	µg/L	1	<1.9	0.0088[9]	0	3
PCBs	µg/L	1	<1	0.000019[9]	0	3
TCDD Equivalents	µg/L	1	2.2E-9	3.9E-9[9]	0	3
1,1,2,2-Tetrachloroethane	µg/L	1	<5	2.3[9]	0	3
Tetrachloroethylene	µg/L	1	<5	2.0[9]	0	3
Toxaphene	µg/L	1	<1	0.00021[9]	0	3
Trichloroethylene	µg/L	1	<5	27[9]	0	3
1,1,2-Trichloroethane	µg/L	1	<5	9.4[9]	0	3
2,4,6-Trichlorophenol	µg/L	1	<2.7	0.29[9]	0	3
Vinyl Chloride	µg/L	1	<5	36[9]	0	3

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]

1. Number of data points available for the RPA.
2. If there is a detected value, the highest reported value is summarized in the table. If there are no detected values, the lowest method detection limit (MDL) is summarized in the table. Note that the reported maximum effluent concentration (MEC) does not account for dilution. The RPA does account for dilution; therefore it is possible for a parameter with an MEC in exceedance of the most stringent criteria not to present a reasonable potential to cause an excursion of the applicable water quality objective (i.e., Endpoint 2).
3. End Point 1 – Reasonable potential determined, limit required, monitoring required.
   End Point 2 – Discharger determined not to have reasonable potential, monitoring may be established.
   End Point 3 – RPA was inconclusive, carry over previous limitations if applicable, and establish monitoring.
4. Based on the 6-Month Median in Table 1 of the Ocean Plan.
5. Background concentrations contained in Table 3 of the Ocean Plan.
6. Based on the water quality objective in the Ocean Plan (Table 1) that apply to intermittent discharges not exceeding two hours.
7. Based on the Daily Maximum in Table 1 of the Ocean Plan.
8. Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3 section 30253 of the California Code of Regulations. Levels of radioactivity that exceed the applicable criteria are not expected in the discharge.
9. Based on 30-Day Average in Table 1 of the Ocean Plan.
10. Represents one sample each for cis-1,3-Dichloropropene and trans-1,3-Dichloropropene (each reported as not detected (ND) at <5.0 µg/L).
11. Non-chlorinated phenolic compounds represent the sum of 2,4-dimethylphenol, 4,6-dinitro-2-methylphenol, 2,3-dinitrophenol, 2-methylphenol, 4-methylphenol, 2-nitrophenol, 4-nitrophenol, and phenol.
12. Chlorinated phenolic compounds represent the sum of 4-chloro-3-methylphenol, 2-chlorophenol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.

The RPA yielded Endpoint 1 for chronic toxicity. Consistent with 40 CFR section 122.44(I)(2), WQBELs for chronic toxicity from Order R9-2006-0043 will be retained in this Order.

The RPA yielded Endpoint 2 for arsenic, copper, selenium, ammonia, residual chlorine, and HCH and these parameters are determined not to have reasonable potential, thus effluent limitations are not required for these parameters. For total residual chlorine, although the RPA resulted in Endpoint 2, the Facility intermittently chlorinates its discharge and discharges a relatively large volume of water. Therefore, the effluent limitations for total residual chlorine from Order R9-2006-0043 will be retained in this Order.

For parameters for which Endpoint 3 was concluded, reasonable potential was inconclusive. Monitoring for these parameters has been established in this Order consistent with Appendix III of the Ocean Plan.

b. Discharge Points 001B through 001E and 001H (Low-Volume Waste Discharges)

Effluent data representing the low-volume waste discharges from the Facility (Discharge Points 001B through 001E and 001H) provided in the Discharger's ROWD and monitoring reports from April 2009 through September 2013 were used in the RPA. A minimum probable initial dilution of 15.5 to 1 was considered in this evaluation. A summary of the RPA results is provided below:

Table F-13. Summary of RPA Results – Combined, Low-volume Internal Wastewater Discharge)

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]
Protection of Marine Aquatic Life						
Arsenic	µg/L	10	4.73.8	8[4]	3[5]	2
Cadmium, Total Recoverable	µg/L	10	<0.25	1[4]	0	3
Chromium, Total Recoverable	µg/L	10	<10	2[4]	0	3
Copper, Total Recoverable	µg/L	10	38	3[4]	2[5]	1
Lead, Total Recoverable	µg/L	10	3.7	2[4]	0	2
Mercury, Total Recoverable	µg/L	10	0.13	0.04[4]	0.0005[5]	3
Nickel, Total Recoverable	µg/L	10	8.1	5[4]	0	2
Selenium, Total Recoverable	µg/L	10	<50	15[4]	0	3
Silver, Total Recoverable	µg/L	10	0.034	0.7[4]	0.16[5]	3
Zinc, Total Recoverable	µg/L	10	<60	20[4]	8[5]	3
Cyanide (as CN)	µg/L	10	11	1[4]	0	1
Residual Chlorine	µg/L	--	60	31.6[4]	0	--
Ammonia-N	µg/L	10	340	600[4]	0	2
Acute Toxicity	Tua	--	--	0.3	0	--
Chronic Toxicity	TU_c	--	--	1[6]	0	--
Phenolic compounds (non-chlorinated) [10]	µg/L	1	<1.5	30[4]	0	3
Chlorinated phenolics[11]	µg/L	1	<2.7	1[4]	0	3
Endosulfans	µg/L	1	<0.04	0.009[4]	0	3
Endrin	µg/L	1	<0.06	0.002[4]	0	3
HCH	µg/L	1	<0.3	0.004[4]	0	3
Radioactivity	µg/L	--	--	[7]	0	--
Protection of Human Health – Noncarcinogens						
Acrolein	µg/L	1	<100	220[8]	0	3
Antimony	µg/L	1	<100	1,200[8]	0	3
Bis(2-chloroethoxy)methane	µg/L	1	<5.3	4.4[8]	0	3
Bis(2-chloroisopropyl)ether	µg/L	1	<5.7	1,200[8]	0	3
Chlorobenzene	µg/L	1	<6	570[8]	0	3
Chromium III	µg/L	--	--	190,000[8]	0	--
di-n-butyl phthalate	µg/L	1	<2.5	3,500[8]	0	3
Dichlorobenzenes	µg/L	1	<5	5,100[8]	0	3
Diethyl phthalate	µg/L	1	<1.9	33,000[8]	0	3
Dimethyl phthalate	µg/L	1	<1.6	820,000[8]	0	3
4,6-Dinitro-2-methylphenol	µg/L	1	<24	220[8]	0	3
2,4-Dinitrophenol	µg/L	1	<42	4.0[8]	0	3
Ethylbenzene	µg/L	1	<7.2	4,100[8]	0	3
Fluoranthene	µg/L	1	<2.2	15[8]	0	3
Hexachlorocyclopentadiene	µg/L	1	<10	58[8]	0	3
Nitrobenzene	µg/L	1	<1.9	4.9[8]	0	3
Thallium	µg/L	1	<100	2[8]	0	3

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]
Toluene	µg/L	1	<6	85,000[8]	0	3
Tributyltin	µg/L	1	<0.00115	0.0014[8]	0	3
1,1,1-Trichloroethane	µg/L	1	<3.8	540,000[8]	0	3
Protection of Human Health – Carcinogens						
Acrylonitrile	µg/L	1	<50	0.10[8]	0	3
Aldrin	µg/L	1	<0.04	0.000022[8]	0	3
Benzene	µg/L	1	<4.4	5.9[8]	0	3
Benzidine	µg/L	1	<10	0.000069[8]	0	3
Beryllium	µg/L	1	<0.01	0.033[8]	0	3
Bis(2-chloroethyl)ether	µg/L	1	<5.7	0.045[8]	0	3
Bis(2-ethylhexyl)phthalate	µg/L	1	<2.5	3.5[8]	0	3
Carbon tetrachloride	µg/L	1	<2.8	0.90[8]	0	3
Chlordane	µg/L	1	<1	0.000023[8]	0	3
Chlorodibromomethane	µg/L	1	<3.1	8.6[8]	0	3
Chloroform	µg/L	1	<1.6	130[8]	0	3
DDT	µg/L	1	<0.04	0.00017[8]	0	3
1,4-Dichlorobenzene	µg/L	1	<5	18[8]	0	3
3-3'-Dichlorobenzidine	µg/L	1	<16	0.0081[8]	0	3
1,2-Dichloroethane	µg/L	1	<2.8	28[8]	0	3
1,1-Dichloroethylene	µg/L	1	<2.8	0.9[8]	0	3
Dichlorobromomethane	µg/L	1	<2.2	6.2[8]	0	3
Dichloromethane	µg/L	1	<18	450[8]	0	3
1,3-Dichloropropene	µg/L	2[9]	<5	8.9[8]	0	3
Dieldrin	µg/L	1	<0.02	0.00004[8]	0	3
2,4-Dinitrotoluene	µg/L	1	<5.7	2.6[8]	0	3
1,2-Diphenylhydrazine	µg/L	1	<10	0.16[8]	0	3
Halomethanes	µg/L	1	<5	130[8]	0	3
Heptachlor	µg/L	1	<0.03	0.00005[8]	0	3
Heptachlor epoxide	µg/L	1	<0.83	0.00002[8]	0	3
Hexachlorobenzene	µg/L	1	<1.9	0.00021[8]	0	3
Hexachlorobutadine	µg/L	1	<0.9	14[8]	0	3
Hexachloroethane	µg/L	1	<1.6	2.5[8]	0	3
Isophorone	µg/L	1	<2.2	730[8]	0	3
N-Nitrosodimethylamine	µg/L	1	<10	7.3[8]	0	3
N-Nitrosodi-n-propylamine	µg/L	1	<10	0.38[8]	0	3
N-Nitrosodiphenylamine	µg/L	1	<10	2.5[8]	0	3
PAHs	µg/L	1	<1.9	0.0088[8]	0	3
PCBs	µg/L	1	<1	0.000019[8]	0	3
TCDD Equivalents	µg/L	1	2.2E-9	3.9E-9[8]	0	3
1,1,2,2-Tetrachloroethane	µg/L	1	<6.9	2.3[8]	0	3
Tetrachloroethylene	µg/L	1	<4.1	2.0[8]	0	3
Toxaphene	µg/L	1	<1	0.00021[8]	0	3

Parameter	Units	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA Endpoint[3]
Trichloroethylene	µg/L	1	<1.9	27[8]	0	3
1,1,2-Trichloroethane	µg/L	1	<5	9.4[8]	0	3
2,4,6-Trichlorophenol	µg/L	1	<2.7	0.29[8]	0	3
Vinyl Chloride	µg/L	1	<5	36[8]	0	3

1. Number of data points available for the RPA.
2. If there is a detected value, the highest reported value is summarized in the table. If there are no detected values, the lowest MDL is summarized in the table. Note that the reported MEC does not account for dilution. The RPA does account for dilution; therefore it is possible for a parameter with an MEC in exceedance of the most stringent criteria not to present a reasonable potential (i.e., Endpoint 2).
3. End Point 1 – reasonable potential determined, limit required, monitoring required.
   End Point 2 – Discharger determined not to have RP, monitoring may be established.
   End Point 3 – RPA was inconclusive, carry over previous limitations if applicable, and establish monitoring.
4. Based on the water quality objective in the Ocean Plan (Table 1) that apply to intermittent discharges not exceeding two hours.
5. Background concentrations contained in Table 3 of the Ocean Plan.
6. Based on the Daily Maximum in Table 1 of the Ocean Plan.
7. Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3 section 30253 of the California Code of Regulations. Levels of radioactivity that exceed the applicable criteria are not expected in the discharge.
8. Based on 30-Day Average in Table 1 of the Ocean Plan.
9. Represents one sample each for cis-1,3-Dichloropropene and trans-1,3-Dichloropropene (each reported as ND at <5.0 µg/L).
10. Non-chlorinated phenolic compounds represent the sum of 2,4-dimethylphenol, 4,6-dinitro-2-methylphenol, 2,3-dinitrophenol, 2-methylphenol, 4-methylphenol, 2-nitrophenol, 4-nitrophenol, and phenol.
11. Chlorinated phenolic compounds represent the sum of 4-chloro-3-methylphenol, 2-chlorophenol, pentachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol.

Based on the RPA, there were several constituents for which Endpoint 1 was determined, including copper and cyanide. Consistent with 40 CFR section 122.44(I)(2), WQBELs for copper from Order R9-2006-0043 will be retained in this Order. New WQBELs for cyanide will also be established in this Order.

Consistent with 40 CFR section 122.44(I)(2)(i)(B), effluent limitations from Order No. R9-2006-0043 will not be retained for constituents for which the RPA results indicated Endpoint 2. Parameters for which Endpoint 2 was concluded are determined not to have reasonable potential, thus it is not required to establish effluent limitations for these parameters. Endpoint 2 was concluded for nickel, thus the effluent limitations for nickel were not retained in this Order. However, monitoring prior to the end of the permit term is being required for use in evaluating reasonable potential for the next Order.

For parameters for which Endpoint 3 was concluded, reasonable potential was inconclusive. For parameters for which Endpoint 3 was concluded and previous effluent limitations had not been established, monitoring prior to the end of the permit term is being required for use in evaluating reasonable potential for the next Order. For parameters for which new data is available and reasonable potential cannot be determined, effluent limitations from Order R9-2006-0043 have been retained (hexavalent chromium and mercury). The MRP in Attachment E of this Order is intended to facilitate collection of additional information for these constituents to determine if reasonable potential exists in future permit reissuances and/or updates.

4. WQBEL Calculations

a. From Table 1 water quality objectives of the Ocean Plan, effluent limitations are calculated according to the following equation for all pollutants, except for toxicity and radioactivity:

Ce = Co + Dm (Co – Cs) where,

Ce = the effluent limitation (µg/L)
Co = the water quality objective to be met at the completion of initial dilution (µg/L)
Cs = background seawater concentration (µg/L)
Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

b. For the Facility Dm equals 15.5, based on observed waste flow characteristics, receiving water density structure, and the assumption that that no currents of sufficient strength to influence the initial dilution process flow across the discharger structure. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of the wastewater with the ocean water around the point of discharge.

c. Table 3 of the Ocean Plan establishes background concentrations for some pollutants to be used when determining reasonable potential (represented as "Cs"). In accordance with Table 1 implementing procedures, Cs equals zero for all pollutants not established in Table 3. The background concentrations provided in Table 3 are summarized below:

Table F-17. Ocean Plan Table 3 Pollutant Background Concentrations

Parameter	Background Seawater Concentration
Arsenic	3 µg/L
Copper	2 µg/L
Mercury	0.0005 µg/L
Silver	0.16 µg/L
Zinc	8 µg/L

d. Mass emission rate effluent limitations are calculated according to the following equation:

lbs/day = 0.00834 x Ce x Q where:

Ce = the effluent concentration limit, µg/L
Q = flow rate, million gallons per day (MGD)

e. Example WQBEL Calculation for Copper

The following provides example calculations for effluent limitations for copper for the low-volume wastewaters (Discharge Points 001B through 001E and Discharge Point 001H). The water quality objectives from the Ocean Plan for copper are as follows:

Parameter	Units	6-Month Median	Daily Maximum	Instantaneous Maximum
Copper	µg/L	3	12	30

Using the equation, Ce = Co + Dm(Co – Cs), effluent limitations are calculated as follows:

Copper

Ce = 3 + 15.5 (3 – 2) = 19 µg/L (6-Month Median)
Ce = 12 + 15.5 (12 – 2) = 167 µg/L (Daily Maximum)
Ce = 30 + 15.5 (30 – 2) = 464 µg/L (Instantaneous Maximum)

lbs/day = 0.00834 x 19 x 2.9 = 0.45 lbs (6-Month Median)
lbs/day = 0.00834 x 167 x 2.9 = 4.0 lbs (Daily Maxium)

Based on the implementing procedures described above, effluent limitations for chromium (VI), copper, mercury, and cyanide for Discharge Points 001B through 001E and 001H were calculated.

5. Whole Effluent Toxicity (WET)

The Basin Plan defines toxicity as the adverse response of organisms to chemicals or physical agents.

The Basin Plan establishes a narrative water quality objective for toxicity:

> *"All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life."*

The San Diego Water Board has considered the following information in developing toxicity monitoring and effluent limitations:

- Discussions with USEPA Region 9;
- USEPA's June 2010 guidance document titled *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document, An Additional Whole Effluent Toxicity Statistical Approach for Analyzing Acute and Chronic Data* (EPA 833-R-10-003);
- USEPA's June 2010 guidance document titled *National Pollutant Discharge Elimination System Test of Significant Toxicity Technical Document, An Additional Whole Effluent Toxicity Statistical Approach for Analyzing Acute and Chronic Data* (EPA 833-R-10-004);
- The narrative water quality for objective for toxicity contained in the Basin Plan;
- The numeric water quality objectives for toxicity contained in the Ocean Plan; and
- Applicable State and federal regulations.

The Ocean Plan establishes a daily maximum chronic toxicity objective of 1.0 TUc = 100/NOEC (No Observed Effects Concentration), using a five-concentration hypothesis test, and a daily maximum acute toxicity objective of 0.3 TUa = 100/LC50, using a point estimate model.

In 2010, USEPA endorsed the peer-reviewed Test of Significant Toxicity (TST) two-concentration hypothesis testing approach in *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, 2010) as an improved hypothesis-testing tool to evaluate data

from USEPA's toxicity test methods. The TST hypothesis testing approach more reliably identifies toxicity in relation to the chronic (0.25 or more) and acute (0.20 or more) mean responses of regulatory management concern, than the current NOEC hypothesis-testing approach used in the Ocean Plan. TST results are also more transparent than the point estimate model approach used for acute toxicity in the Ocean Plan that is not designed to address the question of statistical uncertainty around the modeled toxicity test result in relation to the effect level of concern. The TST is the superior approach for addressing statistical uncertainty when used in combination with USEPA's toxicity test methods and is implemented in federal permits issued by USEPA Region 9. Use of the TST approach to establish the numeric effluent limitations is expected to be protective of the Ocean Plan's numeric toxicity objectives.

In 2011, to demonstrate the advantages of the TST approach, the State Water Board conducted a "test drive" comparing results obtained using TST with results obtained using the NOEC statistical approach currently being used in California's WET program. Using data from a number of sources, the analysis identified the number of tests passing or failing, the range of effects associated with passing or failing, and the within-test variability associated with these tests using the TST and the NOEC approach. A sample was declared toxic if there was greater than or equal to a 25 percent effect in a chronic test at the permitted Instream Waste Concentration (IWC).

The results of the test drive indicated that, overall, use of the TST approach declared as toxic 2.9 percent of all tests with less than 25 percent effect (i.e., not truly toxic), while the NOEC analysis declared a greater number of those tests toxic, 5.3 percent. For chronic toxicity tests using marine species, the ability for the TST approach to more consistently identify truly toxic samples as toxic and truly non-toxic samples as non-toxic is even more pronounced.

The implementation of toxicity monitoring requirements and effluent limitations for discharges are based on the TST statistical approach which was developed by USEPA and assesses the whole effluent toxicity measurement of wastewater effects on specific test organisms' ability to survive, grow, and reproduce. This approach is a statistical method that uses hypothesis testing techniques based on research and peer-reviewed publications. The approach examines whether an effluent at the critical concentration and a control within a WET test differ by an unacceptable amount (the amount that would have a measured detrimental effect on the ability of aquatic organisms to thrive and survive)

Organism response to the effluent and control are unlikely to be exactly the same, even if no toxicity is present. They might differ by such a small amount that even if statistically significant, it would be considered negligible biologically. A more useful approach could be to rephrase the null hypothesis, "Is the mean response in the effluent less than a defined biological amount?" The Food and Drug Administration has successfully used that approach for many years to evaluate drugs, as have many researchers in other biological fields. In that approach, the null hypothesis is stated as the organism response in the effluent is less than or equal to a fixed fraction (b) of the control response (e.g., 0.75 of the control mean response):

Null hypothesis: Effluent sample mean ≤ b * Control mean

To reject the null hypothesis above means the effluent is considered non-toxic. To accept the null hypothesis means the effluent is toxic.

Before the TST null hypothesis expression could be recommended by USEPA, certain Regulatory Management Decisions (RMDs) were needed, including what effect level in the effluent is considered unacceptably toxic and the desired frequency of declaring a truly negligible effect within a test non-toxic.

In the TST approach, the b value in the null hypothesis represents the threshold for unacceptable toxicity. For chronic toxicity, the USEPA made the RMD that the b value is set at 0.75, which means that a 25 percent effect (or more) at the IWC is considered evidence of unacceptable chronic toxicity. For acute toxicity, the b value is set at 0.80.

USEPA's RMDs for the TST method are intended to identify unacceptable toxicity most of the time when it occurs, while also minimizing the probability that the IWC is declared toxic when in fact it is truly acceptable. Additional RMDs by USEPA to achieve this objective were made regarding acceptable maximum false positive (β using a TST approach) and false negative rates (α using a TST approach).

In the TST approach, the RMDs are defined as follows:

1. Declare a sample toxic between 75 – 95 percent of the time ($0.05 \leq \alpha \leq 0.25$) when there is unacceptable toxicity.
2. Declare an effluent non-toxic no more than 5 percent of the time ($\beta \leq 0.05$) when the effluent effect at the critical effluent concentration is 10 percent.

USEPA used valid toxicity data from approximately 2,000 WET tests to develop and evaluate the TST approach. The TST approach was tested using nine different whole effluent toxicity test methods comprising twelve biological endpoints and representing most of the different types of WET test designs in use. More than one million computer simulations were used to select appropriate alpha error rates for each test method that also achieved USEPA's other RMDs for the TST approach.

Effluent limitations are established using the TST "pass" "fail" approach as well as a percent effect.

Chronic Pass: A test result that rejects the null hypothesis (Ho) below is reported as "Pass" in accordance with the TST approach:

Ho: Mean response (percent effluent) ≤ 0.75 × Control mean response

Chronic Fail: A test result that does not reject the null hypothesis (Ho) above is reported as "Fail" in accordance with the TST approach.

Percent Effect: The percent effect at the IWC is calculated for each test result using the following equation:

$$\% \text{ Effect at IWC} = \frac{\text{Mean Control Response - Mean IWC Response} * 100}{\text{Mean Control Response}}$$

Instream Waste Concentration (IWC): The concentration of a toxicant or effluent in the receiving water after mixing (the inverse of the dilution factor). A discharge of 100 percent effluent will be considered the IWC whenever mixing zones or dilution credits are not authorized by the applicable Water Board. The minimum probable initial dilution for the combined discharge is 15.5 parts seawater per part wastewater so the IWC is 1/15.5 or 6.5 percent.

A Maximum Daily Effluent Limitation (MDEL) for chronic toxicity is established for the combined effluent via Discharge Point Nos. 001. The MDEL is exceeded and a violation will be flagged when a chronic toxicity test during routine monitoring results in a "fail" in accordance with the TST approach and the percent effect is greater than or equal to 50 percent.

In June 2010, USEPA published a guidance document titled, *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* (EPA 833-R-10-003, June 2010), in which they recommend the following: "Permitting authorities should consider adding the TST approach to their implementation procedures for analyzing valid WET data for their current NPDES WET Program." The TST approach is another statistical option for analyzing valid WET test data. Use of the TST approach does not result in any changes to USEPA's WET test methods. USEPA's *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, Third Edition (EPA-821-R-02-014)*, recognizes that, "the statistical methods in this manual are not the only possible methods of statistical analysis." The TST approach can be applied to acute (survival) and chronic (sublethal) endpoints and is appropriate to use for both freshwater and marine EPA WET test methods.

Appropriate interpretation of the measurement result from USEPA's TST statistical approach (pass/fail) for effluent and receiving water samples is, by design, independent from the concentration-response patterns of the toxicity tests for those samples. Therefore, when using the TST statistical approach, application of EPA's 2000 guidance on effluent and receiving waters concentration-response patterns will not improve the appropriate interpretation of TST results as long as all Test Acceptability Criteria and other test review procedures—including those related to Quality Assurance for effluent and receiving water toxicity tests, reference toxicity tests, and control performance (mean, standard deviation, and coefficient of variation)—described by the WET test methods manual and TST guidance, are followed. The 2000 guidance may be used to identify reliable, anomalous, or inconclusive concentration-response patterns and associated statistical results to the extent that the guidance recommends review of test procedures and laboratory performance already recommended in the WET test methods manual. The guidance does not apply to single-concentration (IWC) and control statistical t-tests and does not apply to the statistical assumptions on which the TST is based. The Regional Water Board will not consider a concentration-response pattern as sufficient basis to determine that a TST t-test result for a toxicity test is anything other than valid, absent other evidence. In a toxicity laboratory, unexpected concentration-response patterns should not occur with any regular frequency and consistent reports of anomalous or inconclusive concentration-response patterns or test results that are not valid will require an investigation of laboratory practices.

Any Data Quality Objectives or Standard Operating Procedure used by the toxicity testing laboratory to identify and report valid, invalid, anomalous, or inconclusive effluent or receiving water toxicity test measurement results from the TST statistical approach which include a consideration of concentration-response patterns and/or Percent Minimum Significant Difference (PMSDs) must be submitted for review by the Regional Water Board, in consultation with USEPA and the State Water Board's Quality Assurance Officer and Environmental Laboratory Accreditation Program (40 CFR section 122.44(h)). As described in

the bioassay laboratory audit directives to the San Jose Creek Water Quality Laboratory from the State Water Resources Control Board dated August 7, 2014, and from the USEPA dated December 24, 2013, the PMSD criteria only apply to compliance for NOEC and the sublethal endpoints of the NOEC, and are not used to interpret TST results.

A percent effect of 50% for chronic toxicity has been incorporated into the MDEL. The decision to conduct a Toxicity Identification Evaluation (TIE) is based upon consideration of multiple factors such as the magnitude and persistence of toxicity. The magnitude of toxicity present in a sample is an important consideration because a moderate to high level of toxicity typically yield more successful results. Usually, TIEs can be successfully conducted on samples producing at least 50 percent effect (e.g., >50 percent mortality or reduction in reproduction), and this value is recommended for general use in selecting samples for TIEs. Effective TIEs can also be conducted with less toxic samples (e.g., >25 percent effect), but there is a greater chance of the TIE being inconclusive due to changes in toxicity with storage or variability in response (Norberg-King et al. 2005). A percent effect of 50% for chronic toxicity has been incorporated into the MDEL to facilitate a successful TIE.

The minimum probable initial dilution for the combined discharge is 15.5 parts seawater per part wastewater. The IWC for these discharges are established at 6.5% effluent. Allowances for dilution and a different IWC may be made at the discretion of the San Diego Water Board.

The San Diego Water Board finds that the application of USEPA's TST method with the 50% effect for chronic toxicity is scientifically defendable and appropriate for the determination of compliance with the Basin Plan's narrative objective for toxicity. As such, toxicity monitoring requirements, analysis, and effluent limitations are established in this Order based on USEPA's TST method and a 50% effect for chronic toxicity. These refinements of using the TST approach with the appropriate percent effect clarifies the requirements for toxicity analyses, provides the Discharger with the positive incentive to generate high quality data, and affords greater protection of aquatic life.

Implementing provisions at section III.C.4.c.(3) of the Ocean Plan states that the San Diego Water Board may require acute toxicity testing in addition to chronic toxicity monitoring for ocean waste discharges with minimum initial dilution factors ranging from 100:1 to 350:1 as necessary for the protection of beneficial uses of ocean waters. This Order does not contain effluent limitations or monitoring requirements for acute toxicity because the minimum initial dilution factor for the Facility discharge is 15.5:1.

The reasonable potential result for Discharge Point 001 was based on a reported value from April 2010 of >33 TUc, toxic units chronic (based on *Macrocystis pyrifera*, Giant Kelp, germination test). According to the Discharger's ROWD, toxicity testing results from concurrent intake samples exceeded 16.5 TUc, and resampling in June showed chronic toxicity test results to be 1.0 TUc (also based on *Macrocystis pyrifera*, Giant Kelp, germination test). Although it appears as if the source of chronic toxicity in the April 2010 effluent from Discharge Point 001 could have been present in the intake, it is uncertain at this time. Therefore, the effluent limitation for chronic toxicity is established in this Order.

D. Final Effluent Limitation Considerations

1. Anti-Backsliding Requirements

Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 CFR section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for nickel (Discharge Points 001B through 001E and 001H). The effluent limitation for this pollutant is less stringent than that in Order R9-2006-0043. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

The effluent limitations for nickel have been removed from this Order. The removal of this effluent limitations is governed by the anti-backsliding requirements of CWA section 303(d)(4) Section 303(d)(4) permits the relaxation of a WQBEL limitation in attainment waters if 1) water quality meets or exceeds applicable water standards for nickel and 2) if the revision is consistent with the State's approved antidegradation policy.

Anti-degradation policies require that beneficial uses, and the water quality necessary to maintain those beneficial uses in the receiving waters of the discharge, shall be maintained and protected. The Pacific Ocean is not 303(d) listed in the vicinity of the Facility.

As discussed in section IV.C.3 of this Fact Sheet, data submitted by the discharger established that the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality objectives for nickel. Because the removal of effluent limitations for nickels is not expected to affect water quality, the beneficial uses of the Ocean will be maintained. Therefore, the removal of these effluent limitations is consistent with anti-backsliding.

Storm water requirements have also been removed from this Order. Order No. R9-2006-0043 regulated part of the storm water from the site and the Statewide Industrial Storm Water Permit. For consistency of storm water regulation, all storm water at the site will be regulated by the Statewide Industrial Storm Water Permit. This is not a relaxation of effluent limitations because the Statewide Industrial Storm Water Permit is at least as stringent as Order No. R9-2006-0043.

2. Antidegradation Policies

Waste Discharge Requirements for the Discharger must conform with federal and state antidegradation policies provided at 40 CFR section 131.12 and in State Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*. The antidegradation policies require that beneficial uses and the water quality necessary to maintain those beneficial uses in the receiving waters of the discharge shall be maintained and protected, and, if existing water quality is better than the quality required to maintain beneficial uses, the existing water quality shall be maintained and protected unless allowing a lowering of water quality is necessary to accommodate important economic and social development or consistent with maximum benefit to the people of California. When a significant lowering of water quality is allowed by the Regional Water Board, an antidegradation analysis is required in accordance with the State Water Board's *Administrative Procedures Update (July 2, 1990), Antidegradation Policy Implementation for NPDES Permitting*.

As discussed above, this Order removes WQBELs for nickel. A complete anti-degradation analysis is not required because no significant lowering of water quality has been allowed. This permit requires the Discharger to continue operating at current treatment efficiency. The discharge has no reasonable potential to cause exceedances for these constituents such that the removal of these effluent limitations is not expected to result in an increase of pollutant loading to the receiving water.

Because changes in this Order are not expected to result in a lowering of water quality of the receiving water, the requirements of this Order are consistent with federal and state antidegradation requirements.

3. Stringency of Requirements for Individual Pollutants

This Order contains both TBELs and WQBELs for individual pollutants. The TBELs consist of restrictions on total chlorine residual for discharges from Discharge Point 001; pH, TSS, oil and grease, copper, and iron from Discharge Point 001A (Metal Cleaning Wastes); and pH, TSS and oil and grease from Discharge Points 001B through 001E and 001H (Low-Volume Wastes). Restrictions on these pollutants are discussed in section IV.B.2.a in this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. These limitations are not more stringent than required by the CWA.

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. The procedures for calculating the individual WQBELs are based on the Ocean Plan, which was approved by USEPA on February 14, 2006. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

E. Interim Effluent Limitations – Not Applicable

F. Cooling Water Intake Specifications

1. Cooling water intake specifications are necessary to ensure the proper operation of the intake structure such that it does not interfere with the attainment of beneficial uses of the waterbody in which it operates. These specifications are retained from Order R9-2006-0043.

G. Land Discharge Specifications – Not Applicable

H. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

CWA section 303(a-c), requires states to adopt water quality standards, including criteria necessary to protect beneficial uses. The San Diego Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan

states “water quality objectives must protect the most sensitive of the beneficial uses which have been designated for a water body.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies.

The Ocean Plan establishes water quality objectives for California’s ocean waters and provides the basis for regulation of wastes discharged into the California’s coastal waters. The Ocean Plan is applicable to both point and non-point source discharges. The State Water Board adopts the Ocean Plan and, in conjunction with six coastal Regional Water Quality Control Boards, implements and interprets the Ocean Plan.

This Order contains receiving surface water limitations which incorporate Basin Plan and Ocean Plan numerical and narrative water quality objectives for bacterial, physical, chemical, biological, and radioactivity characteristics of ocean waters.

B. Groundwater – Not Applicable

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR section 122.42, are provided in Attachment D to the order.

Sections 122.41(a)(1) and (b) through (n) of 40 CFR establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the State to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

This Order may be re-opened and modified, revoked and reissued, or terminated in accordance with the provisions of 40 CFR parts 122, 123, 124, and 125. The San Diego Water Board may reopen the permit to modify permit conditions and requirements. Causes for modifications include the promulgation of new regulations, modification in sludge use or disposal practices, or adoption of new regulations by the State Water Board or the San Diego Water Board, including revisions to the Basin Plan.

2. Special Studies and Additional Monitoring Requirements

a. Initial Dilution Study

As described in section IV.C.3 of this Fact Sheet, the initial dilution factor used to perform the RPA was based on an initial dilution factor determined using the 1978 Water Quality Control Plan, Table B Guidelines, Ocean Waters of California. This same dilution factor was used in the 1985, 2000, and 2006 reissued Orders for the Facility. There is no information or study available to indicate that the Dm of 15.5 to 1 based on the 1978 Table B Guidelines is not still valid in the vicinity of the discharge. However, because of the age of the modeling used to the justify dilution factor, this Order

requires the Discharger to prepare and submit a dilution study before the expiration of this Order to demonstrate the current mixing characteristics of effluent and receiving water in the vicinity of the discharge location and for use in the next permit cycle if the Facility continues to operate. The Discharger shall submit the results of the study to the San Diego Water Board by March 1, 2020, if the cooling water discharge has not terminated.

3. Best Management Practices (BMPs) and Pollution Prevention – Not Applicable

4. Construction, Operation, and Maintenance Specifications

Discharge specifications from Order R9-2006-0043 regarding 100-year peak stream flows, 100-year storm event, and screenings, sludges, and other solids have been retained in this section of the Order.

5. Special Provisions for Municipal Facilities (POTW's Only) – Not Applicable

6. Other Special Provisions – Once-Through Cooling (OTC) Water Implementation Plan and Schedule

a. Once-Through Cooling (OTC) Water Implementation Plan and Schedule

As discussed in this Fact Sheet section III.E.1. the Discharger will achieve Track 1 compliance by retiring all five electrical generation units (Units) by the compliance deadline of December 31, 2017. All Units will be replaced with the CECP by December 31, 2017. Therefore, the Discharger is required to comply with the following compliance schedule to achieve compliance with Track 1 of the OTC:

Table F-18. Schedule of Compliance with the OTC Policy

Task	Compliance Date
1. Submit progress report on compliance actions (construction of the CECP and retirement of the Units).	July 1, 2016
2. Submit progress report on compliance actions (construction of the CECP and retirement of the Units).	July 1, 2017
3. Cease operation of the Units.	December 31, 2017

The final compliance date of December 31, 2017 may only be suspended in accordance with section 2.B(2) of the OTC Policy.

b. OTC Policy Immediate and Interim Requirements:

The OTC Policy further requires the immediate and interim requirements:

i. As of October 1, 2011, the owner or operator of an existing power plant with an offshore intake shall install large organism exclusion devices having a distance between exclusion bars of no greater that nine inches, or install other exclusion devices, deemed equivalent by the State Water Board.

ii. As of October 1, 2011, any unit that is not directly engaged in power-generating activities or critical system maintenance shall cease intake flows unless it has been demonstrated to the State Water Board that a reduced minimum flow is necessary for operations.

iii. Commencing on October 1, 2015 and continuing up and until achieving final compliance with the OTC Policy, the owner or operator of the existing power plant must implement measures to mitigate the interim impingement and entrainment impacts resulting from the discharge.

Per the submitted Implementation plan and subsequent correspondence, the large organism exclusion device requirement does not apply to the Facility because it does not have an offshore intake structure.

Any unit not directly engaged in power-generating activities or critical maintenance system has ceased intake flows.

The Discharger plans to implement measures to mitigate interim impingement and entrainment impacts resulting from cooling water intake structures commencing October 1, 2015. Until the Facility achieves full OTC compliance, the Discharger will provide funding to the Coastal Conservancy to be used for mitigation projects directed toward increases in marine life associated with the State's Marine Protected Areas in the local geographic region of the Facility. The amount to be provided shall be determined by the Deputy Director of the Division of Water Quality of the State Water Board. The Discharger is also interested in pursuing credit towards interim mitigation for the dredging of Agua Hedionda Lagoon to maintain tidal flow.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWA section 308 and 40 CFR sections 122.41(h), (j)-(*l*), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the San Diego Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (MRP), Attachment E of this Order establishes monitoring, reporting, and recordkeeping requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this Facility.

A. Influent Monitoring

Order No. R9-2006-0043 requires the Discharger to periodically monitor temperature, turbidity, total suspended solids, and pH at the intake structure. Temperature monitoring is required to determine compliance because the temperature effluent limitation is based on the difference (delta) between influent and effluent values for a particular parameter. The Order retains the requirements of Order R9-2006-0043 for influent monitoring at the intake structure except total suspended solids monitoring was eliminated because there are no effluent limitations for total suspended solids. This Order also requires the Discharger to report the flow to the Carlsbad Desalination Project.

B. Effluent Monitoring

Pursuant to the requirements of 40 CFR section 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations/performance goals. Effluent monitoring is necessary to address the following questions:

(1) Does the effluent meet permit effluent limits thereby ensuring that water quality standards are achieved in the receiving water?

(2) What is the mass of the constituents that are discharged annually?

(3) Is the effluent concentration or mass changing over time?

(4) What is the volume of effluent being discharged from the Facility?

(5) What is the toxicity in the discharge as compared to the receiving water?

Combined Discharge at EFF-001 – This Order retains flow, turbidity, pH, total residual chlorine, and chronic toxicity monitoring from Order R9-2006-0043. The monitoring of the remaining priority pollutants has been increased from once during the permit term to annually to ensure adequate data for a reasonable potential analysis.

Carlsbad Desalination Project Effluent at EFF-DESAL – This Order establishes effluent flow reporting for the Carlsbad Desalination Project because this desalination project uses the Discharger's cooling water flows and discharge channel.

Discharge Channel at EFF-CHANN – This Order requires reporting of the flow in the discharge channel to the Ocean. This flow may be calculated using the Discharger's flow and the intake and effluent flow from the Carlsbad Energy Center.

Low-Volume Waste – Consistent with Order No. R9-2006-0043, this permit requires the collection of separate grab samples from each low-volume waste discharged to Discharge Point No. 001. These grab samples are then composited on a flow-weighted basis. The proportion of each waste stream to be added to the composite sample must be based on the actual (preferred) or estimated flow rates for the day on which samples are collected. Monthly monitoring has been established in this Order for constituents with TBELS or where reasonable potential required establishment of effluent limitations. Semiannual monitoring has been established in this Order for chromium and mercury because reasonable potential was inconclusive and effluent limitations were carried over from Order R9-2006-0043. The monitoring of the remaining priority pollutants has been increased from once during the permit term to annually to ensure adequate data for a reasonable potential analysis.

Metal Cleaning Waste – Monthly monitoring prior to discharge has been retained from Order R9-2006-0043 for flow, TSS, oil and grease, copper, and iron. Annual monitoring for the remaining Ocean Plan Table 1 parameters has been added to this Order to ensure adequate data for a reasonable potential analysis.

C. Whole Effluent Toxicity (WET) Testing Requirements

Whole Effluent Toxicity (WET) tests are another method used to assess risk to aquatic life. These tests assess the overall toxicity of the effluent, including the toxicity of unmeasured constituents and/or synergistic effects of multiple constituents. Toxicity monitoring is intended to address the following questions:

(1) Does the effluent meet permit effluent limits for toxicity thereby ensuring that water quality standards are achieved in the receiving water?
(2) If not:
  (a) Are unmeasured pollutants causing risk to aquatic life?
  (b) Are pollutants in combinations causing risk to aquatic life?

Chronic toxicity effluent monitoring is established for combined discharges at Discharge Point No. 001 based on USEPA's TST with a 50 percent effect, as discussed above in section IV.C.5 of this Fact Sheet, in order to evaluate compliance with effluent limitations.

This Order requires the Discharger to conduct additional toxicity testing for exceedances of the toxicity effluent limitations. If the additional tests demonstrate

toxicity, the Discharger is required to submit a Toxicity Reduction Evaluation (TRE) Work Plan in accordance with USEPA guidance which shall include further steps taken by the Discharger to investigate, identify, and correct the causes of toxicity; actions the Discharge will take to mitigate the effects of the discharge and prevent the recurrence of toxicity; and a schedule for these actions. This provision also includes requirements to initiate the TRE/TIE process if the results of toxicity testing exceed the effluent limitation for chronic toxicity.

D. Receiving Water Monitoring

The receiving water and sediment monitoring requirements set forth below are designed to measure the effects of the discharge on the receiving ocean waters. The overall receiving water monitoring program is intended to answer the following questions:

(1) Does the receiving water meet water quality standards?

(2) Are the receiving water conditions getting better or worse over time?

(3) What is the relative contribution of the Facility discharge to pollution in the receiving water?

1. Dispersion and Reference Area Monitoring

Thermal plume monitoring is necessary to evaluate compliance with the requirements of the Thermal Plan. Monitoring for light transmittance, dissolved oxygen and pH are necessary to evaluate compliance with receiving water limitations. This Order retains the requirements of Order No. R9-2006-0043.

E. Groundwater – Not Applicable

F. Regional Monitoring Requirements

Regional ocean water monitoring provides information about the sources, fates, and effects of anthropogenic contaminants in the coastal marine environment necessary to make assessments over large areas. The large scale assessments provided by regional monitoring describe and evaluate cumulative effects of all anthropogenic inputs and enable better decision making regarding protection of beneficial uses of ocean waters. Regional monitoring data assists in the interpretation of core monitoring studies by providing a more accurate and complete characterization of reference conditions and natural variability. Regional monitoring also leads to methods standardization and improved quality control through intercalibration exercise. The coalitions implementing regional monitoring enable sharing of technical resources, trained personnel and associated costs. Focusing these resources on regional issues and developing a broader understanding of pollutants effects in ocean waters enables the development of more rapid and effective response strategies. Based on all of these considerations the San Diego Water Board supports regional approaches to monitoring ocean waters.

The Discharger shall, as directed by the San Diego Water Board, participate with other regulated entities, other interested parties, and the San Diego Water Board in development and implementation of new and improved monitoring and assessment programs for ocean waters in the San Diego Region and discharges to those waters. These programs shall be developed and implemented so as to:

(1) Determine the status and trends of conditions in ocean waters in the San Diego Region with regard to beneficial uses, e.g.,

i. Are fish and shellfish safe to eat?

ii. Is water quality safe for swimming?

iii. Are ecosystems healthy?

(2) Identify the primary stressors causing or contributing to conditions of concern;

(3) Identify the major sources of the stressors causing or contributing to conditions of concern; and

(4) Evaluate the effectiveness (i.e., environmental outcomes) of actions taken to address such stressors and sources.

1. Kelp Bed Monitoring Requirements

Kelp consists of a number of species of brown algae. Along the central and southern California coast, giant kelp (*Macrocystis pyrifera*) is the largest species colonizing rocky, and in some cases sandy, subtidal habitats. Giant kelp is an important component of coastal and island communities in southern California, providing food and habitat for numerous animals. Monitoring of the kelp beds is necessary to answer the following questions:

(1) What is the maximum areal extent of the coastal kelp bed canopies each year?

(2) What is the variability of the coastal kelp bed canopy over time?

(3) Are coastal kelp beds disappearing? If yes, what are factors that could contribute to the disappearance?

(4) Are new coastal kelp beds forming?

Order No. R9-2006-0043 required the Discharger to participate with other ocean discharges in the San Diego Region in an annual photographic survey of regional kelp beds. Using vertical aerial infrared photography, the purpose of the annual survey is to compare the extent of coastal kelp bed coverage areas to historical surveys. Significant, persistent losses must be investigated by divers to determine probable reasons for the loss. This Order retains the requirements of Order No. R9-2006-0043 for kelp bed monitoring.

2. Southern California Bight Monitoring Program Participation Requirements

Order No. R9-2006-0043 required the Discharger to participate and coordinate with state and local agencies and other dischargers in the San Diego Region in development and implementation of a regional ocean monitoring program. This Order requires the Discharger to participate in the Southern California Bight Regional Monitoring Program or other regional monitoring program named by the San Diego Water Board Executive Officer, as directed by the San Diego Water Board Executive Officer pursuant to Water Code sections 13267, 13383, and 40 CFR section 122.48.

VIII. PUBLIC PARTICIPATION

The San Diego Water Board has considered the issuance of WDRs in this Order that will serve as an NPDES permit for the Facility. As a step in the adoption process of this Order

for the Facility, the San Diego Water Board developed a Tentative Order and encouraged public participation in the Board's proceedings to consider adoption of the Tentative Order in accordance with the requirements of 40 CFR section 124.10 and Water Code section 13167.5.

A. Notification of Public Hearing and Public Comment Period

By electronic mail dated **December 18, 2015**, the San Diego Water Board notified the Discharger and interested agencies and persons of its intent to consider adoption of the Tentative Order in a public hearing during a regularly scheduled Board Meeting on March 9, 2016. The San Diego Water Board also provided notice that the Tentative Order was posted on the Board website and provided a period of 30 days for public review and comment. On December 18, 2015, notice of the public hearing and public comment period was also published in the San Diego Union Tribune and the Union Tribune, North County, daily newspapers within the area affected by the Facility**.**

The public also had access to the Board meeting agenda including all supporting documents and any changes in meeting dates and locations through the San Diego Water Board's website at: http://www.waterboards.ca.gov/sandiego/

B. Written Comments and Responses

Interested persons were invited to submit written comments concerning the Tentative Order as provided through the notification process. Written comments or e-mailed comments were required to be received in the San Diego Water Board office at 2375 Northside Drive, Suite 100, San Diego, CA 92108.

To be fully responded to by staff and considered by the San Diego Water Board, the written or e-mailed comments were due at the San Diego Water Board office by 5:00 p.m. on **January 19, 2016**. The San Diego Water Board provided written responses to all timely received public comments on the Tentative Order and posted the response to comments document on the Board's website in advance of the public hearing date.

C. Public Hearing

The San Diego Water Board held a public hearing on the Tentative Order during its regular Board meeting on the following date and time and at the following location:

Date:	**March 9, 2016**
Time:	9:00 AM
Location:	San Diego Water Board Regional Board Meeting Room 2375 Northside Drive, Suite 100, San Diego CA 92108

Details of the Public Hearing are provided in the Fact Sheet. Interested persons were invited to attend. At the public hearing, the San Diego Water Board heard and considered all comments and testimony pertinent to the discharge and the Tentative Order. For accuracy of the record, important testimony was requested in writing.

D. Petition for State Water Board Review

Any aggrieved person may petition the State Water Board to review the decision of the San Diego Water Board regarding the final WDRs of this Order in accordance with Water Code section 13320 and the California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the adoption date of this Order, except that if the thirtieth day following the adoption date of this Order falls on a Saturday, Sunday, or State holiday, the petition

must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the State Water Board website at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

For instructions on how to file a petition for review, see the State Water Board website at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. Public Access to Records

Records pertinent to the San Diego Water Board's proceedings to adopt this Order including but not limited to the ROWD, public notices, draft and finalized versions of the Tentative Order, public comments received, Board responses to comments received, and other supporting documents are maintained by the San Diego Water Board. These records are available for public access Monday through Friday between the hours of 8:00 a.m. to 5:00 p.m. at the San Diego Water Board office.

The San Diego Water Board website contains information and instructions on how to request access and obtain copies of these records at: http://www.waterboards.ca.gov/sandiego/about_us/contact_us/records.shtml

Before making a request to view public records in the San Diego Water Board office you may wish to determine if the information is already available on the San Diego Water Board's website at http://www.waterboards.ca.gov/sandiego/

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this Order should contact the San Diego Water Board at the address below, reference this Facility, and provide a name, address, email address, and phone number.

San Diego Regional Water Quality Control Board
2375 Northside Drive, Suite 100
San Diego, CA 92108-2700
Phone (619) 516-1990
Fax (619) 516-1994
E-mail rb9_questions@waterboards.ca.gov

G. Additional Information

Requests for additional information or questions regarding this Order should be directed to Kristin Schwall at (619) 521-3368 or to the San Diego Water Board via e-mail at rb9_questions@waterboards.ca.gov.

ATTACHMENT G – OCEAN PLAN AND BASIN PLAN PROHIBITIONS

I. Ocean Plan Discharge Prohibitions

a. The Discharge of any radiological chemical, or biological warfare agent or high-level radioactive waste into the ocean is prohibited.

b. Waste shall not be discharged to designated Areas of Special Biological Significance except as provided in Chapter III.E. of the Ocean Plan.

c. Pipeline discharge of sludge to the ocean is prohibited by federal law; the discharge of municipal and industrial waste sludge directly to the ocean, or into a waste stream that discharges to the ocean, is prohibited. The discharge of sludge digester supernatant directly to the ocean, or to a waste stream that discharges to the ocean without further treatment, is prohibited.

d. The by-passing of untreated wastes containing concentrations of pollutants in excess of those of Table 2 or Table 1 [of the Ocean Plan] is prohibited.

II. Basin Plan Discharge Prohibitions

a. The discharge of waste to Waters of the State in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in Water Code section 13050, is prohibited.

b. The discharge of waste to land, except as authorized by WDRs or the terms described in Water Code section 13264 is prohibited.

c. The discharge of pollutants or dredged or fill material to Waters of the U.S. except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in Water Code section 13376) is prohibited.

d. Discharges of recycled water to lakes or reservoirs used for municipal water supply or to inland surface water tributaries thereto are prohibited, unless this San Diego Water Board issues an NPDES permit authorizing such a discharge; the proposed discharge has been approved by the State of California Department of Public Health and the operating agency of the impacted reservoir; and the discharger has an approved fail-safe long-term disposal alternative.

e. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the San Diego Water Board. Consideration would include stream flow data, the degree of treatment provided and safety measures to ensure reliability of Facility performance. As an example, discharge of secondary effluent would probably be permitted if stream flow provided 100:1 dilution capability.

f. The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited, unless the discharge is

authorized by the San Diego Water Board.

g. The dumping, deposition, or discharge of waste directly into Waters of the State, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the San Diego Water Board.

h. Any discharge to a storm water conveyance system that is not composed entirely of storm water is prohibited unless authorized by the San Diego Water Board. [The federal regulations, 40 CFR 122.26(b)(13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from firefighting activities.] [Section 122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

i. The unauthorized discharge of treated or untreated sewage to Waters of the State or to a storm water conveyance system is prohibited.

j. The discharge of industrial wastes to conventional septic tank/ subsurface disposal systems, except as authorized by the terms described in Water Code section 13264, is prohibited.

k. The discharge of radioactive wastes amenable to alternative methods of disposal into the Waters of the State is prohibited.

l. The discharge of any radiological, chemical, or biological warfare agent into Waters of the State is prohibited.

m. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the San Diego Water Board.

n. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in Waters of the State or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

ATTACHMENT H – HEAT TREATMENT DIAGRAM