

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

1515 Clay Street, Suite 1400, Oakland, California 94612
waterboards.ca.gov/sanfranciscobay

**TENTATIVE ORDER R2-2023-00XX
NPDES PERMIT CA0005134**

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

Discharger **Chevron Products Company, a division of Chevron U.S.A. Inc.
Chevron Environmental Management Company**

Name of Facility **Chevron Products Company, Richmond Refinery**

Facility Address **841 Chevron Way
Richmond, California 94801
Contra Costa County**

Table 1. Discharge Locations

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Treated process wastewater and stormwater	37.9708°	-122.4292	San Pablo Bay
002	Stormwater and firewater from Richmond Long Wharf (RLW)	37.9208°	-122.4083°	San Francisco Bay
003	Stormwater, steam condensate, and firewater from North Yard Impound Basin (NYIB)	37.9542°	-122.3917°	San Pablo Bay
004	Stormwater from 12 Basin	37.9542°	-122.4125°	San Francisco Bay
005	Stormwater from 11 Basin	37.9583°	-122.425°	San Francisco Bay
006	Stormwater from 10 Basin	37.9542	-122.4208°	San Francisco Bay
007	Stormwater from Basin 13 and Horse Pasture	37.9542°	-122.4208°	San Francisco Bay
008	Stormwater from Tank Field (100' channel)	37.9542°	-122.3917°	San Pablo Bay
009	Stormwater, steam condensate, and firewater from 8 Basin (SPCC)	37.9333°	-122.4042°	San Francisco Bay
010	Stormwater from Reclamation Yard	37.9547°	-122.3792°	Gertrude Street Ditch to Wildcat Creek to Castro Creek to San Pablo Bay

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
011	Stormwater from Castro Acres Surge Pond	37.9458°	-122.3750°	Castro Creek to San Pablo Bay
014	Stormwater from Consolidation Area	37.9500°	-122.3792°	Castro Creek to San Pablo Bay
017	Stormwater from 3 Basin and 3a Basin	37.9292°	-122.4083°	San Francisco Bay
018	Stormwater, steam condensate, and firewater from 9 Basin (SPCC)	37.9292°	-122.4000°	San Francisco Bay
019	Stormwater, steam condensate, and firewater from 7 Basin (SPCC)	37.9583°	-122.4250°	San Francisco Bay
020	Stormwater from Castro Street (38' channel)	37.9542°	-122.3875°	Castro Creek to San Pablo Bay
021	Stormwater from Landfill 15	37.9458°	-122.3750°	Castro Creek to San Pablo Bay
022	Stormwater from Parr Richmond	37.9542°	-122.3792°	Castro Creek to San Pablo Bay
023	Stormwater from Gertrude Street	37.9542°	-122.3792°	Gertrude Street Ditch to Wildcat Creek to Castro Creek to San Pablo Bay

This Order was adopted on: **XXXX, 2023**
 This Order shall become effective on: **January 1, 2024**
 This Order shall expire on: **December 31, 2028**
 CIWQS regulatory measure number: **XXXXXX**

The Discharger shall file a Report of Waste Discharge as an application for updated 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 **April 1, 2028**. The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board) have classified this discharge as “**major**.”

I hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the Regional Water Board on the date indicated above.

Eileen White, Executive Officer

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1. FACILITY INFORMATION

Information describing Chevron Products Company's and Chevron Environmental Management Company's, Chevron Richmond Refinery (Facility) is summarized on the cover page and in Fact Sheet (Attachment F) sections 1 and 2. Fact Sheet section 1 also includes information regarding the permit application.

2. FINDINGS

The Regional Water Board finds the following:

- 2.1. Legal Authorities.** This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by U.S. EPA and Water Code chapter 5.5, division 7 (commencing with § 13370). It shall serve as an NPDES permit authorizing the Discharger to discharge into waters of the United States as described in Table 1 subject to the WDRs in this Order.
- 2.2. Background and Rationale for Requirements.** The Regional Water Board developed the requirements in this Order based on information the Discharger submitted as part of its application, information obtained through monitoring and reporting programs, and other available information. The Fact Sheet contains background information and rationale for the requirements in this Order and is hereby incorporated into and constitutes findings for this Order. Attachments A through E, G, and S are also incorporated into this Order.
- 2.3. Notification of Interested Parties.** The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe these WDRs and has provided an opportunity to submit written comments and recommendations. Fact Sheet section 8.1 provides details regarding the notification.
- 2.4. Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Fact Sheet section 8.3 provides details regarding the public hearing.

THEREFORE, IT IS HEREBY ORDERED that Order R2-2016-0047 (previous order) is rescinded upon the effective date of this Order, except for enforcement purposes, and, in order to meet the provisions contained in Water Code division 7 (commencing with § 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 Regional Water Board from taking enforcement action for violations of the previous order.

3. DISCHARGE PROHIBITIONS

- 3.1. Discharge of treated or partially-treated wastewater at a location or in a manner different than described in this Order is prohibited.
- 3.2. Discharge at Discharge Point 001 is prohibited when treated wastewater does not receive an initial dilution of at least 34:1, as modeled. Compliance shall be achieved by proper operation and maintenance of the discharge outfall to ensure that it (or its replacement, in whole or part) is in good working order and is consistent with or can achieve better mixing than that described in Fact Sheet section 4.3.4.2. The Discharger shall describe measures taken to ensure this in its application for permit reissuance. The Discharger may reuse a portion of its biologically-treated wastewater for onsite landscape irrigation or in the Facility's fire protection system, including the Richmond Long Wharf Fire Protection System.
- 3.3. Bypass of untreated or partially-treated wastewater to waters of the United States is prohibited, except as provided for in Attachment D section 1.7 of this Order. Routing peak wet weather flows around the 1A or 2A Separators to the bioreactor is not considered a bypass and is not a violation of this Order if such flow is at least 80 percent stormwater and does not contain visible oil.
- 3.4. Discharge of stormwater from the former Chevron Chemical Company Hensley Street Plant site (drainage area for Discharge Point 011) to waters of the United States is prohibited unless a 24-hour rainfall event exceeding a 25-year return frequency (i.e., a 24-hour, 25-year storm) occurs. If such a rainfall event occurs, the Discharger may discharge the volume of stormwater exceeding that attributable to a 24-hour, 25-year storm.
- 3.5. Discharge of Richmond Refinery Enhancement Wetland treatment facility (Wetland) effluent to Discharge Point 001 downstream of granular activated carbon treatment is prohibited unless the Discharger complies with Provision 6.3.4.7 of this Order.

4. EFFLUENT LIMITATIONS

4.1. Discharge Point 001

- 4.1.1. **Effluent Limitations.** The discharge at Discharge Point 001 shall meet the following effluent limitations, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program (MRP, Attachment E):

Table 2. Effluent Limitations

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous
Biochemical Oxygen Demand 5-day @ 20°C (BOD ₅)	lbs/day	5,800	11,000	-
Total Suspended Solids (TSS)	lbs/day	4,800	7,600	-

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous
Chemical Oxygen Demand (COD)	lbs/day	40,000	78,000	
Oil and Grease	lbs/day	1,800	3,400	
Phenolic Compounds, Total	lbs/day	20	80	
Ammonia Nitrogen, Total (as N)	mg/L	42	130	-
Ammonia Nitrogen, Total (as N)	lbs/day	2,200	4,800	
Sulfide, Total	lbs/day	32	71	
Chromium, Total Recoverable	lbs/day	23	67	
Chromium (VI), Total Recoverable	lbs/day	1.9	4.3	
Arsenic, Total	µg/L	260	590	
Copper, Total Recoverable	µg/L	71	120	-
Cyanide, Total	µg/L	19	37	-
Dioxin-TEQ	µg/L	1.4 x 10 ⁻⁸	2.8 x 10 ⁻⁸	-
Nickel	µg/L	230	380	
Selenium ^[1]	kg/day	0.68	-	-
pH ^[2]	standard units	-	-	6.0-9.0

Footnotes:

- [1] Compliance shall be evaluated by calculating the arithmetic mean of daily selenium mass discharges for each day of the calendar month that selenium is measured. Daily mass discharges shall be calculated based on the total daily flow and the corresponding selenium concentration for each day that selenium is measured. The Discharger shall also report its average annual selenium load as required by Provision 6.3.4.4.
- [2] If the Discharger monitors pH continuously, pursuant to 40 C.F.R. section 401.17 the Discharger shall be in compliance with this pH limitation provided that both of the following conditions are satisfied: (1) the total time during which the pH is outside the required range shall not exceed 7 hours and 26 minutes in any calendar month; and (2) no individual excursion from the required pH range shall exceed 60 minutes.

4.1.2. **Chronic Toxicity.** The discharge at Discharge Point 001 shall meet the following maximum daily effluent limit (MDEL) and median monthly effluent limit (MMEL) at Monitoring Location EFF-001, with compliance measured using the instream waste concentration of 10 percent effluent, the most sensitive species as described in the MRP, and the Test of Significant Toxicity:

- MDEL: No chronic aquatic toxicity test result of “fail” for any sub-lethal endpoint and no percent effect greater than or equal to 50 percent for the survival endpoint (if the most sensitive species has a survival endpoint) or greater than or equal to 50 percent for any sub-lethal endpoint (if the most sensitive species has no survival endpoint).
- MMEL: No more than one chronic aquatic toxicity test result of “fail” in a calendar month for any endpoint.

4.1.3. **Acute Toxicity.** The discharge at Discharge Point 001 shall meet the following acute toxicity effluent limitations, with compliance measured at Monitoring Location EFF-001, as described in the MRP. If the Discharger can demonstrate that toxicity exceeding these acute toxicity limits is caused solely by ammonia and that the ammonia in the discharge complies with the ammonia effluent

limits in Table 2 of this Order, then such toxicity shall not constitute a violation of these acute toxicity limits.

- 4.1.3.1. The 11-sample median shall not exhibit less than 90 percent survival (i.e., a bioassay test showing survival of less than 90 percent shall represent a violation of this effluent limit if five or more of the past ten or fewer bioassay tests show less than 90 percent survival).
- 4.1.3.2. The 11-sample 90th percentile shall not exhibit less than 70 percent survival (i.e., a bioassay test showing survival of less than 70 percent shall represent.
- 4.1.4. **Additional Contaminated Runoff Effluent Limitation Allocations.** Additional effluent limitation allocations for contaminated runoff commingled with process wastewater are established on top of the process wastewater mass-based limitations in Table 2. When contaminated runoff is discharged through Discharge Point 001, an additional effluent limitation allocation may be added to the effluent limitation in Table 2 for each pollutant in Table 3, below. The additional allocation shall be equal to the contaminated runoff flow times the pollutant concentration in Table 3.

Table 3. Additional Contaminated Runoff Effluent Limitation Allocations

Parameter	Units	Average Monthly	Maximum Daily
Biochemical Oxygen Demand	mg/L	26	48
Total Suspended Solids	mg/L	21	33
Chemical Oxygen Demand	mg/L	180	360
Oil and Grease	mg/L	8.0	15
Phenolic Compounds, Total	mg/L	0.17	0.35
Chromium, Total Recoverable	mg/L	0.21	0.60
Chromium (VI), Total Recoverable	mg/L	0.028	0.062

- 4.1.5. **Additional Ballast Water Effluent Limitation Allocations.** Additional effluent limitation allocations for ballast water commingled with process wastewater are established on top of the process wastewater mass-based limitations in Table 2. When ballast water is discharged through Discharge Point 001, an additional effluent limitation allocation may be added to the effluent limitation in Table 2 for each pollutant in Table 4, below. The additional allocation shall be equal to the ballast water flow times the pollutant concentration in Table 4.

Table 4. Additional Ballast Water Effluent Limitation Allocations

Parameter	Units	Average Monthly	Maximum Daily
Biochemical Oxygen Demand	mg/L	26	48
Total Suspended Solids	mg/L	21	33
Chemical Oxygen Demand	mg/L	240	470
Oil and Grease	mg/L	8.0	15

4.1.6. **Recycled Water Use Effluent Limitation Adjustments for North Richmond Water Reclamation Plant and Richmond Advanced Recycled Expansion.** When the Discharger replaces raw water used in its operations with recycled water (as described in Fact Sheet section 4.3.5.7.), an additional allocation shall be added to the mass-based and concentration-based effluent limitations by calculating adjustments as described below and adding them to the effluent limitations in Table 2. All calculations supporting such limitation adjustments shall be described in applicable self-monitoring reports.

4.1.6.1. **Concentration-based Effluent Limitation Adjustments.** The adjustment for a concentration based effluent limitation shall be the difference between its recycled water influent mass and raw water influent mass, divided by the effluent volume for the applicable monitoring interval (e.g., seven days for a constituent monitored weekly) and shall be calculated according to the following example in which constituent B is monitored weekly and the lag time is Y days:

Step 1: Influent mass of B = [(Influent recycled water concentration of B) – (Influent raw water concentration of B)] x (Influent recycled water volume)

Step 2: Effluent volume for monitoring period = Effluent volume at Monitoring Location EFF-001 for the one-week period beginning Y days after influent mass determined

Step 3: Effluent limitation adjustment for B = (Influent mass of B) / (Effluent volume for monitoring period)

The Discharger shall determine the lag time based on the interval between the introduction of the constituent in the influent recycled water and its first appearance in the final effluent. The potable water concentrations used in Step 1 can be an average of samples collected over the last year.

The adjustments shall not result in effluent limitations greater than the following:

Table 5. Maximum Recycled Water Adjusted Effluent Limitations

Parameter	Units	Average Monthly	Maximum Daily
Arsenic	mg/L	520	1,200
Copper	mg/L	140	240
Cyanide	mg/L	43	76
Nickel	mg/L	480	750

4.1.6.2. **Mass-based Effluent Limitation Adjustments.** The adjustment for a mass-based effluent limitation shall be the difference between the recycled water influent mass and raw water influent mass, divided by the number of days in

the monitoring period, and shall be calculated according to the following example for constituent B (lag time is not used for this calculation):

Step 1: Influent mass of B = [(Influent recycled water concentration of B) – (Influent raw water concentration of B)] x (Influent recycled water volume)

Step 2: Effluent limitation adjustment for B = (Influent mass of B) / (Monitoring interval in days)

4.2. Discharge Points 002 through 023

4.2.1 The Discharger shall comply with the following effluent limitations at Discharge Points 002 through 023, with compliance measured at Monitoring Locations EFF-002 through EFF-023, as described in the MRP:

Table 6. Effluent Limitations for Stormwater Outfalls

Parameter	Units	Maximum Daily Limit	Other Limits
Total Organic Carbon	mg/L	110	-
Oil and Grease	mg/L	15	-
pH	s.u.	-	6.5 – 8.5 at all times
Visible Oil and Grease	-	-	None observed
Visible Color	-	-	None observed

4.2.2. If the total organic carbon or oil and grease effluent limitation in Table 6 is exceeded at any of Monitoring Locations EFF-002 through EFF-023, the Discharger shall also comply with the following effluent limitations at the same monitoring location as described in the MRP:

Table 7. Supplemental Effluent Limitations for Stormwater Outfalls

Pollutant	Units	Maximum Daily Limit	Average Monthly Limit ^[1]
BOD ₅	mg/L	48	26
TSS ^[2]	mg/L	33	21
COD	mg/L	360	180
Oil and Grease	mg/L	15	8.0
Phenolic Compounds	mg/L	0.35	0.17
Total Chromium	mg/L	0.60	0.21
Hexavalent Chromium	mg/L	0.062	0.028

Footnotes:

^[1] These limitations shall not apply unless there is sufficient runoff for sampling on at least three days during the month.

^[2] As indicated in Provision 6.3.4.3, the numeric actions levels for TSS are an annual average of 100 mg/L and a daily maximum of 400 mg/L.

5. RECEIVING WATER LIMITATIONS

5.1. The discharge shall not cause the following conditions at any place in receiving waters:

- 5.1.1. Floating material, including solids, liquids, foams, and scum, in concentrations that cause nuisance or adversely affect beneficial uses;
- 5.1.2. Alteration of suspended sediment in such a manner as to cause nuisance or adversely affect beneficial uses or detrimental increase in the concentrations of toxic pollutants in sediments or aquatic life;
- 5.1.3. Suspended material in concentrations that cause nuisance or adversely affect beneficial uses;
- 5.1.4. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;
- 5.1.5. Alteration of temperature beyond present natural background levels unless it can be demonstrated to the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses;
- 5.1.6. Changes in turbidity that cause nuisance or adversely affect beneficial uses, or increases from normal background light penetration or turbidity greater than 10 percent in areas where natural turbidity is greater than 50 nephelometric turbidity units, or above 55 nephelometric turbidity units in areas where natural turbidity is less than or equal to 50 nephelometric turbidity units;
- 5.1.7. Coloration that causes nuisance or adversely affects beneficial uses;
- 5.1.8. Visible, floating, suspended, or deposited oil or other products of petroleum origin; or
- 5.1.9. Toxic or other deleterious substances in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

5.2. The discharge shall not cause the following limits to be exceeded at any place in receiving waters within one foot of the water surface:

- 5.2.1. Dissolved Oxygen 5.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations

- 5.2.2. Dissolved Sulfide Natural background levels

- 5.2.3. pH The pH shall not be depressed below 6.5 nor raised above 8.5. The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.
- 5.2.4. Nutrients Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.
- 5.3. The discharge shall not cause a violation of any water quality standard for receiving waters adopted by the Regional Water Board or State Water Resources Control Board (State Water Board) as required by the CWA and regulations adopted thereunder beyond any mixing zone established through this Order. If more stringent water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Regional Water Board may revise or modify this Order in accordance with the more stringent standards.

6. PROVISIONS

6.1. Standard Provisions

- 6.1.1. The Discharger shall comply with all “Standard Provisions” in Attachment D.
- 6.1.2. The Discharger shall comply with all applicable provisions of the “Regional Standard Provisions, and Monitoring and Reporting Requirements for NPDES Wastewater Discharge Permits” in Attachment G.
- 6.1.3. For discharges from Discharge Points 002 through 023, the Discharger shall comply with the applicable provisions of Attachment S (*Stormwater Provisions, Monitoring, and Reporting Requirements*).
- 6.1.4. If there is any conflict, duplication, or overlap between provisions in this Order, the more stringent provision shall apply.

6.2. Monitoring and Reporting Provisions

The Discharger shall comply with the Monitoring and Reporting Program (MRP, Attachment E) and future revisions thereto, and applicable monitoring and reporting requirements in Attachments D and G.

6.3. Special Provisions

6.3.1. Reopener Provisions

The Regional Water Board may modify or reopen this Order prior to its expiration date in any of the following circumstances as allowed by law or as otherwise authorized by law. The Discharger may request a permit modification

based on any of these circumstances. With any such request, the Discharger shall include antidegradation and anti-backsliding analyses as necessary.

- 6.3.1.1. If present or future investigations demonstrate that the discharges governed by this Order have or will have a reasonable potential to cause or contribute to adverse impacts on water quality or beneficial uses of the receiving waters;
- 6.3.1.2. If new or revised water quality objectives or total maximum daily loads (TMDLs) come into effect for San Francisco Bay or contiguous water bodies (whether statewide, regional, or site-specific). In such cases, effluent limitations in this Order may be modified as necessary to reflect the updated water quality objectives or wasteload allocations. Adoption of the effluent limitations in this Order does not restrict in any way future modifications based on legally-adopted water quality objectives or TMDLs or as otherwise permitted under federal regulations governing NPDES permit modifications;
- 6.3.1.3. If translator, dilution, or other water quality studies provide a basis for determining that a permit condition should be modified;
- 6.3.1.4. If a State Water Board precedential decision, new policy, new law, or new regulation is adopted; or
- 6.3.1.5. If an administrative or judicial decision on a separate NPDES permit or WDRs addresses requirements similar to this discharge.

6.3.2. **Effluent Characterization Study and Report**

- 6.3.2.1. **Study Elements.** The Discharger shall characterize and evaluate the discharge from Discharge Point 001 as required by the MRP to verify that the reasonable potential analysis conclusions of this Order remain valid and to inform the next permit reissuance. The Discharger shall evaluate on an annual basis if concentrations of any of the priority pollutants listed in Attachment G, Table B, significantly increase over past performance. The Discharger shall investigate the cause of any such increase. The investigation may include, but need not be limited to, an increase in monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. The Discharger shall establish remedial measures addressing any increase resulting in reasonable potential to cause or contribute to an exceedance of applicable water quality objectives. This requirement may be satisfied through identification of the constituent as a “pollutant of concern” in the Discharger’s Pollutant Minimization Program, described in Provision 6.3.3.

6.3.2.2. **Reporting Requirements**

- 6.3.2.2.1. **Routine Reporting.** The Discharger shall report the pollutants detected at or above applicable water quality objectives (see Fact Sheet Table F-5 for

the objectives) in the transmittal letter for the self-monitoring report associated with the month in which samples were collected. This requirement does not apply to pollutants with effluent limitations (see Table 2 of this Order).

6.3.2.2.2. **Annual Reporting.** The Discharger shall summarize the annual data evaluation and source investigation in the annual self-monitoring report.

6.3.3. **Pollutant Minimization Program**

6.3.3.1. The Discharger shall continue to improve its existing Pollutant Minimization Program to promote minimization of pollutant loadings to the treatment plant and therefore to the receiving waters.

6.3.3.2. The Discharger shall submit an annual report no later than February 28 of each calendar year. Each annual report shall include at least the following information:

6.3.3.2.1. **Brief description of treatment plant.** The description shall include the treatment plant processes.

6.3.3.2.2. **Discussion of current pollutants of concern.** Periodically, the Discharger shall analyze its circumstances to determine which pollutants are currently a problem and which pollutants may be potential future problems. This discussion shall include the reasons for choosing the pollutants.

6.3.3.2.3. **Identification of sources for pollutants of concern.** This discussion shall include how the Discharger intends to estimate and identify pollutant sources. The Discharger shall include sources or potential sources not directly within the ability or authority of the Discharger to control, such as pollutants in the potable water supply and air deposition.

6.3.3.2.4. **Identification of tasks to reduce the sources of pollutants of concern.** This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. The Discharger may implement the tasks by itself or participate in group, regional, or national tasks that address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that address its pollutants of concern whenever it is efficient and appropriate to do so. An implementation timeline shall be included for each task.

6.3.3.2.5. **Outreach to employees.** The Discharger shall inform employees about the pollutants of concern, potential sources, and how they might be able to help reduce the discharge of these pollutants of concern into the Facility. The Discharger may provide a forum for employees to provide input.

- 6.3.3.2.6. **Discussion of criteria used to measure Pollutant Minimization Program and task effectiveness.** The Discharger shall establish criteria to evaluate the effectiveness of its Pollutant Minimization Program. This discussion shall identify the specific criteria used to measure the effectiveness of each task in Provisions 6.3.3.2.3, 6.3.3.2.4, 6.3.3.2.5, and 6.3.3.2.6.
- 6.3.3.2.7. **Documentation of efforts and progress.** This discussion shall detail all of the Discharger's Pollutant Minimization Program activities during the reporting year.
- 6.3.3.2.8. **Evaluation of Pollutant Minimization Program and task effectiveness.** The Discharger shall use the criteria established in Provision 6.3.3.2.7 to evaluate the program and task effectiveness.
- 6.3.3.2.9. **Identification of specific tasks and timelines for future efforts.** Based on the evaluation, the Discharger shall explain how it intends to continue or change its tasks to more effectively reduce the amount of pollutants flowing to the treatment plant, and subsequently in its effluent.
- 6.3.3.3. The Discharger shall develop and conduct a Pollutant Minimization Program as described below when there is evidence that a priority pollutant is present in the effluent above an effluent limitation (e.g., sample results reported as detected but not quantified [DNQ] when the effluent limitation is less than the method detection limit [MDL], sample results from analytical methods more sensitive than those methods required by this Order, presence of aquatic toxicity, health advisories for fish consumption, or results of benthic or aquatic organism tissue sampling) and either:
- 6.3.3.3.1. A sample result is reported as DNQ and the effluent limitation is less than the Reporting Level (RL); or
- 6.3.3.3.2. A sample result is reported as not detected (ND) and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in the MRP.
- 6.3.3.4. If triggered for a reason set forth in Provision 6.3.3.3, above, the Discharger's Pollutant Minimization Program shall include, but not be limited to, the following actions and submittals:
- 6.3.3.4.1. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutants, which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures when source monitoring is unlikely to produce useful analytical data;
- 6.3.3.4.2. Quarterly monitoring for the reportable priority pollutants in the influent to the wastewater treatment system. The Executive Officer may approve

alternative measures when influent monitoring is unlikely to produce useful analytical data;

- 6.3.3.4.3. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutants in the effluent at or below the effluent limitation;
- 6.3.3.4.4. Implementation of appropriate cost-effective control measures for the reportable priority pollutants, consistent with the control strategy; and
- 6.3.3.4.5. Inclusion of the following specific items within the annual report required by Provision 6.3.3.2, above:
 - 6.3.3.4.5.1. All Pollutant Minimization Program monitoring results for the previous year;
 - 6.3.3.4.5.2. List of potential sources of the reportable priority pollutants;
 - 6.3.3.4.5.3. Summary of all actions undertaken pursuant to the control strategy; and
 - 6.3.3.4.5.4. Description of actions to be taken in the following year.

6.3.4. Other Special Provisions

- 6.3.4.1. **Copper Action Plan.** The Discharger shall implement pretreatment, source control, and pollution prevention for copper in accordance with the following tasks and time schedule:

Table 8. Copper Action Plan

Task No.	Task	Deadline
1	Review Potential Copper Sources. Submit an up-to-date inventory of potential copper sources.	With annual pollution minimization program report due February 28, 2024
2	Implement Copper Control Program. Continue to minimize copper sources, as identified in Discharger's Pollutant Prevention and Minimization Plan. Incorporate additional measures as appropriate to address newly identified potential copper sources.	Implementation shall be ongoing
3	Implement Additional Actions. If the Regional Water Board notifies the Discharger that the three-year rolling mean dissolved copper concentration in San Pablo Bay exceeds 3.0 µg/L, then within 90 days of the notification, evaluate the effluent copper concentration trend and, if it is increasing, develop and begin implementation of additional measures to control copper discharges. Report the conclusion of the trend analysis and provide a schedule for any new actions to be taken within the next 12 months.	With next annual pollution minimization program report due February 28 (at least 90 days following notification)
4	Report Status. Submit an annual report documenting copper control program implementation that evaluates the effectiveness of the actions taken, including any additional actions required by Task 2 above, and provides a schedule for actions to be taken within the next 12 months.	Annually, with annual pollution minimization program report due February 28 each year

6.3.4.2. **Cyanide Action Plan.** The Discharger shall implement monitoring and surveillance, pretreatment, source control, and pollution prevention for cyanide in accordance with the following tasks and time schedule:

Table 9. Cyanide Action Plan

Task No.	Task	Deadline
1	Review Potential Cyanide Sources. Submit an up-to-date inventory of potential cyanide sources.	With annual pollution minimization program report due February 28, 2024
2	Implement Cyanide Control Program. Continue to minimize cyanide sources, as identified in Discharger’s Pollutant Prevention and Minimization Plan consisting, at a minimum, of the following elements: a. Inspect each potential source to assess the need to include that source in the control program. b. Maintain an emergency monitoring and response plan to be implemented if a significant cyanide discharge occurs.	Implementation shall be ongoing following Executive Officer notification under Task 1
3	Implement Additional Measures. If the Regional Water Board notifies the Discharger that ambient monitoring shows cyanide concentrations are 1.0 µg/L or higher in the main body of San Francisco Bay, then within 90 days of the notification, commence actions to identify and abate cyanide sources responsible for the elevated ambient concentrations, report on the progress and effectiveness of the actions taken, and provide a schedule for actions to be taken within the next 12 months.	With next annual pollution minimization program report due February 28 (at least 90 days following notification)
4	Report Status of Cyanide Control Program. Submit an annual report documenting cyanide control program implementation and addressing the effectiveness of actions taken, including any additional cyanide controls required by Task 3, above, and provide a schedule for actions to be taken within the next 12 months.	Annually, with annual pollution minimization program report due February 28 each year

6.3.4.3. **Stormwater Pollution Prevention Plan and Annual Report.** By October 1, 2024, the Discharger shall submit and implement an updated Stormwater Pollution Prevention Plan (SWPPP). The SWPPP shall contain the elements listed in Attachment S section 1.1.

The Discharger shall submit an annual stormwater report by July 30 of each year covering data for the previous wet weather season. The annual stormwater report shall, at a minimum, include the elements listed in Attachment S section 3.1 and the following:

- 6.3.4.3.1. A tabulated summary of all sampling results and visual observations for all stormwater discharge points; and
- 6.3.4.3.2. A comprehensive discussion of attainment of stormwater action levels (Attachment S, section 1.7), compliance with effluent limitations and other requirements of this Order, and any corrective actions taken or planned.
- 6.3.4.4. **Average Annual Selenium Load.** The Discharger shall report the average annual selenium load from Discharge Point 001 in its Annual Self Monitoring

Report. The average annual load shall be the arithmetic mean of the annual mass discharges for the previous permit term. Annual mass emissions shall be computed as follows:

$$\text{Annual Mass emission rate (kg/day)} = (3.785/N) \sum Q_i C_i$$

Where:

N = number of samples in a year

Q_i = flow rate (MGD) associated with the i^{th} sample, valid until a new sample is collected

C_i = selenium concentration (mg/L) associated with the i^{th} sample, valid until a new sample is collected

When calculating selenium loads, the Discharger shall use estimated values and assume data reported below the method detection limit equal half of the detection limit.

- 6.3.4.5. **Acceptance of Ballast Water.** Before accepting ballast water at its treatment plant, the Discharger shall obtain approval from the California State Lands Commission and notify the Regional Water Board of that approval.
- 6.3.4.6. **Construction and Development Requirements for Stormwater.** In areas where stormwater is not subject to physical treatment, the Discharger shall obtain coverage under *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (NPDES Permit CAS000002, currently State Waterboard Order 2022-0057-DWQ). For potential development in refinery areas that discharge to Discharge Point 020 (City of Richmond Pump Station), the Discharger shall also comply with the City of Richmond's specifications so that the City complies with Provisions C.3 and C.6 of the Municipal Regional Stormwater Permit (NPDES Permit CAS612008, currently Order R2-2022-0018).
- These requirements do not apply to stormwater that drains to the Discharger's wastewater treatment plant or stormwater that is treated in earthen basins via physical settling.
- 6.3.4.7. **Wastewater Discharges from the Wetland.** The Discharger may discharge Wetland effluent directly to Discharge Point 001 (downstream of the granular activated carbon treatment filters) provided Wetland effluent discharges do not exceed a daily maximum of 3.0 MGD and Wetland effluent does not cause acute toxicity.

To demonstrate that Wetland effluent does not cause acute toxicity, the Discharger shall conduct at least two consecutive weekly flow-through bioassays with at least 80 percent survival. Acute toxicity testing shall be conducted in accordance with MRP section 5.1. If Wetland toxicity tests show less than 80 percent survival, the Discharger shall route Wetland effluent

through granular activated carbon treatment units before discharge at Discharge Point 001. The Discharger may resume discharging Wetland effluent directly to Discharge Point 001 after at least two consecutive toxicity tests, started at least five days apart, demonstrate at least 80 percent survival. When discharging Wetland effluent directly to Discharge Point 001, the Discharger shall report the daily flow of this treated wastewater and the results of acute toxicity testing in self-monitoring reports.

6.3.4.8. **Richmond Advanced Recycled Expansion (RARE) Enhancement Project.** If the Discharger completes construction of the RARE Enhancement Project (as described in Fact Sheet section 2.6.), it shall notify the Regional Water Board prior to commencing recycled water operations. The notification shall specify the anticipated date the operations will commence, describe the project as constructed, and include documentation that “reject water” (concentrate) from the reverse osmosis process will completely mix with treated wastewater prior to Monitoring Location EFF-001. Within 120 days of commencing the RARE Enhancement Project, the Discharger shall submit a technical report that includes the following:

- 6.3.4.8.1. Volume of reverse osmosis concentrate relative to treated wastewater for worst-case conditions;
- 6.3.4.8.2. Acute and chronic toxicity test results that use worst-case conditions (maximum reverse osmosis concentrate to treated wastewater ratio);
- 6.3.4.8.3. A mixing zone modeling study that demonstrates the discharge will receive the initial dilution required by Discharge Prohibition 3.2. The study shall use an EPA-approved model, such as Visual PLUMES or CORMIX, and estimate the initial dilution of the discharge at the outfall under worst-case conditions;
- 6.3.4.8.4. Reverse osmosis concentrate concentrations for pollutants listed in Regional Standard Provisions (Attachment G) Table B;
- 6.3.4.8.5. Analysis of whether pollutant concentrations will trigger reasonable potential under worst-case conditions for the water quality objectives listed in Fact Sheet Table F-7;
- 6.3.4.8.6. Documentation that the Discharger will comply with all effluent limits (including acute and chronic toxicity) under worst-case conditions;
- 6.3.4.8.7. Documentation that the Discharger will conduct a species sensitivity screening, as required by Monitoring and Reporting Program (Attachment E) section 2.1.3.; and
- 6.3.4.8.8. If new pollutants trigger reasonable potential or if the Discharger determines it may not comply with effluent limits, a list of corrective actions it shall implement to ensure compliance with this Order.

6.3.4.9. **Conditions for Recycled Water Use Adjustment for RARE Enhancement Project.** Prior to any allocation of recycled water use adjustments to mass-based or concentration-based effluent limitations (see Table 2) for the RARE Enhancement Project (as described in Fact Sheet section 2.6), the Discharger shall satisfy all of the following conditions:

- 6.3.4.9.1. The Discharger shall sample and analyze influent recycled water for any constituents for which it seeks adjustments at Monitoring Location INF-001 at least as frequently as the MRP requires for effluent monitoring at Monitoring Location EFF-001.
- 6.3.4.9.2. The Discharger shall sample and analyze influent raw water for any constituents for which it seeks adjustments at Monitoring Location INF-002 at least once per year. The annual average concentration may be used in the calculations described in section 4.1.7 of this Order.
- 6.3.4.9.3. The Discharger shall determine the interval between the introduction of a limited constituent in recycled water and the appearance of that constituent in the final effluent.
- 6.3.4.9.4. The Discharger shall submit a technical report demonstrating that the proposed adjustments will not impair beneficial uses in the vicinity of the discharge (such as by creating a zone acutely toxic to aquatic organisms). At a minimum, the report shall assess toxicity testing results and compare the effluent concentrations projected when using recycled water to the proposed adjusted effluent limitations.
- 6.3.4.9.5. The Discharger shall submit one or more examples of how influent recycled and raw water concentrations, lag time, and effluent limitation adjustments will be calculated in accordance with section 4.1.5 of this Order.
- 6.3.4.9.6. The Discharger shall obtain written concurrence from the Executive Officer stating that these conditions have been met.

ATTACHMENT A – DEFINITIONS AND ABBREVIATIONS

DEFINITIONS

Alternative Hypothesis

Statement used to propose a statistically significant relationship in a set of given observations. Under the TST approach, when the Null Hypothesis is rejected, the Alternative Hypothesis is accepted in its place, indicating a relationship between variables and an acceptable level of toxicity.

Arithmetic Mean (μ)

Also called the average, sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

$$\text{Arithmetic mean} = \mu = \Sigma x / n$$

where: Σx is the sum of the measured ambient water concentrations,
and n is the number of samples

Average Monthly Effluent Limitation (AMEL)

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)

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.

Bioaccumulative

Taken up by an organism from its surrounding medium through gill membranes, through epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Calendar Month(s)

Period from the first day of a month through the last day of a month (e.g., January 1 to January 31). For toxicity monitoring, the period is from the first day of a routine monitoring test to the day before the corresponding day of the next month (e.g., from June 15 to July 14), or to the last day of the next month if there is no corresponding day (e.g., January 31 to February 28).

Carcinogenic

Known to cause cancer in living organisms.

Coefficient of Variation (CV)

Measure of data variability calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge

Either: (1) the total mass of a constituent discharged over a calendar day (12:00 a.m. through 11:59 p.m.) 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 a constituent over a 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 is considered the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)

Sample results less than the RL, but greater than or equal to the laboratory's MDL. Sample results reported as DNQ are estimated concentrations.

Dilution Credit

Amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effective Concentration (EC)

The EC is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Kärber. EC25 is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

Effluent Concentration Allowance (ECA)

Value derived from the water quality criterion or objective, dilution credit, and ambient background concentration that is used, in conjunction with the CV for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as wasteload allocation (WLA) as used in U.S. EPA guidance (*Technical Support Document for Water Quality-based Toxics Control*, March 1991, second printing, EPA/505/2-90-001).

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 the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration

Concentration that results from the confirmed detection of a substance below the ML by the analytical method.

Estuaries

Waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters are considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220; Suisun Bay; Carquinez Strait downstream to the Carquinez Bridge; and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inhibition Concentration (IC)

The IC is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC25 is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as U.S. EPA's Bootstrap Procedure.

Inland Surface Waters

All surface waters of the state that are not the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation

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

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).

Instream Waste Concentration (IWC)

Concentration of effluent in the receiving water after any dilution credit is applied. The IWC is the inverse of 1 plus the dilution credit, D, or $IWC = 1/(1+D)$, expressed as a percentage (e.g., if D = 9, the IWC is 10 percent). If no dilution credit is granted, the IWC is 100 percent.

Maximum Daily Effluent Limitation (MDEL)

Highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour

period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For toxicity, the MDEL is based on the outcome of the TST and the percent effect at the IWC (applied to the results of any single bioassay). For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Maximum Daily Effluent Target (MDET)

Target based on a single independent toxicity test using the TST used to determine whether a TRE should be conducted. Not meeting the MDET is not a violation of an effluent limitation. The MDET only applies to discharges with no numeric toxicity limits.

Median

Middle measurement in a data set. The median of a data set is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2+1)})/2$ (i.e., the midpoint between $n/2$ and $n/2+1$).

Median Monthly Effluent Limitation (MMEL)

Highest allowable median of daily discharges over a calendar month, calculated as the median of all daily discharges measured during a calendar month. For aquatic toxicity, the MMEL is an effluent limitation based on a maximum of three independent toxicity tests analyzed using the TST during a calendar month.

Median Monthly Effluent Target (MMET)

Target based on a maximum of three independent toxicity tests using the TST during a calendar month used to determine whether a TRE should be conducted. Not meeting a MMET is not a violation of an effluent limitation. The MMET only applies to discharges with no numeric toxicity limits or to testing with *Ceriodaphnia dubia* prior to January 1, 2024.

Method Detection Limit (MDL)

Minimum concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results, as defined in 40 C.F.R. part 136, Appendix B.

Minimum Level (ML)

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.

Mixing Zone

Limited volume of receiving water allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

MMEL Compliance Test

For chronic toxicity monitoring, one of up to two tests used in addition to a routine monitoring test to determine compliance with the chronic toxicity MMEL and MDEL.

MMET Test

For chronic toxicity monitoring, one of up to two tests used in addition to a routine monitoring test to evaluate if the discharge meets the chronic toxicity MMET and MDET.

No Observed Effect Concentration (NOEC).

The NOEC is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

No Observed Effect level (NOEL).

For compliance determination, the NOEL is equal to IC25 or EC25. If the IC25 or EC25 cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

Not Detected (ND)

Sample results less than the laboratory's MDL.

Null Hypothesis

Statement used in statistical testing that has been put forward either because it is believed to be true or because it is to be used as a basis for argument, but has not been proved.

Percent Effect

Value that denotes the difference in response between a test concentration and a control, divided by the mean control response and multiplied by 100.

Persistent Pollutants

Substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program

Program of waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of a Pollutant Minimization Program is to reduce all potential sources of a priority pollutant through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. Cost effectiveness may be considered when establishing the requirements of a Pollutant Minimization Program. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), is considered to fulfill the Pollutant Minimization Program requirements.

Pollution Prevention

Any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State Water Resources Control Board or Regional Water Board.

Regulatory Management Decision (RMD)

Decision that represents the maximum allowable error rates and thresholds for toxicity and non-toxicity that would result in an acceptable risk to aquatic life.

Reporting Level (RL)

ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order, including an additional factor if applicable as discussed herein. For priority pollutants, the MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from State Implementation Plan (SIP) Appendix 4 in accordance with SIP section 2.4.2 or established in accordance with SIP section 2.4.3. 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 RL.

Response

Measured biological effect (e.g., on survival, reproduction, growth) of exposure to a stimulus.

Routine Monitoring

Regular chronic toxicity monitoring required during the permit term. Routine monitoring results may trigger MMEL compliance tests. If a violation of the MDEL or MMEL occurs, Routine monitoring also includes one sample collected during the following month (regardless of the regular monitoring frequency), which is used to determine if a TRE is necessary. Routine monitoring does not include surveillance monitoring.

Source of Drinking Water

Any water designated as municipal or domestic supply (MUN) beneficial use.

Standard Deviation (σ)

Measure of variability calculated as follows:

$$\text{Standard deviation} = \sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where: x is the observed value
 μ is the arithmetic mean of the observed values
 n is the number of samples

Surveillance Monitoring

Chronic toxicity monitoring performed using the most sensitive species at an effluent concentration at least double the IWC. Surveillance monitoring results are not for assessing compliance with the chronic toxicity MMEL or MDEL.

Test of Significant Toxicity (TST)

Statistical approach used to analyze aquatic toxicity test data, as described in section III.B.3 of *State Water Board's State Policy for Water Quality Control: Toxicity Provisions*.

Toxicity Reduction Evaluation (TRE)

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 chemicals responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.

ABBREVIATIONS

°F	degrees Fahrenheit
°C	degrees Celsius
%	Percent
µg/L	Micrograms per liter
1/Blending Event	Once per blending event
1/Discharge	Once per discharge
1/Day	Once per day
1/Month	Once per month
1/Quarter	Once per quarter
1/Week	Once per week
1/Year	Once per year
2/Month	Two times per month
2/Week	Twice per week
2/Year	Twice per year

3/Week	Three times per week
4/Week	Four times per week
5/Week	Five times per week
AMEL	Average monthly effluent limitation
AWEL	Average weekly effluent limitation
B	Background concentration
bpd	Barrels per day
C	Water quality criterion or objective
C-24	24-hour composite
CFU/100 mL	Colony forming units per 100 milliliters
CIWQS	California Integrated Water Quality System
Continuous	Measured continuously
Continuous/D	Measured continuously, and recorded and reported daily
Continuous/H	Measured continuously, and recorded and reported hourly
CTR	California Toxics Rule
CV	Coefficient of Variation
DMR	Discharge Monitoring Report
DNQ	Detected, but not quantified
DL	Detection level
ECA	Effluent Concentration Allowance
gpm	Gallons per minute
Grab	Grab sample
IWC	Instream Waste Concentration
MDEL	Maximum Daily Effluent Limitation
MDET	Maximum Daily Effluent Target
MDL	Method detection limit
MEC	Maximum effluent concentration
MG	Million gallons
mg/L	Milligrams per liter
mg/L as N	Milligrams per liter as nitrogen
MGD	Million gallons per day
ML	Minimum level
MMEL	Median Monthly Effluent Limitation

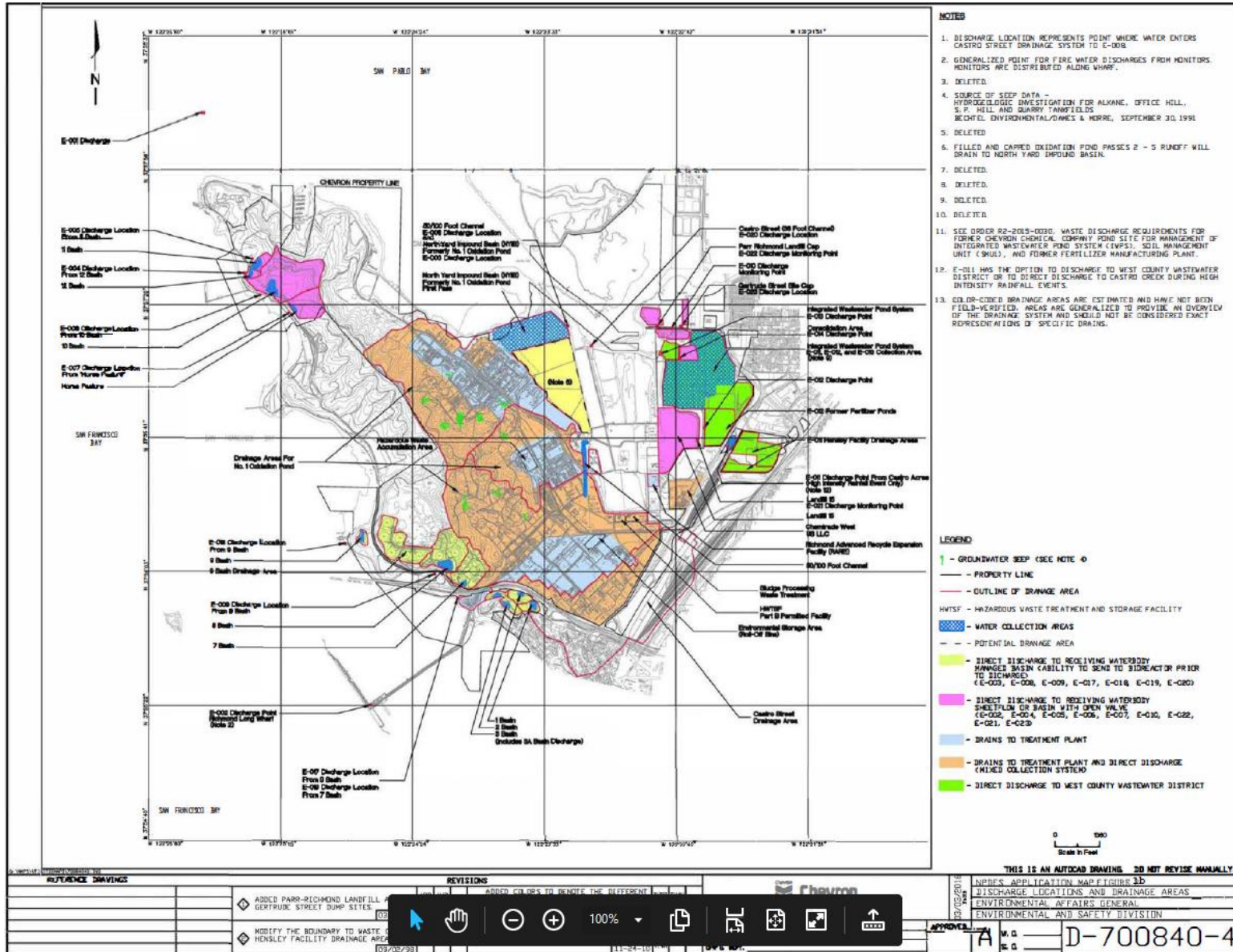
MMET	Median Monthly Effluent Target
MPN/100 mL	Most probable number per 100 milliliters
MRP	Monitoring and Reporting Program (Attachment E)
ND	Not detected
NTR	National Toxics Rule
NTU	Nephelometric turbidity units
ppt	Parts per thousand
RL	Reporting level
RPA	Reasonable potential analysis
SIP	<i>Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California</i> (State Implementation Policy)
SMR	Self-Monitoring Report
s.u.	Standard pH units
TIE	Toxicity identification evaluation
TRE	Toxicity reduction evaluation
TST	Test of Significant Toxicity
WDRs	Waste discharge requirements
WQBEL	Water quality-based effluent limitation

ATTACHMENT B – MAPS

Figure B-1. Satellite Image of Facility

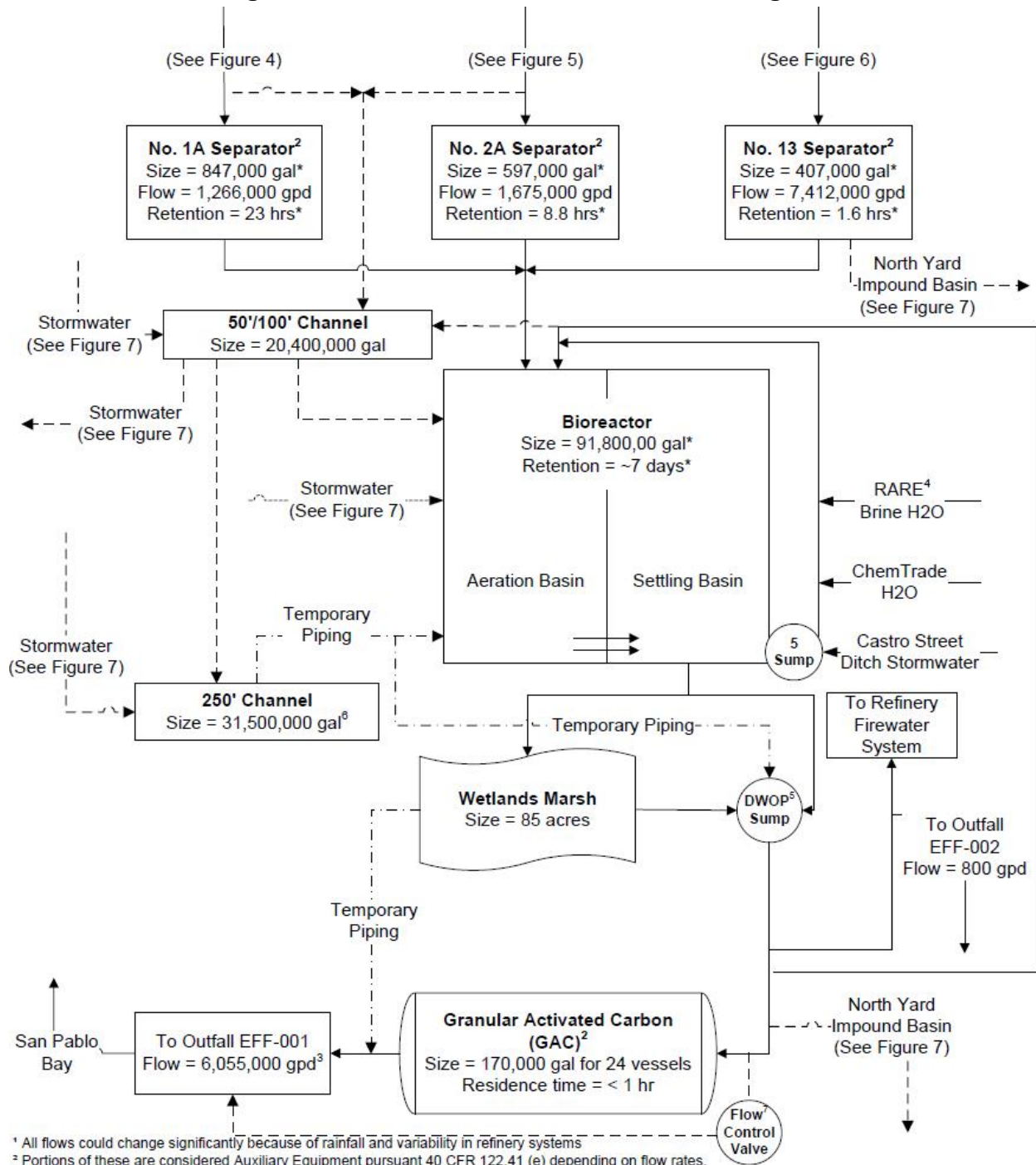


Figure B-2. Facility Map



ATTACHMENT C – FLOW SCHEMATICS

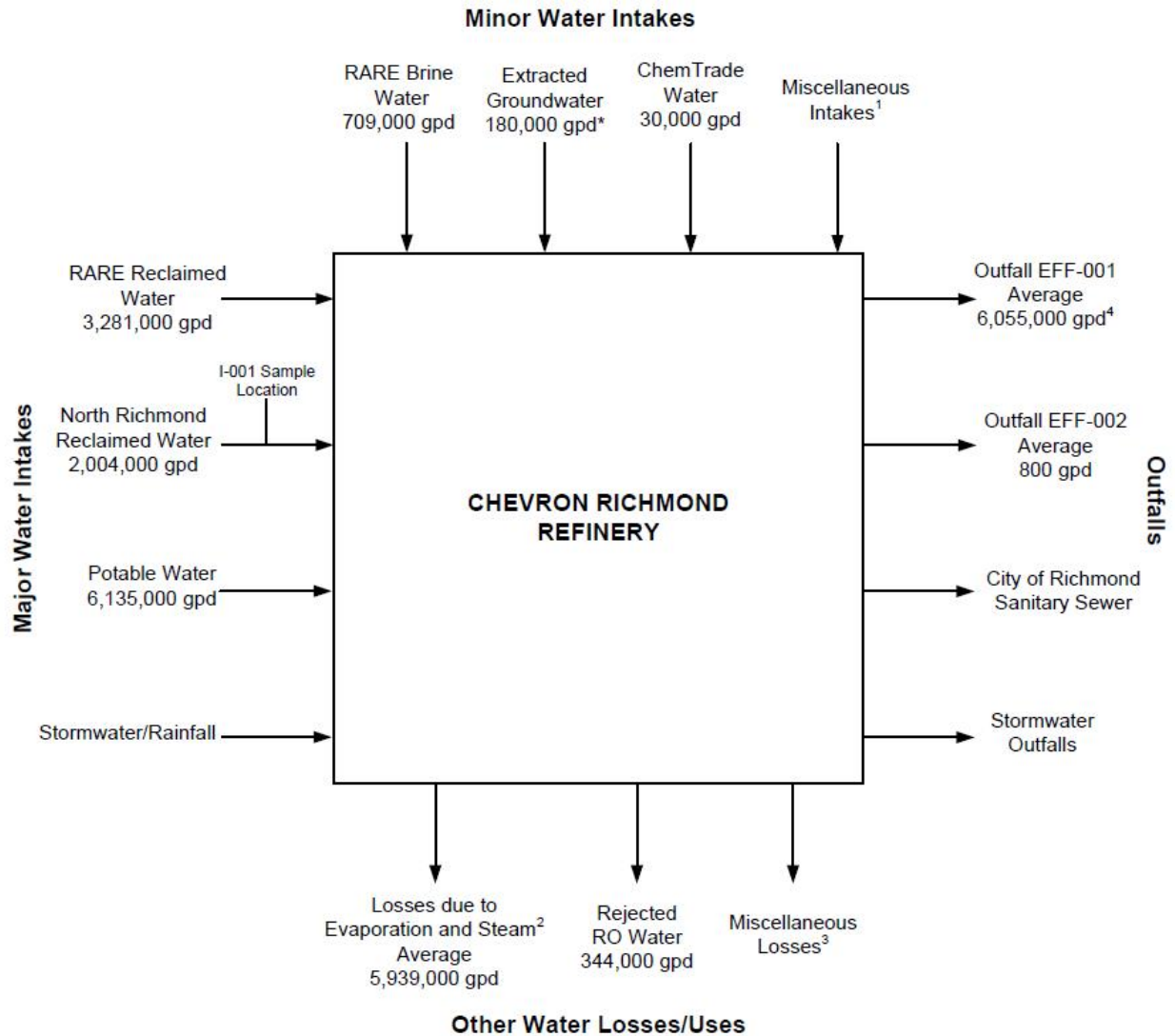
Figure C-1. Wastewater Treatment Flow Diagram



¹ All flows could change significantly because of rainfall and variability in refinery systems
² Portions of these are considered Auxiliary Equipment pursuant 40 CFR 122.41 (e) depending on flow rates.
³ Dry weather E-001 flow is estimated to be 4,660,000 gpd.
⁴ Richmond Advanced Recycle Expansion
⁵ Deep Water Outfall Project
⁶ 250' channel size based on remaining capacity when level is at 5'6"
⁷ Control valve is normally closed. The Control Valve opens and modulates flow through and around GAC filters as required to manage a safe working pressure to the GAC pressure filters during high flow events.
^{*} Based on Best Available Engineering Estimates

LEGEND
 ——— Normal Routing
 - - - Alternate Routing

Figure C-2. Refinery Overall Water Balance



¹ Miscellaneous Intakes include but are not limited to water present in crude oil, ballast water, and water from the Chevron Marketing Terminal, Technology Center, and Pipeline.

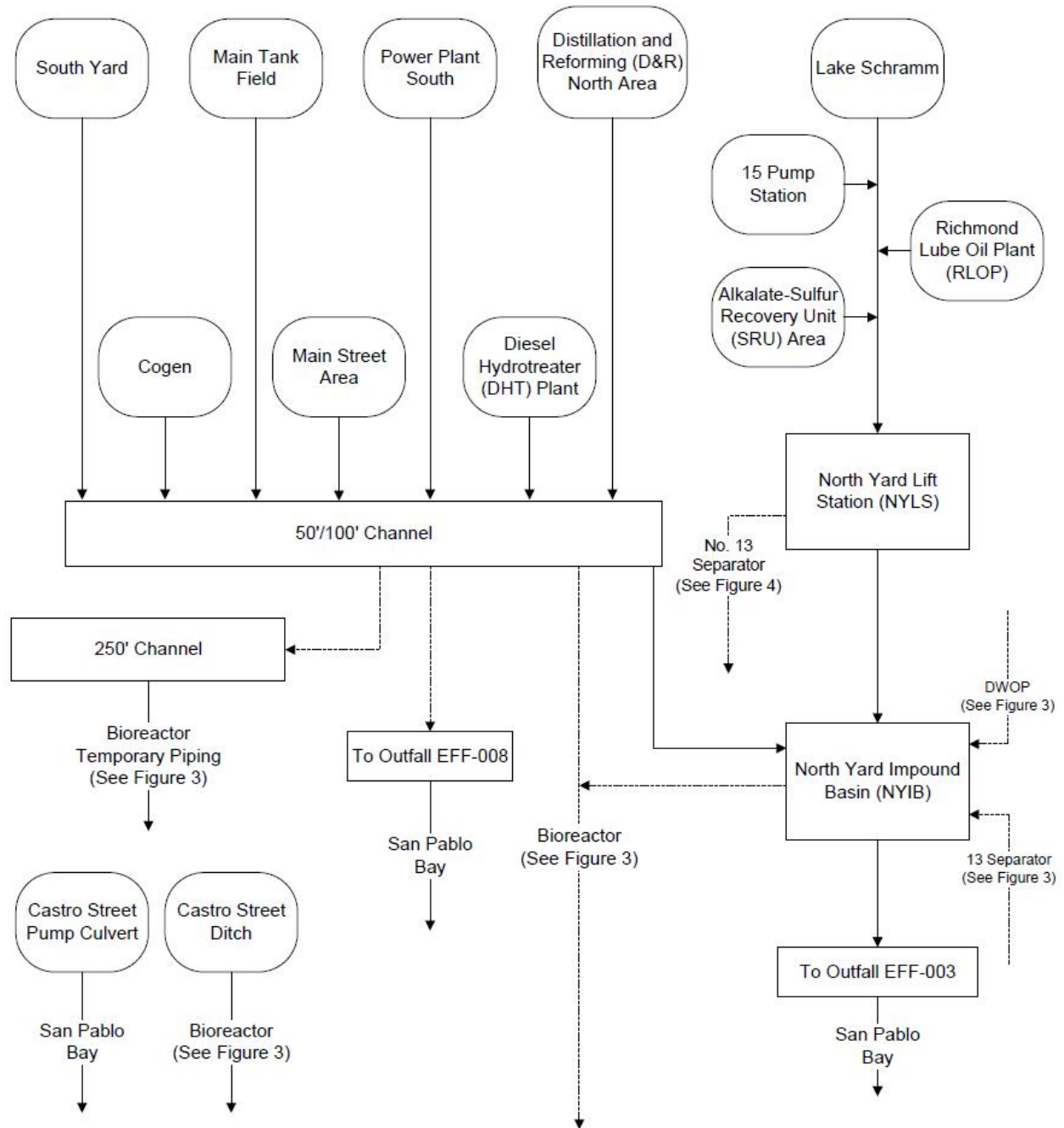
² Evaporation includes but is not limited to water lost from Cooling Towers and the Effluent Treatment System.

³ Miscellaneous Losses include but are not limited to water used for irrigation, domestic use, production of products or intermediates, and firewater.

⁴ Dry weather EFF-001 flow is estimated to be 4,660,000 gpd.

* Flow Data is based on Best Available Engineering Estimates.

Figure C-3. Refinery Process Area Stormwater Flow Diagram

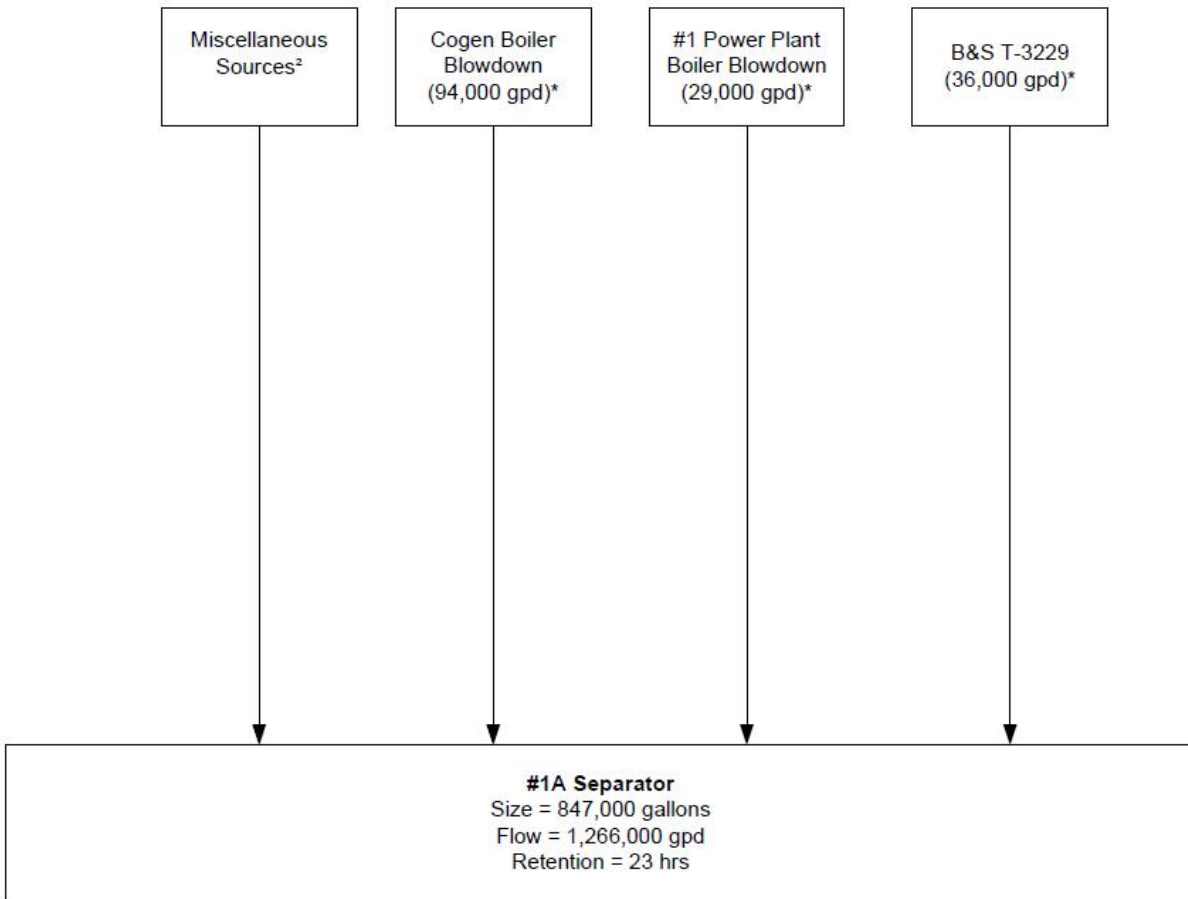


LEGEND

- Normal Routing
- - - Alternate Routing

¹ All flows could change significantly because of rainfall and variability in refinery systems

Figure C-4: 1A Oil/Water Separator Flow Diagram

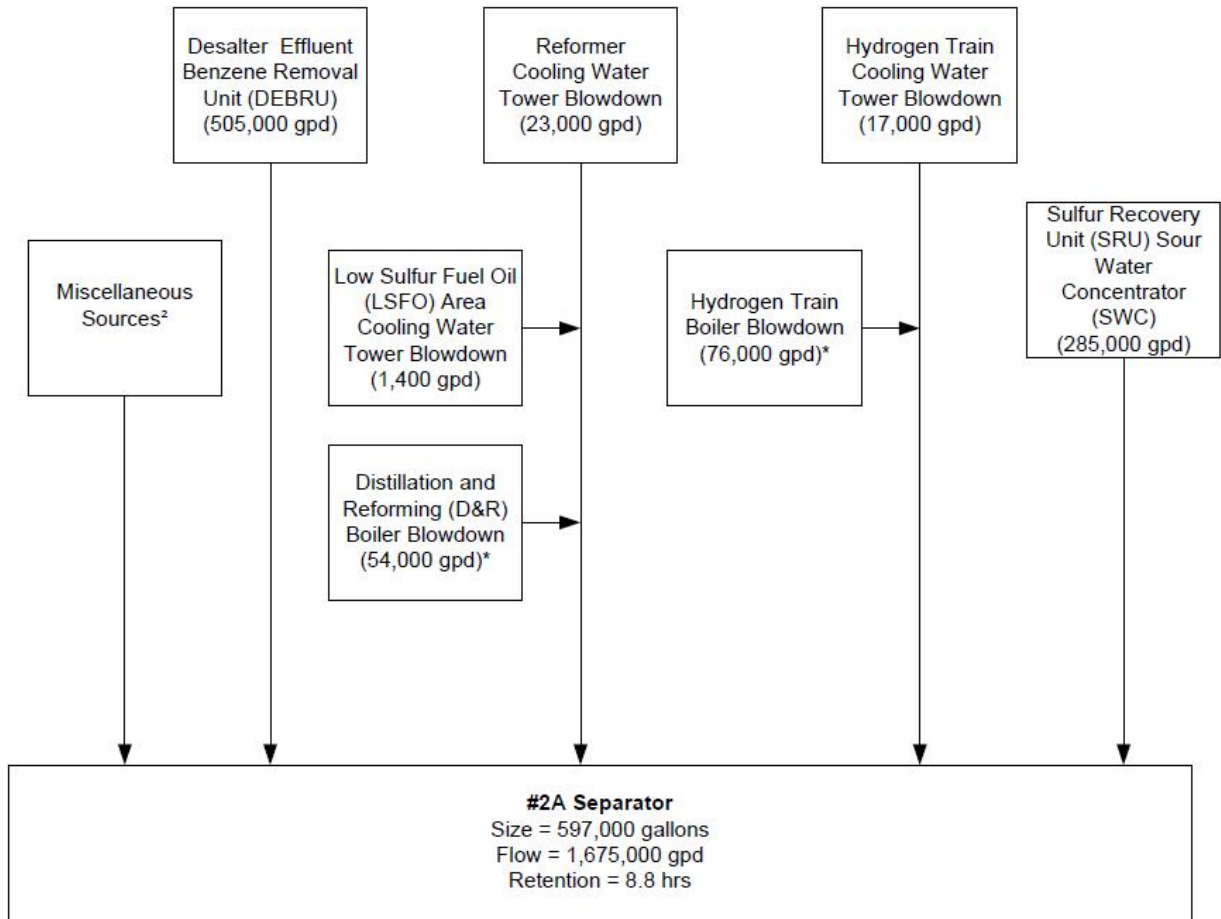


¹ All flows could change significantly because of rainfall and variability in refinery systems.

² Miscellaneous Sources include wastewater and storm water from off-site Chevron facilities, plant washdowns, drain temperature control, equipment cleaning and hydrotesting, lab waste water, fire systems testing and training, storm water from construction sites including those one acre or more, etc.

* Flow based on Best Available Engineering Estimates

Figure C-5: 2A Oil/Water Separator Flow Diagram

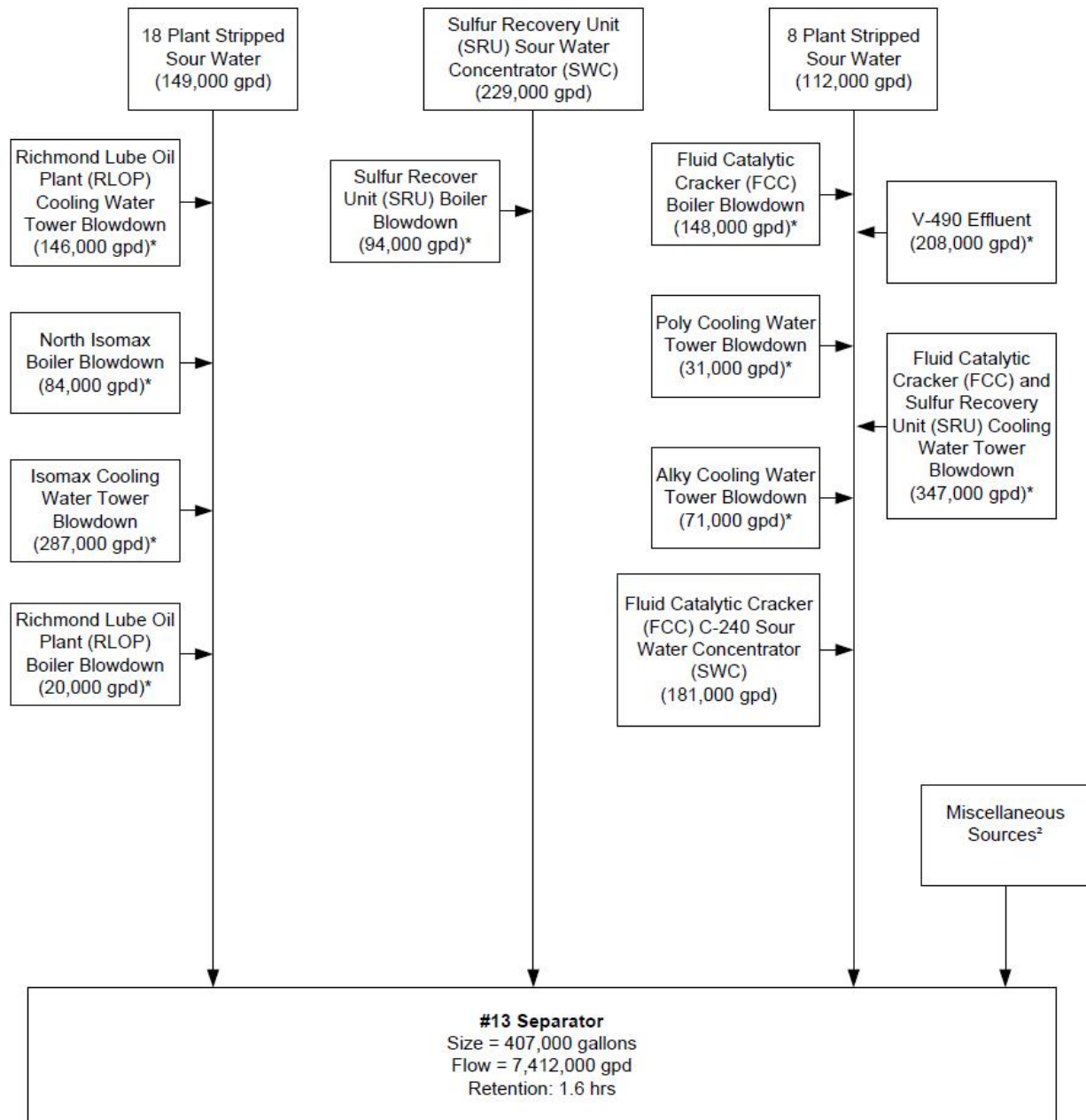


¹ All flows could change significantly because of rainfall and variability in refinery systems.

² Miscellaneous Sources include wastewater and storm water from off-site Chevron facilities, plant washdowns, drain temperature control, equipment cleaning and hydrotesting, lab waste water, fire systems testing and training, storm water from construction sites including those one acre or more, etc.

* Flow based on Best Available Engineering Estimates

Figure C-6: 13 Oil/Water Separator Flow Diagram

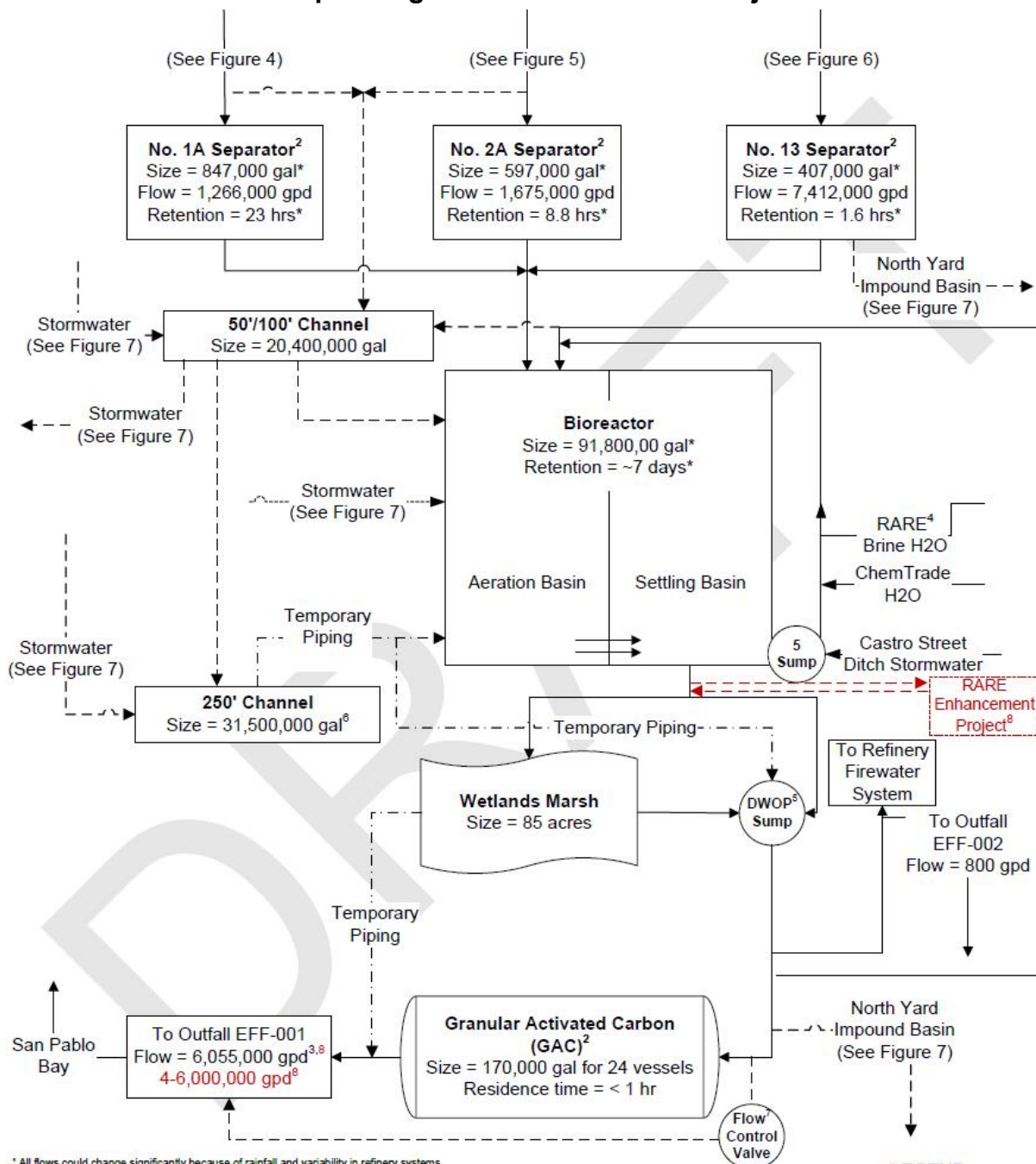


¹ All flows could change significantly because of rainfall and variability in refinery systems.

² Miscellaneous Sources include wastewater and storm water from off-site Chevron facilities, plant washdowns, drain temperature control, equipment cleaning and hydrotesting, lab waste water, fire systems testing and training, storm water from construction sites including those one acre or more, etc.

* Flow based on Best Available Engineering Estimates

**Figure C-7: Proposed Treatment Flow Diagram
incorporating RARE Enhancement Project**



¹ All flows could change significantly because of rainfall and variability in refinery systems
² Portions of these are considered Auxiliary Equipment pursuant 40 CFR 122.41 (e) depending on flow rates.
³ Dry weather E-001 flow is estimated to be 4,660,000 gpd. Post project dry weather flows could be reduced by up to 2,000,000 gpd pending final design
⁴ Richmond Advanced Recycle Expansion
⁵ Deep Water Outfall Project
⁶ 250' channel size based on remaining capacity when level is at 56"
⁷ Control valve is normally closed. The Control Valve opens and modulates flow through and around GAC filters as required to manage a safe working pressure to the GAC pressure filters during high flow events.
⁸ Potential project that would supplement RARE (Richmond Advanced Recycle Expansion) with effluent to enhance capacity. Recycled flow rates are estimated to be in the 0 - 2,000,000 gpd range with decreases in outfall flows in that same range.
^{*} Based on Best Available Engineering Estimates

LEGEND
 — Normal Routing
 - - - Alternate Routing
 - - - Potential Project

ATTACHMENT D – STANDARD PROVISIONS

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ATTACHMENT D – STANDARD PROVISIONS

1. STANDARD PROVISIONS – PERMIT COMPLIANCE

1.1. Duty to Comply

- 1.1.1. 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 and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.)
- 1.1.2. The Discharger shall comply with effluent standards or prohibitions established under CWA section 307(a) for toxic pollutants 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 C.F.R. § 122.41(a)(1).)

1.2. 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 C.F.R. § 122.41(c).)

1.3. Duty to Mitigate. The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 C.F.R. § 122.41(d).)

1.4. 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) that 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 C.F.R. § 122.41(e).)

1.5. Property Rights

- 1.5.1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)
- 1.5.2. 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 C.F.R. § 122.5(c).)

1.6. Inspection and Entry. The Discharger shall allow the Regional Water Board, State Water Board, U.S. EPA, 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. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, §§ 13267, 13383):

- 1.6.1. 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. § 1318(a)(4)(B)(i); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);
- 1.6.2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);
- 1.6.3. 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. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, §§ 13267, 13383); and
- 1.6.4. Sample or monitor, at reasonable times, for the purposes of ensuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383.)

1.7. Bypass

1.7.1. Definitions

- 1.7.1.1. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)
- 1.7.1.2. "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 C.F.R. § 122.41(m)(1)(ii).)

1.7.2. **Bypass not exceeding limitations.** The Discharger may allow any bypass to occur that does not cause exceedances of effluent limitations, but only if it is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance sections 1.7.3, 1.7.4, and 1.7.5 below. (40 C.F.R. § 122.41(m)(2).)

1.7.3. **Prohibition of bypass.** Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):

- 1.7.3.1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
- 1.7.3.2. 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 C.F.R. § 122.41(m)(4)(i)(B)); and
- 1.7.3.3. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance section 1.7.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)
- 1.7.4. **Approval.** The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance section 1.7.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)
- 1.7.5. **Notice**
 - 1.7.5.1. **Anticipated bypass.** If the Discharger knows in advance of the need for a bypass, it shall submit prior notice, if possible, at least 10 days before the date of the bypass. The notice shall be sent to the Regional Water Board. As of December 21, 2025, a notice shall also be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 below. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(i).)
 - 1.7.5.2. **Unanticipated bypass.** The Discharger shall submit a notice of an unanticipated bypass as required in Standard Provisions – Reporting section 5.5 below (24-hour notice). The notice shall be sent to the Regional Water Board. As of December 21, 2025, a notice shall also be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 below. Notices shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(ii).)
- 1.8. **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 C.F.R. § 122.41(n)(1).)

- 1.8.1. **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 section 1.8.2 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 C.F.R. § 122.41(n)(2).)
- 1.8.2. **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 C.F.R. § 122.41(n)(3)):
 - 1.8.2.1. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - 1.8.2.2. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));
 - 1.8.2.3. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting section 5.5.2.2 below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and
 - 1.8.2.4. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance section 1.3 above. (40 C.F.R. § 122.41(n)(3)(iv).)
- 1.8.3. **Burden of proof.** In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

2. STANDARD PROVISIONS – PERMIT ACTION

- 2.1. **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 C.F.R. § 122.41(f).)
- 2.2. **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 C.F.R. § 122.41(b).)
- 2.3. **Transfers.** This Order is not transferable to any person except after notice to the Regional Water Board. The Regional 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 Water Code. (40 C.F.R. §§ 122.41(l)(3), 122.61.)

3. STANDARD PROVISIONS – MONITORING

- 3.1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)
- 3.2. Monitoring must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. chapter 1, subchapter N. Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or as required under 40 C.F.R. chapter 1, subchapter N. For the purposes of this paragraph, a method is sufficiently sensitive when:
 - 3.2.1. 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 either 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 the method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge; or
 - 3.2.2. The method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N, for the measured pollutant or pollutant parameter.

In the case of pollutants or pollutant parameters for which there are no approved methods under 40 C.F.R. part 136 or otherwise required under 40 C.F.R. chapter 1, subchapter N, monitoring must be conducted according to a test procedure specified in this Order for such pollutants or pollutant parameters. (40 C.F.R. §§ 122.21(e)(3), 122.41(j)(4), 122.44(i)(1)(iv).)

4. STANDARD PROVISIONS – RECORDS

- 4.1. 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 Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)
- 4.2. Records of monitoring information shall include:
 - 4.2.1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));

- 4.2.2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
 - 4.2.3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
 - 4.2.4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
 - 4.2.5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
 - 4.2.6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- 4.3.** Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):
- 4.3.1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
 - 4.3.2. Permit applications and attachments, permits, and effluent data. (40 C.F.R. § 122.7(b)(2).)

5. STANDARD PROVISIONS – REPORTING

5.1. Duty to Provide Information. The Discharger shall furnish to the Regional Water Board, State Water Board, or U.S. EPA within a reasonable time, any information that the Regional Water Board, State Water Board, or U.S. EPA 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 Regional Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, §§ 13267, 13383.)

5.2. Signatory and Certification Requirements

- 5.2.1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting sections 5.2.2, 5.2.3, 5.2.4, 5.2.5, and 5.2.6 below. (40 C.F.R. § 122.41(k).)
- 5.2.2. For a corporation, all permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (1) 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 (2) the manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that 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 ensure 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 C.F.R. § 122.22(a)(1).)

For a partnership or sole proprietorship, all permit applications shall be signed by a general partner or the proprietor, respectively. (40 C.F.R. § 122.22(a)(2).)

For a municipal, state, federal, or other public agency, all permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3).)

- 5.2.3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting section 5.2.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - 5.2.3.1. The authorization is made in writing by a person described in Standard Provisions – Reporting section 5.2.2 above (40 C.F.R. § 122.22(b)(1));
 - 5.2.3.2. 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 C.F.R. § 122.22(b)(2)); and
 - 5.2.3.3. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)
- 5.2.4. If an authorization under Standard Provisions – Reporting section 5.2.3 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 section 5.2.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
- 5.2.5. Any person signing a document under Standard Provisions – Reporting section 5.2.2 or 5.2.3 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 C.F.R. § 122.22(d).)

- 5.2.6. Any person providing the electronic signature for documents described in Standard Provisions – Reporting sections 5.2.1, 5.2.2, or 5.2.3 that are submitted electronically shall meet all relevant requirements of Standard Provisions – Reporting section 5.2, and shall ensure that all relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R. § 122.22(e).)

5.3. Monitoring Reports

- 5.3.1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4).)
- 5.3.2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board. All reports and forms must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 and comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(l)(4)(i).)
- 5.3.3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. chapter 1, subchapter N, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or reporting form specified by the Regional Water Board or State Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)
- 5.3.4. Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

- 5.4. 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 C.F.R. § 122.41(l)(5).)

5.5. Twenty-Four Hour Reporting

- 5.5.1. 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 report shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The report 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.

For noncompliance related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (i.e., combined sewer overflow, sanitary sewer overflow, or bypass event), type of overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volume untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the event, and whether the noncompliance was related to wet weather.

As of December 21, 2025, all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events must be submitted to the Regional Water Board and must be submitted electronically to the initial recipient defined in Standard Provisions – Reporting section 5.10 The reports shall comply with 40 C.F.R. part 3, 40 C.F.R. section 122.22, and 40 C.F.R. part 127. The Regional Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(6)(i).)

- 5.5.2. The following shall be included as information that must be reported within 24 hours:
- 5.5.2.1. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
- 5.5.2.2. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)
- 5.5.3. The Regional Water Board may waive the above required written report on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

- 5.6. Planned Changes.** The Discharger shall give notice to the Regional 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 C.F.R. § 122.41(l)(1)):

- 5.6.1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. section 122.29(b) (40 C.F.R. § 122.41(l)(1)(i)); or
- 5.6.2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order unless the discharge is an existing manufacturing, commercial, mining, or silvicultural discharge as referenced in 40 C.F.R. section 122.42(a). (40 C.F.R. § 122.41(l)(1)(ii).) If the discharge is an existing manufacturing, commercial, mining, or silvicultural discharge as referenced in 40 C.F.R. section 122.42(a), this notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under 40 C.F.R. section 122.42(a)(1) (see Additional Provisions – Notification Levels section 7.1.1). (40 C.F.R. § 122.41(l)(1)(ii).)
- 5.7. Anticipated Noncompliance.** The Discharger shall give advance notice to the Regional Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order’s requirements. (40 C.F.R. § 122.41(l)(2).)
- 5.8. Other Noncompliance.** The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting sections 5.3, 5.4, and 5.5 above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting section 5.5 above. For noncompliance related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in Standard Provision – Reporting section 5.5 and the applicable required data in appendix A to 40 C.F.R. part 127. The Regional Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(7).)
- 5.9. 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 Regional Water Board, State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)
- 5.10. Initial Recipient for Electronic Reporting Data.** The owner, operator, or duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the initial recipient defined in 40 C.F.R. section 127.2(b). U.S. EPA will identify and publish the list of initial recipients on its website and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. section 127.2(c)]. U.S. EPA will update and maintain this list. (40 C.F.R. § 122.41(l)(9).)

6. STANDARD PROVISIONS – ENFORCEMENT

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

7. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

7.1. **Non-Municipal Facilities.** Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

7.1.1. 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 C.F.R. § 122.42(a)(1)):

7.1.1.1. 100 micrograms per liter ($\mu\text{g/L}$) (40 C.F.R. § 122.42(a)(1)(i));

7.1.1.2. 200 $\mu\text{g/L}$ for acrolein and acrylonitrile; 500 $\mu\text{g/L}$ for 2,4 dinitrophenol and 2-methyl 4,6 dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));

7.1.1.3. Five (5) times the maximum concentration reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or

7.1.1.4. The level established by the Regional Water Board in accordance with 40 C.F.R. section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)

7.1.2. 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 C.F.R. § 122.42(a)(2)):

7.1.2.1. 500 micrograms per liter ($\mu\text{g/L}$) (40 C.F.R. § 122.42(a)(2)(i));

7.1.2.2. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));

7.1.2.3. Ten (10) times the maximum concentration reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or

7.1.2.4. The level established by the Regional Water Board in accordance with 40 C.F.R. section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

7.2 Publicly Owned Treatment Works (POTWs)

7.2.1. All POTWs shall provide adequate notice to the Regional Water Board of any new introduction of pollutants into the POTW from an indirect discharger that

would be subject to CWA sections 301 or 306 if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)).

- 7.2.2. All POTWs shall provide adequate notice to the Regional Water Board of any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of this Order. (40 C.F.R. § 122.42(b)(2).)
- 7.2.3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Clean Water Act (CWA) section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code section 13383 also authorizes the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. This Monitoring and Reporting Program (MRP) establishes monitoring, reporting, and recordkeeping requirements that implement the federal and State laws and regulations.

1. GENERAL MONITORING PROVISIONS

- 1.1. The Discharger shall comply with this MRP. The Executive Officer may amend this MRP pursuant to 40 C.F.R. section 122.63. If any discrepancies exist between this MRP and the “Regional Standard Provisions, and Monitoring and Reporting Requirements (Supplement to Attachment D) for NPDES Wastewater Discharge Permits” (Attachment G), this MRP shall prevail.
- 1.2. The Discharger shall conduct all monitoring in accordance with Attachment D section 3, as supplemented by Attachment G. Equivalent test methods must be more sensitive than those specified in 40 C.F.R. section 136 and must be specified in this permit.
- 1.3. For the analysis of monitoring samples, the Discharger shall use laboratories certified by the State Water Resources Control Board (State Water Board) in accordance with Water Code section 13176 and shall obtain quality assurance/quality control data with laboratory reports. For any onsite field tests (e.g., turbidity, pH, temperature, dissolved oxygen, conductivity, disinfectant residual) analyzed by a noncertified laboratory, the Discharger shall implement a Quality Assurance-Quality Control Program. The Discharger shall keep a manual onsite containing the steps followed in this program and shall demonstrate sufficient capability to adequately perform these field tests (e.g., qualified and trained employees, properly calibrated and maintained field instruments). The program shall conform to U.S. EPA guidelines or other approved procedures.
- 1.4. The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or most recent Water Pollution Performance Evaluation Study are submitted annually to the State Board at the following address:

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

2. MONITORING LOCATIONS

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

Table E-1. Monitoring Locations

Discharge Point	Monitoring Location	Monitoring Location Description
Recycled Water	INF-001	Any point in pipe that delivers only recycled water to the Facility but upstream of any wastewater treatment unit, blending point, or point of use.
Raw Water	INF-002	Any point that is representative of raw water delivered to the Facility.
Treated Process Wastewater	EFF-001	Any point in the discharge line from the deepwater discharge pump sump such that samples are representative of treated wastewater discharged at Discharge Point 001.
Richmond Long Wharf (fire protection system)	EFF-002	Any point where representative samples of stormwater and authorized non-stormwater discharges for the drainage area for Discharge Point 002 can be obtained prior to discharge.
Stormwater	EFF-003	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 003 can be obtained prior to discharge.
Stormwater	EFF-004	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 004 can be obtained prior to discharge.
Stormwater	EFF-005	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 005 can be obtained prior to discharge.
Stormwater	EFF-006	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 006 can be obtained prior to discharge.
Stormwater	EFF-007	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 007 can be obtained prior to discharge.
Stormwater	EFF-008	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 008 can be obtained prior to discharge.
Stormwater	EFF-009	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 009 can be obtained prior to discharge.
Stormwater	EFF-010	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 010 can be obtained prior to discharge.
Stormwater	EFF-011	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 011 can be obtained prior to discharge.
Stormwater	EFF-014	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 014 can be obtained prior to discharge.

Discharge Point	Monitoring Location	Monitoring Location Description
Stormwater	EFF-017	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 017 can be obtained prior to discharge.
Stormwater	EFF-018	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 018 can be obtained prior to discharge.
Stormwater	EFF-019	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 019 can be obtained prior to discharge.
Stormwater	EFF-020	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 020 can be obtained prior to discharge.
Stormwater	EFF-021	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 021 can be obtained prior to discharge.
Stormwater	EFF-022	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 022 can be obtained prior to discharge.
Stormwater	EFF-023	Any point where representative samples of the stormwater discharge for the drainage area for Discharge Point 023 can be obtained prior to discharge.
Receiving Water	RSW-001	Any point that is representative of salinity and hardness near Discharge Point 001.
Rainfall	R-1	Nearest official National Weather Service rainfall station, Discharger's Laboratory rain gauge, or other station acceptable to the Executive Officer.

3. INFLUENT MONITORING

3.1. Recycled Water Intake. Monitoring recycled water at Monitoring Location INF-001 is only required if the Discharger chooses to apply for recycled water adjustments in accordance with provision 4.1.7 of this Order. The Discharger need monitor only those parameters for which it seeks effluent limitation adjustments; monitoring other parameters is optional.

Table E-2. Influent Monitoring – Monitoring Location INF-001

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Recycled Water Flow ^[1]	MGD	Continuous	Continuous
Biochemical Oxygen Demand (BOD ₅) (5-day @ 20 degrees Celsius)	mg/L	C-24	1/Month
Total Suspended Solids (TSS)	mg/L	C-24	1/Week
Chemical Oxygen Demand (COD)	mg/L	C-24	1/Month
Oil and Grease	mg/L	Grab	1/Month
Phenolic Compounds, Total	mg/L	C-24	1/Month
Ammonia, Nitrogen Total (as N)	mg/L as N	C-24	1/Month
Sulfide, Total	mg/L	Grab	1/Month

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Chromium, Total Recoverable	mg/L	C-24	1/Month
Chromium (VI), Total Recoverable ^[2]	mg/L	Grab	1/Month
Arsenic, Total	mg/L	C-24	1/Month
Copper, Total Recoverable	µg/L	C-24	1/Month
Cyanide, Total ^[3]	µg/L	Grab	1/Month
Nickel, Total Recoverable	µg/L	C-24	1/Month
Selenium, Total Recoverable ^[4]	µg/L	C-24	1/Week
Dioxin-TEQ	pg/L	C-24	2/Year

Footnotes:

^[1] Flow shall be monitored continuously and the following flow information shall be reported in monthly self-monitoring reports:

- Daily average flow rate (MGD)
- Total monthly flow volume (MG)

^[2] The Discharger may, at its option, comply with the hexavalent chromium limitations by using total chromium results. In this case, analysis for hexavalent chromium shall be waived. The Discharger shall use the same chromium analysis as the one it conducts for Monitoring Location EFF-001.

^[3] The Discharger may, at its option, analyze for cyanide as weak acid dissociable cyanide using protocols specified in 40 C.F.R. Part 136, or an equivalent method in the latest Standard Method edition.

^[4] The Dischargers shall analyze selenium using U.S. EPA Method No. 200.8 or Standard Method No. 3114B or 3114C.

3.2. Raw Water Intake. Monitoring raw water at Monitoring Location INF-002 is only required if the Discharger chooses to apply for recycled water adjustments in accordance with provision 4.1.7. of this Order. The Discharger need monitor only those parameters for which it seeks effluent limitation adjustments; monitoring other parameters is optional.

Table E-3. Influent Monitoring – Monitoring Location INF-002

Parameter	Unit	Sample Type	Minimum Sampling Frequency
BOD ₅	mg/L	C-24	1/Year ^[1]
TSS	mg/L	C-24	1/Year ^[1]
COD	mg/L	C-24	1/Year ^[1]
Oil and Grease	mg/L	Grab	1/Year ^[1]
Phenolic Compounds, Total	mg/L	C-24	1/Year ^[1]
Ammonia	mg/L as N	C-24	1/Year ^[1]
Sulfide, Total	mg/L	Grab	1/Year ^[1]
Chromium, Total Recoverable	mg/L	C-24	1/Year ^[1]
Chromium (VI), Total Recoverable ^[2]	mg/L	Grab	1/Year ^[1]
Arsenic, Total	mg/L	C-24	1/Year ^[1]
Copper, Total Recoverable	µg/L	C-24	1/Year ^[1]
Cyanide, Total ^[3]	µg/L	Grab	1/Year ^[1]

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Nickel, Total Recoverable	µg/L	C-24	1/Year ^[1]
Selenium, Total Recoverable ^[4]	µg/L	C-24	1/Year ^[1]
Dioxin-TEQ	pg/L	C-24	1/Year ^[1]

Footnotes:

- ^[1] As described in Provision 4.1.6. of this Order, the Discharger shall sample and analyze influent raw water at least once per year at Monitoring Location INF-002 for any constituents for which it seeks recycled water use adjustments. The annual average concentration may be used in the calculations described in provision 4.1.7 of this Order.
- ^[2] The Discharger may, at its option, comply with the hexavalent chromium limitations by using total chromium results. In this case, analysis for hexavalent chromium shall be waived. The Discharger shall use the same chromium analysis as the one it conducts for Monitoring Location EFF-001.
- ^[3] The Discharger may, at its option, analyze for cyanide as weak acid dissociable cyanide using protocols specified in 40 C.F.R. Part 136, or an equivalent method in the latest Standard Method edition.
- ^[4] The Discharger shall analyze selenium using U.S. EPA Method No. 200.8 or Standard Method No. 3114B or 3114C.

4. EFFLUENT MONITORING

4.1. Monitoring Location EFF-001. The Discharger shall monitor treatment plant effluent at Monitoring Location EFF-001 as follows:

Table E-4. Effluent Monitoring – Monitoring Location EFF-001

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Flow ^[1]	MGD	Continuous	Continuous/D
pH ^[2]	standard units	Continuous	Continuous
Temperature	°F	Continuous	Continuous
Salinity	ppt	C-24	1/Month
BOD ₅	mg/L, lbs/day	C-24	1/Month
TSS	mg/L, lbs/day	C-24	1/Month
COD	mg/L, lbs/day	C-24	1/Month
Oil and Grease	mg/L, lbs/day	Grab	1/Month
Phenolics Compounds	mg/L, lbs/day	C-24	1/Month
Ammonia	mg/L as N, lbs/day	C-24	1/Month
Sulfide, Total	mg/L, lbs/day	Grab	1/Month
Chromium, Total Recoverable	mg/L, lbs/day	C-24	1/Month
Chromium (VI), Total Recoverable ^[3]	mg/L, lbs/day	Grab	1/Month
Arsenic, Total	µg/L	C-24	1/Month
Copper, Total Recoverable	µg/L	C-24	1/Month
Cyanide, Total ^[4]	µg/L	Grab	1/Month
Nickel, Total Recoverable	µg/L	C-24	1/Month
Dioxin-TEQ	µg/L	C-24	2/Year
Phosphorus, Total	µg/L	C-24	1/Month
Nitrate-nitrite	mg/L as N	C-24	1/Month
Selenium, Total Recoverable ^[5]	µg/L	C-24	1/Week
Acute Toxicity ^[6]	% survival	C-24	1/Week

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Chronic Toxicity ^[7]	“pass” or “fail” and % effect ^[9]	C-24	1/Month
Other Priority Pollutants ^[8]	µg/L	Grab	2/Year

Footnotes:

- ^[1] For effluent flows, daily average flow (MGD) and total monthly flow (MG) shall be monitored and reported in self-monitoring reports.
- ^[2] If pH is monitored continuously, the minimum and maximum pH values for each day shall be reported in self-monitoring reports.
- ^[3] The Discharger may, at its option, comply with the hexavalent chromium limitations by using total chromium results. In this case, analysis for hexavalent chromium shall be waived.
- ^[4] The Discharger may, at its option, analyze for cyanide as weak acid dissociable cyanide using protocols specified in Standard Method Part 4500-CN-I, U.S. EPA Method OI 1677, or an equivalent method in the latest edition.
- ^[5] The Discharger shall analyze selenium using U.S. EPA Method No. 200.8 or Standard Method No. 3114B or 3114C.
- ^[6] Acute bioassay tests shall be performed in accordance with MRP section 5.1.
- ^[7] Chronic toxicity tests shall be performed in accordance with MRP section 5.2.
- ^[8] The Discharger shall monitor for the pollutants listed in Attachment G, Table B. The Discharger shall collect C-24 samples for metals.

4.3. Stormwater Monitoring Locations EFF-002, EFF-003, EFF-009, EFF-010, EFF-014, and EFF-017 through EFF-023. The Discharger shall monitor stormwater discharges at Monitoring Locations EFF-002, EFF-003, EFF-009, EFF-010, EFF-014, and EFF-017 through EFF-023 as follows:

Table E-6. Stormwater Monitoring – Monitoring Locations EFF-002, EFF-003, EFF-009, EFF-010, EFF-014, and EFF-017 through EFF-023

Parameter	Unit	Sample Type	Minimum Sampling Frequency ^[1]
TOC	mg/L	Grab ^[2]	2/Wet Weather Season or 1/Day ^[3]
Oil and Grease	mg/L	Grab ^[2]	2/Wet Weather Season or 1/Day ^[3]
pH	s.u.	Grab ^[2]	2/Wet Weather Season or 1/Day ^[3]
Specific Conductance	µmhos/cm	Grab ^[2]	2/Wet Weather Season or 1/Day ^[3]
TSS	mg/L	Grab ^[2]	2/Wet Weather Season or 1/Day ^[3, 4]
BOD ₅	mg/L	Grab ^[2]	Daily during discharge event ^[5]
COD	mg/L	Grab ^[2]	Daily during discharge event ^[5]
Phenolic Compounds	mg/L	Grab ^[2]	Daily during discharge event ^[5]
Total Chromium	µg/L	Grab ^[2]	Daily during discharge event ^[5]
Hexavalent Chromium	µg/L	Grab ^[2]	Daily during discharge event ^[5]
Standard Observations ^[6]	-	-	Daily during discharge event ^[5]

Footnotes:

- ^[1] Sampling shall occur at least twice during the storm season for stormwater discharges that do not drain to stormwater basins. Such monitoring shall be conducted during periods when the laboratory is normally staffed.
- ^[2] The Discharger shall collect samples representative of first flush conditions if feasible. For locations with valve-controlled discharge, at least one sample shall be collected within the first 30 minutes of discharge.
- ^[3] If and when supplemental effluent limitations for the pollutants in Table 7 of this Order become effective, the Discharger shall increase the monitoring frequency at outfalls where the limitations are in effect to daily during each storm. The Discharger shall continue daily monitoring until two consecutive samples show compliance with the TOC and oil and grease limitations in Table 6 of this Order.

- [4] If TSS exceeds one or both of the numeric action levels in Attachment S section 1.7 during the previous wet weather season, the Discharger shall increase the monitoring frequency at outfalls where a numeric action level exceedance occurred to four times per year. The Discharger shall continue monitoring TSS four times per year until TSS levels for an entire wet weather season are below the numeric action levels.
- [5] If and when supplemental effluent limitations for the pollutants in Table 7 of this Order become effective, the Discharger shall begin monitoring at outfalls where the limitations are in effect. The Discharger shall continue monitoring each storm event until two consecutive samples show compliance with the TOC and oil and grease limitations in Table 6 of this Order.
- [6] Standard observations are specified in Attachment G section 3.2.

4.4. Stormwater Monitoring Locations EFF-008 and EFF-011. The Discharger shall document in self-monitoring reports that it only discharges stormwater from Discharge Point 011 in excess of that attributable to a 24-hour, 25-year storm and monitor at Monitoring Locations EFF-008 and EFF-011 as follows:

Table E-7. Stormwater Monitoring – Monitoring Locations EFF-008 and EFF-011

Parameter	Unit	Sample Type	Minimum Sampling Frequency
TOC	mg/L	Grab ^[1]	Each discharge event
Oil and Grease	mg/L	Grab ^[1]	Each discharge event
pH	s.u.	Grab ^[1]	Each discharge event
Specific Conductance	µmhos/cm	Grab ^[1]	Each discharge event
TSS	mg/L	Grab ^[1]	Each discharge event
Standard Observations ^[2]	-	-	Each discharge event
Priority Pollutants ^[3]	µg/L	Grab ^[1]	First Discharge Event of wet season
BOD ₅	mg/L	Grab ^[1]	Daily during discharge event ^[4]
COD	mg/L	Grab ^[1]	Daily during discharge event ^[4]
Phenolic Compounds	mg/L	Grab ^[1]	Daily during discharge event ^[4]
Total Chromium	µg/L	Grab ^[1]	Daily during discharge event ^[4]
Hexavalent Chromium	µg/L	Grab ^[1]	Daily during discharge event ^[4]

Footnotes:

- [1] The Discharger shall collect at least one grab sample within the first 30 minutes of discharge.
- [2] Standard observations are specified in Attachment G section 3.2.
- [3] The Discharger shall monitor for the pollutants listed in Attachment G, Table B. The Discharger shall collect C-24 samples for metals.
- [4] If and when the supplemental effluent limitations in Table 7 of this Order become effective in accordance with section 4.2.2 of this Order, the monitoring frequency at the outfalls where the limitations are in effect shall be increased to daily during each discharge event. The Discharger shall continue daily monitoring until two consecutive samples show compliance with the TOC and oil and grease limitations in Table 6 of this Order.

4.5. Stormwater Monitoring Locations EFF-004 through EFF-007. The Discharger shall monitor at Monitoring Locations EFF-004 through EFF-007 as follows:

Table E-8. Stormwater Monitoring – Monitoring Locations EFF-004 through EFF-007

Parameter	Unit	Sample Type	Minimum Sampling Frequency
TOC	mg/L	Grab ^[1]	Once ^[2]
Oil and Grease	mg/L	Grab ^[1]	Once ^[2]
pH	s.u.	Grab ^[1]	Once ^[2]
Specific Conductance	µmhos/cm	Grab ^[1]	Once ^[2]
TSS	mg/L	Grab ^[1]	Once ^[2]
Standard Observations ^[3]	-	-	Once ^[2]

Parameter	Unit	Sample Type	Minimum Sampling Frequency
BOD ₅	mg/L	Grab ^[1]	Daily during discharge event ^[4]
COD	mg/L	Grab ^[1]	Daily during discharge event ^[4]
Phenolic Compounds	mg/L	Grab ^[1]	Daily during discharge event ^[4]
Total Chromium	µg/L	Grab ^[1]	Daily during discharge event ^[4]
Hexavalent Chromium	µg/L	Grab ^[1]	Daily during discharge event ^[4]

Footnotes:

- ^[1] The Discharger shall collect at least one grab sample within the first 30 minutes of discharge.
- ^[2] If and when supplemental effluent limitations for the pollutants in Table 7 of this Order become effective, the Discharger shall increase the monitoring frequency at outfalls where the limitations are in effect to daily during each storm. The Discharger shall continue daily monitoring until two consecutive samples show compliance with the TOC and oil and grease limitations in Table 6 of this Order.
- ^[3] Standard observations are specified in Attachment G section 3.2.
- ^[4] If and when supplemental effluent limitations for the pollutants in Table 7 of this Order become effective, the Discharger shall begin monitoring at outfalls where the limitations are in effect. The Discharger shall continue monitoring each storm event until two consecutive samples show compliance with the TOC and oil and grease limitations in Table 6 of this Order.

5. TOXICITY MONITORING

5.1. Acute Toxicity

- 5.1.1. Compliance with the acute toxicity effluent limitations shall be evaluated at Monitoring Location EFF-001 by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays.
- 5.1.2. Test organisms shall be rainbow trout (*Onchorhynchus mykiss*). Alternatively, the Executive Officer may specify a more sensitive organism or, if testing a particular organism proves unworkable, the most sensitive organism available.
- 5.1.3. All bioassays shall be performed according to the most up-to-date protocols in 40 C.F.R. part 136, currently *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms*, 5th Edition (EPA-821-R-02-012). If these protocols prove unworkable, the Executive Officer and the Environmental Laboratory Accreditation Program may grant exceptions in writing upon the Discharger's request with justification.
- 5.1.4. Bioassay monitoring shall include, on a daily basis, pH, dissolved oxygen, ammonia (if toxicity is observed), temperature, hardness, and alkalinity. These results shall be reported. If final or intermediate results of an acute bioassay test indicate a violation (e.g., the percentage of surviving test organisms is less than 70 percent), the Discharger shall initiate a new test as soon as practical and shall investigate the cause of the mortalities and report its findings in the next self-monitoring report. The Discharger shall repeat the test until a test fish survival rate of 90 percent or greater is observed. If the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new fish and shall continue as soon as practical until an acceptable test is completed (i.e., control fish survival rate is 90 percent or greater).

5.2. Chronic Toxicity

5.2.1. Compliance Monitoring

- 5.2.1.1. **Sampling.** The Discharger shall collect 24-hour composite effluent samples at Monitoring Location EFF-001 for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, the Discharger shall collect 24-hour composite samples on consecutive or alternating days.
- 5.2.1.2. **Test Species.** The test species shall be water flea (*Ceriodaphnia dubia*) unless a more sensitive species is identified in accordance with MRP, Appendix E-1. The Discharger shall conduct chronic toxicity species sensitivity screening as required in Appendix E-1. Upon completion of the chronic toxicity screening, the most sensitive species shall be the species that exhibits the highest percent effect. The Executive Officer may temporarily designate the next most sensitive species available of those listed in MRP Tables AE-1 and AE-2 as the “most sensitive species” if testing a particular species proves unworkable (e.g., the discharger encounters unresolvable test interference or cannot secure a reliable supply of test organisms). The Executive Officer will specify a temporary designation of the most sensitive species in writing.
- 5.2.1.3. **Frequency.** The Discharger shall monitor chronic toxicity as specified below:
- 5.2.1.3.1. **Routine Monitoring.** The Discharger shall conduct routine monitoring once per month at the Instream Waste Concentration (IWC) set forth in section 4.1.2 of the Order, and continue routine monitoring during any Toxicity Reduction Evaluation (TRE) consistent with MRP section 5.2.3.7.
- 5.2.1.3.2. **MMEL Compliance Tests and TRE Determination.** If any routine monitoring test result is “fail,” the Discharger shall conduct at least one and at most two MMEL compliance tests. The results of these tests shall be used to determine if a TRE is necessary according to the process shown in Appendix E-3. The Discharger shall initiate these tests within the same calendar month as the failed routine monitoring test. (For the purposes of MMEL compliance tests, the “calendar month” shall begin on the calendar day that the failed routine monitoring test was initiated. The “calendar month” shall end on the day before the corresponding day of the following month, or on the last day of the following month if it has no corresponding day [e.g., January 31 through February 28]).
- 5.2.1.3.2.1. If the first MMEL compliance test result is “pass,” then the Discharger shall conduct a second MMEL compliance test. If the first MMEL compliance test result is “fail,” that result constitutes an MMEL violation and a second MMEL compliance test is not required. If any of the failed tests were also an MDEL violation, the discharger shall conduct a TRE (see MRP § 5.2.3).

- 5.2.1.3.2.2. If the second MMEL compliance test result is “pass,” then the Discharger shall return to routine monitoring as described in MRP section 5.2.1.3.1. (See Appendix E-5, Toxicity Reduction Evaluation Process Flowchart.) If the second MMEL compliance Test result is “fail,” that result constitutes an MMEL violation. If any of the failed tests were also an MDEL violation, the discharger shall conduct a TRE (see MRP § 5.2.3).
- 5.2.1.3.2.3. If the Discharger cannot conduct an MMEL compliance test because not enough effluent is available to test, the Discharger shall return to routine monitoring as soon as enough effluent is available.
- 5.2.1.4. **Methodology.** Sample collection, handling, and preservation shall be in accordance with U.S. EPA protocols. Bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-2. These are *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms*, currently 1st edition (EPA/600/R-95/136); *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms*, currently 3rd edition (EPA-821-R-02-014); and *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, currently 4th edition (EPA-821-R-02-013). If these protocols prove unworkable, the Executive Officer and the Environmental Laboratory Accreditation Program may grant exceptions in writing upon the Discharger’s request with justification.

Chronic toxicity shall be evaluated using the Test of Significant Toxicity (TST) as described in Toxicity Provisions section III.B.3. The selected test concentrations shall include the IWC. The TST shall be conducted using the IWC sample and a control as described in Toxicity Provisions section III.B.3. Test sample pH may be controlled to the level of the effluent sample as received by the laboratory prior to being salted up. A result of “fail” indicates toxicity at the IWC.

If the Discharger demonstrates that specific identifiable substances in the discharge are rapidly rendered harmless upon discharge to the receiving water, compliance with the chronic toxicity limit may be determined after test samples are adjusted to remove the influence of those substances. The adjustment shall not remove the influence of other substances. Written acknowledgement that the Executive Officer concurs with the Discharger’s demonstration must be obtained prior to any such adjustment.

- 5.2.2. **Reporting.** The Discharger shall provide toxicity test results with self-monitoring reports and shall include the following, at a minimum, for each test:

- 5.2.2.1. Sample date.

- 5.2.2.2. Test initiation date.
- 5.2.2.3. Test species.
- 5.2.2.4. End point values for the control and IWC sample (e.g., number of young, growth rate, percent survival). For routine monitoring and MMEL compliance tests, the Discharger shall report the results as either “pass” or “fail,” and the percent effect at the IWC for each endpoint.
- 5.2.2.5. End point values for each replicate of the control and IWC sample (e.g., number of young, growth rate, percent survival).
- 5.2.2.6. Available water quality measurements for each test (e.g., pH, dissolved oxygen, temperature, conductivity, hardness, salinity, ammonia).

5.2.3. Toxicity Reduction Evaluation (TRE)

- 5.2.3.1. The Discharger shall prepare a generic TRE work plan within 90 days of the effective date of this Order to be ready to respond to toxicity events. The Discharger shall review and update the generic work plan as necessary so it remains current and applicable to the discharge and discharge facilities.
- 5.2.3.2. Within 30 days of the following circumstances, the Discharger shall submit a TRE work plan that shall be the generic work plan revised as appropriate for the particular toxicity observed. The circumstances triggering a TRE are as follows:
 - 5.2.3.2.1. The Discharger has any combination of two or more MDEL or MMEL violations within a single calendar month or two successive calendar months; or
 - 5.2.3.2.2. The Discharger violates the MDEL or MMEL during a calendar month, there is no effluent available to test in the following calendar month, and the Executive Officer requires a TRE;
- 5.2.3.3. Within 30 days of submitting the TRE work plan, the Discharger shall initiate a TRE in accordance with the TRE work plan. The TRE shall be specific to the discharge and be in accordance with current technical guidance and reference materials, including U.S. EPA guidance materials. The Discharger shall conduct the TRE as a tiered evaluation as summarized below:
 - 5.2.3.3.1. Tier 1 shall consist of basic data collection (routine monitoring, additional routine monitoring, and MMEL compliance tests);
 - 5.2.3.3.2. Tier 2 shall consist of evaluating treatment processes, including operational practices and process chemicals;

- 5.2.3.3.3. Tier 3 shall consist of a toxicity identification evaluation (TIE) to identify the substance or combination of substances causing the observed toxicity. The Discharger shall employ all reasonable efforts using currently available TIE methodologies;
- 5.2.3.3.4. Tier 4 shall consist of a toxicity source evaluation;
- 5.2.3.3.5. Tier 5 shall consist of a toxicity control evaluation that considers alternative strategies, including treatment process modifications, to reduce or eliminate the toxic substances from the discharge; and
- 5.2.3.3.6. Tier 6 shall consist of implementing all reasonable toxicity control measures, and follow-up monitoring and confirmation of implementation success.
- 5.2.3.4. The Discharger may end the TRE at any stage if monitoring finds there is no longer consistent toxicity (i.e., two consecutive test results of “pass”).
- 5.2.3.5. The Executive Officer may authorize the Discharger to end a TRE if the Discharger documents that it has exhausted all reasonable efforts to identify the cause of the toxicity.
- 5.2.3.6. Many recommended TRE elements parallel required or recommended efforts related to source control, pollution prevention, and stormwater control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to demonstrate compliance with TRE requirements.
- 5.2.3.7. The routine monitoring frequency shall be a minimum of two tests per calendar year at the IWC when the Discharger is conducting toxicity testing as part of a TRE during that calendar year. The Discharger must return to the routine monitoring frequency specified in MRP section 5.2.1.3.1 at the conclusion of the TRE or one year after the initiation of the TRE, whichever occurs sooner. TRE triggers are set forth below.

Table E-9. Toxicity Reduction Evaluation (TRE) Triggers

Monitoring Type and Frequency	Triggers	TRE Required?
Routine and MMEL compliance monitoring, less than monthly frequency	1. Violation of MDEL or MMEL in a calendar month, AND 2. No discharge during the following calendar month	EO may require TRE
Routine and MMEL compliance monitoring	Any combination of two or more MDEL or MMEL violations in a single calendar month or successive calendar months	TRE is required

6. RECEIVING WATER MONITORING

- 6.1 The Discharger shall continue to participate in the Regional Monitoring Program, which collects data on pollutants and toxicity in San Francisco Bay water, sediment, and biota.
- 6.2 The Discharger shall conduct receiving water monitoring at Monitoring Location RSW-001 as described below (alternatively, the Discharger may satisfy this requirement by ensuring that the RMP collects such samples):

Table E-10. Receiving Water Monitoring – Monitoring Location RWS-001

Parameter	Unit	Sample Type	Minimum Sampling Frequency
Salinity	ppt	Grab	1/Quarter
Hardness	mg/L	Grab ¹	1/Quarter

Footnotes:

- ^[1] U.S. EPA Method 1600 or an equivalent method is suggested to measure culturable enterococci.
- ^[2] Results may be reported as either MPN/100 mL if the laboratory method used provides results in MPN/100 mL or CFU/100 mL if the laboratory method used provides results in CFU/100 mL.

7. REPORTING REQUIREMENTS

7.1. General Monitoring and Reporting Requirements. The Discharger shall comply with all Standard Provisions (Attachments D, G, and S) related to monitoring, reporting, and recordkeeping.

7.2. Self-Monitoring Reports (SMRs)

7.2.1. **SMR Format.** The Discharger shall electronically submit SMRs using the State Water Board’s [California Integrated Water Quality System \(CIWQS\) Program website](http://waterboards.ca.gov/water_issues/programs/ciwqs) (waterboards.ca.gov/water_issues/programs/ciwqs). The CIWQS website will provide additional information for SMR submittal in the event of a planned service interruption for electronic submittal.

7.2.2. **SMR Due Dates and Contents.** The Discharger shall submit SMRs by the due dates, and with the contents, specified below:

7.2.2.1. **Monthly SMRs** — Monthly SMRs shall be due the first day of the second month after the monthly monitoring period. Each SMR shall contain the applicable items described in Provision 6.3.2 (Effluent Characterization Study and Report) of the Order, Attachment D section 5.2, and Attachment G section 5.3. Each SMR shall 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 Discharger shall include the results of such monitoring in the calculations and reporting for the SMR. The Discharger shall report when peak wet weather flows are routed around the 1A or 2A Separators to the bioreactor, monitor these flows for oil and grease, and submit documentation (e.g. oil and grease sampling) that demonstrate

that such flow is at least 80 percent stormwater and does not contain visible oil..

7.2.2.2. **Annual SMR** — Annual SMRs shall be due February 1 each year, covering the previous calendar year. The annual SMR shall contain the applicable items described in Provisions 6.3.2 (Effluent Characterization Study and Report) and 6.3.4.5 (Annual Selenium Load) of the Order, and Attachment G section 5.3.1.6.

7.2.3. **Specifications for Submitting SMRs to CIWQS.** The Discharger shall submit analytical results and other information using one of the following methods:

Table E-11. CIWQS Reporting

Parameter	Method of Reporting: EDF/CDF data upload	Parameter
All parameters identified in influent, effluent, and receiving water monitoring tables (except Dissolved Oxygen and Temperature)	Required for all results	-
Dissolved Oxygen, Temperature	Required for monthly maximum and minimum results only ^[1]	Discharger may use this method for all results or keep records
Antimony, Arsenic, Beryllium, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Nickel, Selenium, Silver, Thallium, Zinc, Dioxins & Furans (by U.S. EPA Method 1613), Other Pollutants (by U.S. EPA Methods 601, 602, 608, 610, 614, 624, and 625)	Required for all results ^[2]	-
Analytical Method	Not required (Discharger may select “data unavailable”) ^[1]	-
Collection Time, Analysis Time	Not required	-

Footnotes:

^[1] The Discharger shall continue to monitor at the minimum frequency specified in this MRP, keep records of the measurements, and make the records available upon request.

^[2] These parameters require EDF/CDF data upload or manual entry regardless of whether monitoring is required by this MRP or other provisions of this Order (except for biosolids, sludge, or ash provisions).

The Discharger shall arrange all reported data in a tabular format and summarize data to clearly illustrate whether the Facility is operating in compliance with effluent limitations. The Discharger is not required to duplicate the submittal of data 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, the Discharger shall electronically submit the data in a tabular format as an attachment.

7.2.4. **Monitoring Periods.** Monitoring periods for all required monitoring shall be as set forth below unless otherwise specified:

Table E-12. Monitoring Periods

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period
Continuous	Order effective date	All times
Continuous/1H	Order effective date	Measured continuously or, if infeasible, at least every hour
1/Hour	Order effective date	Every hour on the hour
1/Day	Order effective date	Any 24-hour period that reasonably represents a calendar day for sampling purposes (e.g., beginning at midnight and continuing through 11:59 p.m.)
1/Week 2/Week	First Sunday following or on Order effective date	Sunday through Saturday
1/Month	First day of calendar month following or on Order effective date ^[2]	First day of calendar month through last day of calendar month
1/Quarter	Closest January 1, April 1, July 1, or October 1 before or after Order effective date ^[1]	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31
1/Year	Closest January 1 before or after Order effective date ^[1]	January 1 through December 31
2/Year	Closest January 1 or July 1 before or after Order effective date ^[1]	January 1 through June 30 July 1 through December 31
Each Discharge Event	As soon as possible after Discharger becomes aware of the event	Any time when sampling can characterize the discharge event
2/Wet Weather Season	Closest November 1 before or after Order effective date ^[1]	November 1 through April 30
Once	Order effective date	Once during the term of the Order within 12 months prior to applying for permit reissuance

Footnote:

^[1] Monitoring performed during the previous order term may be used to satisfy monitoring required by this Order.

^[2] See Attachment A for the definition of a calendar month for chronic toxicity testing.

7.2.5. RL and MDL Reporting. The Discharger shall report with each sample result the Reporting Level (RL) and Method Detection Limit (MDL) as determined by the procedure in 40 C.F.R. 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:

- 7.2.5.1. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- 7.2.5.2. Sample results less than the RL, 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 purposes of data collection, the Discharger shall require the laboratory to 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 (\pm a percentage of the reported value), numerical ranges (low to high), or any other means the laboratory considers appropriate.

- 7.2.5.3. Sample results less than the laboratory's MDL shall be reported as "Not Detected", or ND.
- 7.2.5.4. The Discharger shall instruct laboratories to establish calibration standards so that the minimum level (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.
- 7.2.6. **Compliance Determination.** Compliance with effluent limitations shall be determined using sample reporting protocols defined above, in the Fact Sheet, and in Attachments A, D, and G. For purposes of reporting and administrative enforcement by the Regional Water Board and State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the pollutant in the monitoring sample is greater than the effluent limitation and, if applicable, greater than or equal to the RL.
- 7.3. **Discharge Monitoring Reports (DMRs).** DMRs are U.S. EPA reporting requirements. The Discharger shall electronically certify and submit DMRs together with SMRs using Electronic Self-Monitoring Reports module eSMR 2.5 or the latest upgraded version. Electronic DMR submittal shall be in addition to electronic SMR submittal. Information about electronic DMR submittal is available at the [DMR website](http://waterboards.ca.gov/water_issues/programs/discharge_monitoring) (waterboards.ca.gov/water_issues/programs/discharge_monitoring).

APPENDIX E-1

CHRONIC TOXICITY DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS

1. Definition of Terms

- 1.1. Continuous Discharger.** Discharger that discharges without interruption throughout its operating hours, except for infrequent shutdowns for maintenance, process changes, or other similar activities, and that discharges throughout the calendar year.
- 1.2. Non-Continuous Discharger.** Discharger that does not discharge in a continuous manner or does not discharge throughout the calendar year (e.g., intermittent and seasonal dischargers).

2. Chronic Toxicity Species Sensitivity Screening

- 2.1.** The Discharger shall perform species sensitivity screening as specified in Toxicity Provisions section III.C.2:
- 2.1.1. The Discharger shall conduct species sensitivity screening and submit a technical report that identifies the most sensitive test species within 18 months of the effective date of this Order, whichever is latest, if the Discharger has not previously conducted a species sensitivity screening as specified in Toxicity Provisions section III.C.2.
- 2.1.2. The Discharger shall conduct a species sensitivity screening and submit a technical report that identifies the most sensitive test species with the application for permit reissuance. Alternatively, the Discharger may provide species sensitivity screening results from a previous sensitive species screening conducted within the 15 years before the expiration date of this Order if that sensitive species screening was conducted as specified in Toxicity Provisions section III.C.2.
- 2.1.3. The Discharger shall conduct species sensitivity screening and submit a technical report that identifies the most sensitive test species no later than 18 months after any significant change in the nature of the effluent discharged due to changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts.
- 2.2.** Species sensitivity screening shall, at a minimum, reflect the following elements:
- 2.2.1 Test species specified in Appendix E-2, attached, and protocols referenced in those tables. Test species shall be Tier I unless those species are unavailable. In such cases, the Executive Officer may approve a Tier II test species.

- 2.2.2. Continuous Dischargers: four sets of tests, one in each calendar quarter of a calendar year.

Non-continuous Dischargers: at least two sets of tests, one in each calendar quarter with at least 15 days of discharge, unless the Discharger discharges in only one quarter of a calendar year; in that case, both sets of testing shall occur during the same calendar quarter. Testing in a specific species sensitivity screening can be conducted using effluent that is not discharged into surface waters (e.g., effluent discharged onto land because of a summer prohibition on discharges into surface waters) as long as the effluent tested is representative of the effluent that will be discharged to surface waters.

- 2.2.3. Appropriate controls as required by the applicable U.S. EPA test method for the selected test species.
- 2.2.4. Tests conducted at a waste concentration of 10 percent or the IWC, whichever represents a higher concentration of effluent. Alternatively, the Executive Officer may specify a higher waste concentration if needed to increase the likelihood that potential effects might be observed.
- 2.3. The Discharger shall submit a species sensitivity screening proposal at least 30 days prior to initiating any species sensitivity screening. The proposal shall address each of the elements listed above.
- 2.4. The most sensitive species shall be the species exhibiting the highest percent effect.

APPENDIX E-2: SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS

Table AE-1. West Coast Marine Chronic Toxicity Test Species and Methods

Species	Scientific Name	Tier	Effect	Test Duration	Reference
Giant kelp	<i>Macrocystis pyrifera</i>	I	Percent germination; germ tube length	48 hours	1
Red Abalone	<i>Haliotis rufescens</i>	I	Larval development	48 hours	1
Oyster Mussel	<i>Crassostrea gigas</i> <i>Mytilus sp.</i>	I	Larval development	48 hours	1
Purple Urchin Sand dollar	<i>Strongylocentrotus purpuratus</i> <i>Dendraster excentricus</i>	I	Percent fertilization or larval development	1 hour or 72 hours	1
Shrimp	<i>Americamysis bahia</i>	II	Percent survival; growth	7 days	2
Topsmelt	<i>Atherinops affinis</i>	I	Percent survival; growth	7 days	1
Silverside	<i>Menidia beryllina</i>	II	Larval growth rate; percent survival	7 days	2

Toxicity Test References:

1. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/821/R-02/014. October 2002.

Table AE-2. Freshwater Chronic Toxicity Test Species and Method

Species	Scientific Name	Tier	Effect	Test Duration	Reference
Fathead minnow	<i>Pimephales promelas</i>	I	Survival; growth rate	7 days	1
Water flea	<i>Ceriodaphnia dubia</i>	I	Survival; number of young	7 days	1
Green Alga	<i>Selenastrum capricornutum</i>	I	Final cell density	4 days	1

Toxicity Test Reference:

1. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, fourth Edition Chronic manual (EPA-821-R-02-013, October 2002).

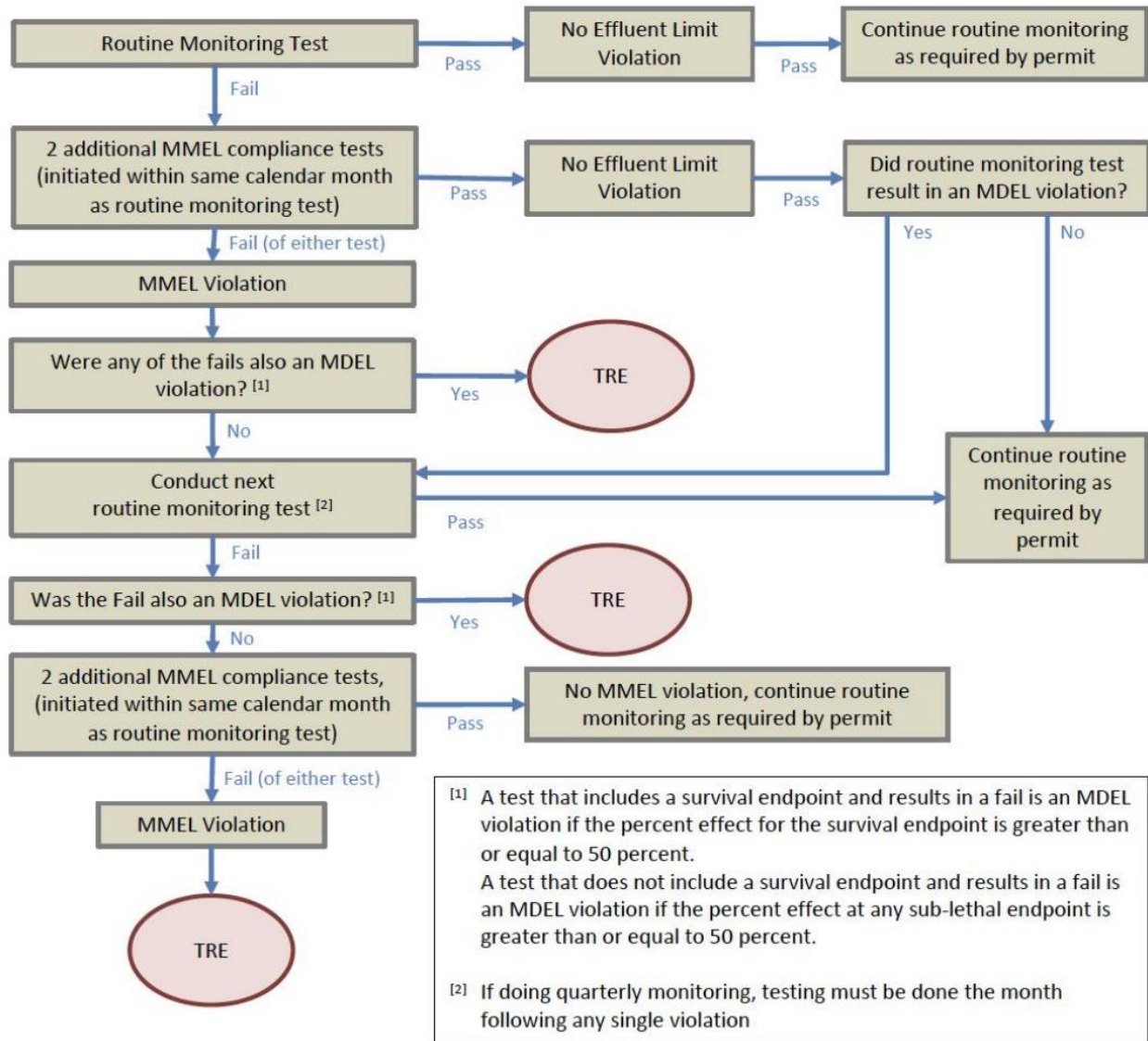
Table AE-3. Toxicity Test Requirements for Species Sensitivity Screening

Requirements	Discharges to Marine or Estuarine Water (San Francisco Bay) ^[1]	Discharges to Freshwater ^[1]
Taxonomic diversity	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Screening Requirement	A total of 3 Marine and/or Freshwater species from Table AE-1 and Table AE-2	3 Freshwater species from Table AE-2 ^[2]

Footnotes:

- ^[1] (a) "Marine" refers to receiving water salinities greater than 1.0 parts per thousand (ppt) at least 95 percent of the time during a normal water year.
 (b) "Freshwater" refers to receiving water with salinities less than 1.0 ppt at least 95 percent of the time during a normal water year.
 (c) "Estuarine" refers to all other cases (i.e., when receiving water salinity is above 1.0 less than 95 percent of the time and below 1.0 less than 95% of the time).
- ^[2] The freshwater species may be substituted with a marine species if:
 (a) The salinity of the effluent is above 1 ppt greater than 95 percent of the time, or
 (b) The ionic strength (TDS or conductivity) of the effluent at the IWC is documented to be toxic to the test species.

APPENDIX E-3: TOXICITY REDUCTION EVALUATION PROCESS FLOWCHART ROUTINE MONITORING



ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

This Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order. As described in section 2.2 of the Order, the Regional Water Board incorporates this Fact Sheet as findings supporting the issuance of the Order.

1. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	2 071044001
CIWQS Place ID	252650
Discharger	Chevron Products Company, a division of Chevron U.S.A. Inc. Chevron Environmental Management Company
Facility Name	Chevron Richmond Refinery
Facility Address	841 Chevron Way Richmond, CA 94801 Contra Costa County
Facility Contact, Title, and Phone	Kris Battleson, HSE Manager, (510) 242-1400
Authorized Person to Sign and Submit Reports	Same as Facility contact
Mailing Address	Same as Facility Address
Billing Address	PO Box 1272 Richmond, CA 94802
Facility Type	Petroleum Refinery
Major or Minor Facility	Major
Water Quality Threat	1
Complexity	A
Pretreatment Program	No
Recycling Requirements	No
Mercury and PCBs Requirements	NPDES Permit CA0038849
Nutrients Requirements	Not Applicable
Average Facility Flow	6.1 MGD – projected average daily flow
Permitted Flow	25 MGD (maximum reported daily flow)
Watershed	San Francisco Bay
Receiving Water	San Pablo Bay and San Francisco Bay
Receiving Water Type	Marine
Last Inspection	June 12, 2023

1.1. Chevron Products Company (a division of Chevron U.S.A., Inc.) and Chevron Environmental Management Company (collectively the Discharger) own and operate the Chevron Richmond Refinery (Facility), a 2,900-acre petroleum refinery. Attachment B includes maps of the Facility and its surroundings.

For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and State laws, regulations, plans, and policies are held to be equivalent to references to the Discharger herein.

- 1.2. The Discharger is regulated pursuant to National Pollutant Discharge Elimination System (NPDES) Permit CA0005134. The Discharger was previously subject to Order R2-2016-0047 (previous order). The Discharger filed a Report of Waste Discharge and submitted an application for reissuance of its Waste Discharge Requirements (WDRs) and NPDES permit on May 5, 2021.
- 1.3. The Discharger is authorized to discharge subject to the WDRs in this Order at the discharge locations described in Table 1 of this Order. Regulations in 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed five years. Accordingly, this Order limits the effective period for the discharge authorization. Pursuant to 40 C.F.R. section 122.6(d) and California Code of Regulations, title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all requirements for continuation of expired permits.
- 1.4. The discharge is also regulated pursuant to NPDES Permit CA0038849, which establishes mercury and polychlorinated biphenyls (PCBs) requirements for wastewater discharges to San Francisco Bay. This Order does not affect that permit.
- 1.5. For areas where stormwater is not subject to physical treatment, the Discharger must obtain coverage under *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities*, (NPDES Permit CAS000002, State Water Board Order 2022-0057-DWQ). This Order authorizes discharges of stormwater that drains to the Discharger’s wastewater treatment plant and stormwater treated in earthen basins via physical settling prior to discharge.

2. FACILITY DESCRIPTION

The Facility occupies most of Point San Pablo Peninsula and processes an average crude oil throughput of 251,000 barrels per day, producing diesel fuels, lubricant base oils, as well as fuel oil, liquefied petroleum gas, and hydrogen solely for its own use. The Facility discharges to San Pablo Bay and San Francisco Bay (in some cases by way of Wildcat Creek or Castro Creek) via 19 outfalls: Discharge Points 001 through 023. Attachment B provides site maps with approximate discharge point locations.

- 2.1. **Wastewater Treatment at Discharge Point 001.** The Facility discharges process wastewater, non-process wastewater, and stormwater at Discharge Point 001 after treatment at the wastewater treatment plant. Process water as well as non-process water from utility infrastructure and other operations enters the wastewater treatment system from many sources. Wastewaters include, but are

not limited to, desalter effluent, sour water, boiler blowdown, cooling tower blowdown, reverse osmosis brine from freshwater treatment facilities, ballast water, stormwater from refinery process areas, underflow from the recovered oil system and groundwater extraction systems, and wastewater from steam and electrical generation facilities, steam distribution systems, firewater testing, hydrotesting, laboratories, collocated facilities, the Chem Trade West US facility. In addition, wastewater may also contain water generated from onsite and offsite activities, including construction activities, marketing and pipeline activities, facility washing equipment cleaning, environmental remediation activities, inspection and maintenance activities, drain temperature control testing, fire protection system testing and training, and other activities. In the event of a fire emergency, firefighting fluids and other materials (e.g., hydrocarbons wash water, foam, sediment, and combustion materials) would likely drain to the wastewater treatment plant. Attachment C provides process flow diagrams for the wastewater treatment plant and several of its components.

The wastewater collection system consists of a network of drains and trunk lines leading from areas throughout the refinery to the wastewater treatment plant. The wastewater is initially treated in one of three American Petroleum Institute oil-water separators, each servicing different areas of the refinery (Attachment C, Figures 4 through 6). Each oil-water separator consists of two or more parallel cells. The Discharger may leave cells out of service if their capacity is not required to treat a given flow; such cells may constitute auxiliary treatment consistent with 40 C.F.R. section 122.41(e).

Wastewater flows from the oil-water separators to a bioreactor. Flows from Chem Trade West US, Richmond Advanced Recycled Expansion, and Castro Street Ditch (stormwater) enter the bioreactor directly. The bioreactor consists of two sections. The first section provides biological treatment through aeration; the second section functions as a settling basin. Bioreactor residence time is about 25 days at average system flow. The Discharger routes about 3 MGD of bioreactor effluent to the Richmond Refinery Enhancement Wetland pilot treatment facility (Wetland) and the remaining portion to granular activated carbon (GAC) filters, as described below.

The Wetland consists of 85 acres of wetlands arranged in three passes and improves effluent quality prior to final treatment with GAC filters. To minimize exposure of resident wildlife to selenium and prevent selenium accumulation in resident birds, the Discharger maintains a water level of about three to four feet in the first pass and no more than about one foot in the second pass. This approach discourages bird use in the first pass, where most selenium is removed. Most Wetland effluent flows to the GAC filters; however, the Discharger may discharge up to 3.0 MGD of Wetland effluent directly to Discharge Point 001, provided that it complies with Provision 6.3.4.7. Also, the Discharger diverts about 200 MG of Wetland and bioreactor effluent per year to the fire protection system. The Discharger returns most water discharged during firefighting and fire protection system testing and training to the wastewater treatment plant. The Discharger

uses a small portion at the Richmond Long Wharf and discharges it through Discharge Point 002 (see Fact Sheet section 2.3.1.).

Most Wetland effluent and all bioreactor effluent that bypasses the Wetland flows to 24 GAC filters operated in paired series during normal operations and in parallel during high flow conditions. The GAC filters remove some metals and hydrocarbons and reduce effluent toxicity. The Discharger may leave individual GAC filters out of service if their capacity is not required to treat a given flow; such filters may be considered auxiliary treatment pursuant to 40 C.F.R. section 122.41(e). GAC filter effluent is discharged through Discharge Point 001, a deepwater outfall equipped with a diffuser at an average depth of 30 to 50 feet, approximately 2,000 feet offshore north of Point San Pablo (see Attachment B). During large rain events, to avoid overflow of the bioreactor, Chevron can partially open a flow control valve to allow some bioreactor flow to bypass the GAC filters. This is done so to prevent an overflow while still maximizing flow through the GAC filters.

The Discharger uses about 3.0 MGD of tertiary-treated recycled water from the East Bay Municipal Utility District (EBMUD) North Richmond Water Reclamation Plant in Facility cooling towers and about 3.5 MGD from the EBMUD Richmond Advanced Recycled Expansion (RARE) plant, located at the Facility, in Facility boilers. The RARE plant treats secondary effluent from the West County Wastewater District through microfiltration and reverse osmosis. The Discharger directs reverse osmosis brine to its bioreactor and microfiltration backwash water to the West County Wastewater District.

2.2. Stormwater Treatment and Control. The Facility discharges stormwater runoff from process areas at Discharge Point 001 after treatment at the wastewater treatment plant, and stormwater runoff from non-process areas, including former Chevron facilities located offsite, through 18 stormwater discharge points (see Table 1 of the Order and Attachment B). Stormwater handling is summarized below.

2.2.1. Process Area Stormwater. Process area stormwater commingles with process wastewater (i.e., commingled stormwater) and flows to the wastewater treatment plant, with exceptions during large storm events described below. Process area stormwater flow is shown in Attachment C, Figure 3.

A flow-splitter box upstream of the 1A and 2A Separators diverts some commingled stormwater during large storms that could exceed their design capacities. Such commingled stormwater is diverted to the 20-MG capacity 100-foot Channel for temporary storage. The flow-splitter box includes overflow and underflow weirs that provide initial oil-water separation. When flows subside, the Discharger routes commingled stormwater from the 100-foot Channel to the wastewater treatment plant. If visual inspection confirms there is no visible oil, the Discharger routes this commingled stormwater to the bioreactor; otherwise, the Discharger routes it to the 1A or 2A Separator.

The Discharger also diverts stormwater from the Richmond Lube Oil Plant, Lake Schramm, and Petrolite Hill away from the 13 Separator to the North Yard Impound Basin during large storms that could exceed the 13 Separator’s design capacity. The diverted stormwater flows first to the North Yard Lift Station, then to the North Yard Impound Basin. If the Discharger has only diverted non-commingled stormwater from these areas to the North Yard Impound Basin, it discharges the stormwater directly to San Francisco Bay via Discharge Point 003; otherwise, it routes it to the bioreactor. In large storms, the Discharger may also route commingled stormwater treated by the 13 Separator directly to the North Yard Impound Basin, then to the bioreactor.

2.2.2. **Non-Process Area Stormwater.** Stormwater from non-process areas (mainly current or former tank farms) is discharged either to San Pablo Bay or San Francisco Bay. This stormwater either drains to basins that provide treatment by settling prior to discharge, or is discharged directly by sheet flow (see Table F-2 below). Fact Sheet section 2.3 describes the 18 stormwater outfalls and their discharges.

2.2.3. **Stormwater Ponds.** Stormwater from certain areas flows to stormwater ponds from which discharge is usually prohibited. The Discharger typically routes stormwater from the Castro Acres Surge Pond (Discharge Point 011), to the West County Wastewater District or the bioreactor. The Discharger typically routes stormwater from the 100-foot Channel (Discharge Point 008) to the bioreactor. The Discharger will no longer discharge stormwater from the Fertilizer Evaporation Pond (Discharge Point 012), and Integrated Wastewater Pond System (Discharge Point 013). These discharge points and their treatment controls are listed in the table below:

Table F-2. Stormwater Outfalls and Treatment Controls

Discharge Point	Type of Treatment Control
002	None (sheet flow)
003	Settling Basin; valve-controlled discharge
004	Settling Basin
005	Settling Basin
006	Settling Basin
007	Settling Basin
008	Settling Basin (effluent normally sent to bioreactor)
009	Settling Basin; valve-controlled discharge
010	None (sheet flow)
011	Settling Basin; valve-controlled discharge (effluent normally sent to West County Wastewater District)
014	None (sheet flow)
017	Settling Basin; valve-controlled discharge
018	Settling Basin; valve-controlled discharge
019	Settling Basin; valve-controlled discharge
020	Settling Basin and sheet flow

021	None (sheet flow)
022	None (sheet flow)
023	None (sheet flow)

2.3. Stormwater Outfall Descriptions

2.3.1. **Discharge Point 002 (Richmond Long Wharf).** Discharge Point 002 discharges stormwater runoff from Richmond Long Wharf (an area of approximately 2 acres) directly to San Francisco Bay by sheet flow. Discharge Point 002 also discharges non-stormwater, including San Francisco Bay water used in the fire protection system, steam condensate, pipeline exterior wash water, and fire protection water. Fire protection water discharges average 5,600 gallons and occur during housekeeping activities and tests of, or maintenance on, the fire protection system. Fire protection system testing occurs about once per week and lasts for about 10 minutes each time.

2.3.2. **Discharge Point 003 (North Yard Impound Basin).** Discharge Point 003 discharges stormwater runoff from approximately 410 acres within the Poleyard and Alkane Tank Fields and adjacent hillsides, liquid petroleum gas and Ammonia Storage Facilities, former Oxidation Ponds 2 through 5, Cracking and Hydroprocessing facilities and processing areas, and the Hydropits Cap to San Pablo Bay. Discharge Point 003 also discharges steam condensate, groundwater seepage, non-contact San Pablo Bay water, and residual hydrotesting and fire protection system water. The Discharger routes hydrotesting and fire protection system water from the North Yard Impound Basin to the bioreactor, but residual amounts may be discharged with stormwater. Flow from the Tank Field 100-foot Channel, otherwise discharged at Discharge Point 008, may also be routed to the North Yard Impound Basin and discharged at Discharge Point 003.

The North Yard Impound Basin treats stormwater via physical settling. Prior to discharge, the Discharger analyzes North Yard Impound Basin stormwater samples for compliance with the effluent limits in Table 6 of the Order. Once compliance is confirmed, the Discharger performs a valve-controlled gravity discharge to San Pablo Bay.

2.3.3. **Discharge Point 004 (12-Basin).** Discharge Point 004 discharges stormwater runoff from an area of approximately 4 acres in the former Point Orient Tank Field to San Francisco Bay. The Point Orient Tank Field is no longer in use. Stormwater from 12-Basin may be transferred to 10-Basin for discharge at Discharge Point 006.

2.3.4. **Discharge Point 005 (11-Basin).** Discharge Point 005 discharges stormwater runoff from an approximately 3-acre area in the former Point Orient Tank Field to San Francisco Bay. The Point Orient Tank Field is no longer in use.

- 2.3.5. **Discharge Point 006 (10-Basin).** Discharge Point 006 discharges stormwater runoff from an approximately 48-acre area in the former Point Orient Tank Field to San Francisco Bay. The Point Orient Tank Field is no longer in use. Stormwater from 12-Basin (Discharge Point 004), Horse Pasture, and 13-Basin (Discharge Point 007) may be transferred to 10-Basin for discharge at Discharge Point 006.
- 2.3.6. **Discharge Point 007 (Horse Pasture, 13-Basin).** Discharge Point 007 discharges stormwater runoff from an approximately 17-acre area in the former Point Orient Tank Field (commonly referred as Horse Pasture) and 13-Basin to San Francisco Bay. Stormwater from the Horse Pasture and 13-Basin may also be transferred to 10-Basin for discharge at Discharge Point 006.
- 2.3.7. **Discharge Points 008 (Tank Field 100-foot Channel).** Discharge Point 008 discharges stormwater runoff from approximately 500 acres in and around the Main Tank field, adjacent hillsides, Distillation and Reforming facilities, Main and South Yard Areas, rail car loading racks, and the Cogeneration Facility to San Pablo Bay. Tank Field 100-foot Channel, an earthen basin, provides treatment by physical settling. The Discharger typically routes all water from the 100-foot Channel to the bioreactor.
- 2.3.8. **Discharge Point 009 (8-Basin).** Discharge Point 009 discharges stormwater from approximately 26 acres within the Quarry Tank Field to San Francisco Bay. Discharge Point 009 also discharges non-stormwater, including steam condensate, groundwater seepage, irrigation water, hydrotesting water, and fire protection system water. The Discharger routes most hydrotesting and fire protection system water from the 8-Basin to the bioreactor, but residual amounts may be discharged along with stormwater.

The 8-Basin, an earthen basin, provides treatment by physical setting. Before discharging, the Discharger analyzes stormwater samples for compliance with the effluent limits in Table 6 of the Order. Once compliance is confirmed, the Discharger performs a valve-controlled gravity discharge.

- 2.3.9. **Discharge Point 010 (Reclamation Area).** Discharge Point 010 discharges stormwater from approximately 6 acres within the former Reclamation Yard area by sheet flow from Gertrude Street to Wildcat Creek, which then drains to Castro Creek, a tributary of San Pablo Bay.
- 2.3.10. **Discharge Point 011 (Castro Acres Surge Pond).** Discharge Point 011 discharges stormwater from approximately 36 acres within the former Chevron Chemical Company Hensley Street Plant to Castro Creek, a tributary of San Pablo Bay, only when 24-hour rainfall exceeds the 25-year return frequency (i.e., a 24-hour, 25-year storm occurs) (see Discharge Prohibition 3.4 of the Order and Fact Sheet section 4.1.1.4.). Otherwise, the Discharger routes Castro Acres Surge Pond effluent to the West County Wastewater District's sanitary sewer system via the Integrated Wastewater Pond System or directly

to the bioreactor. Discharge Point 011 also discharges non-stormwater, including groundwater, irrigation water, and fire protection system water. The Castro Acres Surge Pond provides treatment by physical settling.

2.3.11. **Discharge Point 012 (Fertilizer Evaporation Pond).** This Order does not permit stormwater discharges at Discharge Point 012. The Discharger routes stormwater from the Fertilizer Evaporation Pond to West County Wastewater District Sanitary Sewer or directly to the bioreactor.

2.3.12. **Discharge Point 013 (Integrated Wastewater Pond System).** This Order does not permit stormwater discharge at Discharge Point 013. In the previous order, Discharge Point 013 discharged stormwater to Castro Creek from approximately 81 acres of synthetically-lined surface impoundments and, potentially, runoff from the former Hensley Street Plant, the Fertilizer Evaporation Pond, and from an adjacent 4-acre capped Class II waste management unit (Soil Management Unit 1). Discharge Point 013 also discharged non-stormwater, including irrigation water and groundwater.

The Discharger routes stormwater from the Integrated Wastewater Pond System to West County Wastewater District Sanitary Sewer or directly to the bioreactor.

2.3.13. **Discharge Point 014 (Consolidation Area).** Discharge Point 014 discharges stormwater by sheet flow from approximately 5 acres that include a capped waste management unit to Castro Creek, a tributary of San Pablo Bay.

2.3.14. **Discharge Point 015 (1-Basin).** This Order does not permit stormwater discharges at Discharge Point 015. The Discharger routes stormwater from 1-Basin to Discharge Point 020.

2.3.15. **Discharge Point 016 (2-Basin).** This Order does not permit stormwater discharges at Discharge Point 016. The Discharger routes stormwater from 2-Basin to Discharge Point 020.

2.3.16. **Discharge Point 017 (3-Basin).** Discharge Point 017 discharges stormwater from approximately 7 acres within a former tank field area to San Francisco Bay. Discharge Point 017 also discharges non-stormwater, including fire protection system water. The Discharger routes most fire protection system water from the 3-Basin to the bioreactor, but residual amounts may be discharged with stormwater.

The 3-Basin is an earthen basin that treats stormwater by physical settling. Before discharge, the Discharger analyzes stormwater samples for compliance with the effluent limits in Table 6 of the Order. Once compliance is confirmed, the Discharger performs a valve-controlled gravity discharge.

2.3.17. **Discharge Point 018 (9-Basin).** Discharge Point 018 discharges stormwater from approximately 29 acres in the Quarry Tank Field to San Francisco Bay.

Discharge Point 018 also discharges non-stormwater, including residual water from steam traps, fire protection system water, and hydrotesting water. The Discharger routes most hydrotesting and fire protection system water from the 9-Basin to the bioreactor, but residual amounts may be discharged with stormwater.

The 9-Basin is an earthen basin that treats stormwater by physical settling. Before discharge, the Discharger analyzes stormwater samples for compliance with the effluent limits in Table 6 of the Order. Once compliance is confirmed, the Discharger performs a valve-controlled gravity discharge.

- 2.3.18. **Discharge Point 019 (7-Basin).** Discharge Point 019 discharges stormwater from approximately 20 acres within the SP Hill Tank Field to San Francisco Bay. Discharge Point 019 also discharges non-stormwater, including residual water from steam traps, hydrotesting water, and fire protection system water. The Discharger routes most hydrotesting and fire protection system water from the 7-Basin to the bioreactor, but residual amounts may be discharged with stormwater.

The 7-Basin is an earthen basin that treats stormwater by physical settling. Before discharge, the Discharger analyzes stormwater samples for compliance with the effluent limits in Table 6 of the Order. Once compliance is confirmed, the Discharger performs a valve-controlled gravity discharge.

- 2.3.19. **Discharge Point 020 (Castro Street, 1-Basin, and 2-Basin).** Discharge Point 020 discharges stormwater from the City of Richmond's stormwater management system, which consists of (a) stormwater from approximately 260 acres at Castro Street, (b) stormwater collected at the 1-Basin from approximately 4 acres within a former tank field area, and (c) stormwater collected at the 2-Basin from approximately 5 acres within a former tank field area. The Discharger routes stormwater from these three locations and from City of Richmond storm sewers to the Castro Street Pump Station, then to Chevron's 38-foot Channel. The 38-foot Channel discharges to Castro Creek, a tributary of San Pablo Bay. This Order permits the discharge of stormwater from 1-Basin and 2-Basin through Discharge Point 020.

- 2.3.20. **Discharge Point 021 (Landfill 15).** Discharge Point 021 discharges stormwater by sheet flow from approximately 41 acres that include a capped waste management unit to Castro Creek, a tributary of San Pablo Bay.

- 2.3.21. **Discharge Point 022 (Parr-Richmond).** Discharge Point 022 discharges stormwater by sheet flow from approximately 24 acres that include a capped waste management unit to Wildcat Creek, which drains to Castro Creek, a tributary of San Pablo Bay.

2.3.22. **Discharge Point 023 (Gertrude Street).** Discharge Point 023 discharges stormwater by sheet flow from approximately 3 acres to Wildcat Creek, which drains to Castro Creek, a tributary of San Pablo Bay.

2.3. Previous Requirements and Monitoring Data

2.3.1. **Monitoring data for Discharge Point 001.** The table below presents the previous order's effluent limitations and representative monitoring data from the previous order term (February 2017 – May 2023):

Table F-3. Previous Effluent Limitations and Monitoring Data

Parameter	Units	Average Monthly Limit	Maximum Daily Limit	Other Limits	Average	Highest Daily Discharge
Biochemical Oxygen Demand (5-day @ 20°C) (BOD ₅)	lbs/day	5,800	11,000	-	740	12,000 ^[1]
Total Suspended Solids (TSS)	lbs/day	4,800	7,600	-	500	5,100
Chemical Oxygen Demand (COD)	lbs/day	40,000	78,000	-	3,300	16,000
Oil and Grease	lbs/day	1,800	3,400	-	74	600
Sulfide, Total	lbs/day	32	71	-	1.6	7.0
Phenolic Compounds, Total	lbs/day	20	80	-	0.28	2.4
Ammonia Nitrogen, Total (as N)	mg/L	50	150	-	0.77	6.1
Ammonia Nitrogen, Total (as N)	lbs/day	2,200	4,800	-	45	490
Chromium, Total Recoverable	lbs/day	23	67	-	0.14	0.38
Chromium (VI), Total Recoverable	lbs/day	1.9	4.3	-	0.043	0.41
Selenium, Total Recoverable	kg/day	-	0.68	-	0.31	0.65
Copper, Total Recoverable	µg/L	71	120	-	1.6	3.5
Cyanide, Total	µg/L	19	38	-	2.1	5.1
Dioxin-TEQ	µg/L	1.4E-8	2.8E-8	-	3.9E-9	3.5E-6
Nickel, Total Recoverable	µg/L	240	380	-	24	76
Acute Toxicity	percent survival	-	-	90% (11-sample median)	-	99 ^[2]
Acute Toxicity	percent survival	-	-	70% (11-sample 90 th percentile)	-	100 ^[1]
Chronic Toxicity	TUc	-	-	10 (single-sample maximum)	-	44
pH	Standard units	-	-	6.0 - 9.0	7.1	6.0 - 8.5 ^[3]

Footnotes:

- [1] This BOD discharge included an effluent limitation allocation for contaminated runoff.
[2] Lowest percent survival.
[3] These are the lowest and highest reported pH values.

2.3.2. **Monitoring data for Discharge Points 002 through 023.** The following table presents stormwater quality during the previous order term (March 2016 – February 2021):

Table F-4. Monitoring Data for Discharge Points 002 through 023

Discharge Point	TOC (mg/L)		Oil and Grease (mg/L)		TSS (mg/L)		pH (s.u.)	
	Max.	Avg.	Max.	Avg.	Max.	Avg.	Min.	Max.
002	16	11	9.3	2.0	890	26	7	8.5
003	8.14	6.6	4.2	1.8	47	23	7.3	8.1
004	--	--	--	--	--	--	--	--
005	--	--	--	--	--	--	--	--
006	7.5	7.5	ND	ND	72	72	7.3	7.3
007	13	13	1.6	1.6	23	23	7.4	7.4
008	11	11	1.6	1.6	74	74	7.4	7.4
009	13	7.0	2.1	2.1	72	28	7.3	8.5
010	11.1	2.6	2.2	1.6	140	29	6.7	8
011	--	--	--	--	--	--	--	--
012	--	--	--	--	--	--	--	--
013	--	--	--	--	--	--	--	--
014	29	14	2	1	25	10	7.6	8.4
017	17	9.6	1.3	1.3	15	7.4	6.8	7.5
018	23	11	2.4	1.8	33	17	7.4	8.4
019	10	10	1.3	1.3	400	310	7.4	7.7
020	5.4	4.5	4	2.9	76	32	7.1	8.2
021	12	8.5	4	3.5	9.3	4.9	7.7	8.4
022	3.8	2.9	ND	ND	12	6.1	7.2	7.7
023	10	4.0	ND	ND	4.9	3.2	6.6	7.9

2.4. Compliance Summary

2.4.1. **Discharge Point 001.** During the previous order (February 2017 through January 2022), the Discharger violated its chronic toxicity maximum daily effluent limitation once. At the time of the violation, the Discharger was conducting maintenance on one of the processing units. During maintenance turnarounds, the Discharger cleans and repairs equipment, which may introduce additional pollutants. As a corrective measure, the Discharger stored wash waters and initiated accelerated (monthly) monitoring. The proceeding chronic toxicity test passed and accelerated monitoring was discontinued.

2.4.2. **Discharge Points 002 through 023.** As shown in Table F-4, the Discharger complied with all stormwater effluent limits within the previous order term.

2.5. Sea Level Rise. The Discharger's *Assessment of Potential Future Physical Risks to Richmond Refinery for California Regulatory Compliance* evaluated potential flood risk of the Refinery under future sea level rise, groundwater rise, and storm surge conditions. A detailed perimeter berm evaluation identifies locations and timeframes when areas of the facility are at risk for inundation from storm events, and inferred potential berm elevations that could reduce interior flood risk. The Discharger also notes that inundation along the coastal areas of the facility does not necessarily result in inundation of interior facilities. An evaluation of potential rising groundwater impacts found that due to the elevated topography associated with the Potrero-San Pablo Ridge, large areas of the Facility are at low risk of impacts from emergent groundwater due to sea level rise. Areas of emergent groundwater and shallow groundwater primarily occur along the seaward margin, with tidal marshes, along surface water drainage features, and near water retention basins. As part of the CEQA requirements for the facility Modernization Project, the Discharger will submit a Flood Contingency Plan to the City of Richmond by April 2024. This contingency plan will use a phased approach and must be updated and resubmitted every five years.

2.6. Planned Changes. The Discharger plans to increase recycled water use within the Refinery cooling towers by using a combination of rainwater runoff and recycled treatment plant effluent. Based on the results of a bench-scale study, the Refinery treatment plant effluent may be a viable supplemental feed source for the RARE water treatment plant, but more investigations are required to ensure permit compliance and evaluate the effect on the RARE microfiltration and reverse osmosis (RO) system. The current plan is to divert some bioreactor effluent to the RARE plant for recycling and to send the RO brine upstream of the Wetlands (see Attachment C, Figure 7). A pilot study to investigate the feasibility and impacts of the project is scheduled to begin in late 2023 or early 2024.

The Discharger also plans to replace and reposition aerators in the bioreactor. While the bioreactor is offline for repairs, the Discharger is considering installation of a BioWeb textile in an aerated section of the bioreactor. The BioWeb is a lock-knit textile designed to encourage biofilm growth on the textile media, which could enhance nutrient removal within the lagoon.

The Discharger also plans to install 14.5 acres of floating photo voltaic solar arrays in the 250-foot channel and 25.4 acres of ground mounted photo voltaic solar arrays on the capped landfill. The project will connect the 15-megawatt capacity to an existing Refinery substation. The project is expected to provide about 35 gigawatt-hours per year.

These changes are not requirements of this Order, except to the extent that they pertain to ensuring Facility reliability.

3. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

3.1. Legal Authorities. This Order serves as WDRs pursuant to California Water Code article 4, chapter 4, division 7 (commencing with § 13260). This Order is also issued pursuant to federal Clean Water Act (CWA) section 402 and implementing regulations adopted by the U.S. EPA, and Water Code chapter 5.5, division 7 (commencing with § 13370). It serves as an NPDES permit authorizing the Discharger to discharge into waters of the United States at the discharge locations described in Table 1 subject to the WDRs in this Order.

3.2. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resources Code division 13, chapter 3 (commencing with § 21100).

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

3.3.1. Water Quality Control Plan. The Regional Water Board adopted the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. In addition, this Order implements State Water Board Resolution 88-63, which established State Policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal and domestic supply. Because of the marine influence on San Pablo Bay and San Francisco Bay, total dissolved solids exceed 3,000 mg/L; therefore, San Pablo Bay and San Francisco Bay meet an exception to State Water Board Resolution 88-63. Therefore, the beneficial uses applicable to San Pablo Bay and Central San Francisco Bay are listed below:

Table F-5. Beneficial Uses

Discharge Points	Receiving Water ^[1]	Beneficial Uses
001, 003, 008, 010 through 014, and 020 through 023	San Pablo Bay	Industrial Service Supply (IND) Ocean, Commercial and Sport Fishing (COMM) Shellfish Harvesting (SHELL) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)

Discharge Points	Receiving Water ^[1]	Beneficial Uses
002, 004 through 007, 009, and 017 through 019	San Francisco Bay Central	Industrial Service Supply (IND) Industrial Process Supply (PRO) Ocean, Commercial and Sport Fishing (COMM) Shellfish Harvesting (SHELL) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2) Navigation (NAV)

Footnotes:

^[1] Wildcat Creek and Castro Creek are not listed because the discharge location is located within the tidal portion of the creek.

- 3.3.2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** The NTR and CTR contain federal water quality criteria for priority pollutants. U.S. EPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About 40 NTR criteria apply in California. U.S. EPA adopted the CTR on May 18, 2000. The CTR promulgated new toxics criteria for California and incorporated the NTR criteria that applied in the State. U.S. EPA amended the CTR on February 13, 2001.
- 3.3.3. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP establishes implementation provisions for priority pollutant criteria and objectives, and provisions for chronic toxicity control. The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria U.S. EPA promulgated for California through the NTR and the priority pollutant objectives the Regional Water Board established through the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria U.S. EPA promulgated through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. Requirements of this Order implement the SIP.
- 3.3.4. **Sediment Quality.** The State Water Board adopted the *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* on September 16, 2008, and it became effective on August 25, 2009. The State Water Board adopted amendments to the plan on June 5, 2018, that became effective on March 11, 2019. This plan establishes sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries.

- 3.3.5. **Toxicity Provisions.** The State Water Board adopted the *State Policy for Water Quality Control: Toxicity Provisions* (Toxicity Provisions) on October 5, 2021. U.S. EPA approved the Toxicity Provisions on May 1, 2023. Toxicity Provisions sections II.C.1 and II.C.2 establish numeric chronic and acute toxicity objectives that apply to all inland surface waters, enclosed bays, and estuaries in the State with aquatic life beneficial uses. The Toxicity Provisions include related implementation provisions and require that compliance with the chronic toxicity water quality objectives be assessed using U.S. EPA's Test of Significant Toxicity (TST) (U.S. EPA, *National Pollutant Discharge Elimination System Test of Significant Toxicity Implementation Document* [EPA/833-R-10-003], June 2010).
- 3.3.6. **Antidegradation Policy.** Federal regulations at 40 C.F.R. section 131.12 require that state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy through State Water Board Resolution 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, which incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. Permitted discharges must be consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.
- 3.3.7. **Anti-Backsliding Requirements.** CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.
- 3.3.8. **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 §§ 2050 to 2097) or Federal Endangered Species Act (16 U.S.C.A. §§ 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, threatened, or endangered species. The Discharger is responsible for meeting all applicable Endangered Species Act requirements.
- 3.4. **Impaired Water Bodies on CWA section 303(d) List.** On May 11, 2022, U.S. EPA approved a revised list of impaired waters pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards will not be met after implementation of technology-based effluent limitations on point sources. Where it has not done so already, the Regional Water Board plans to adopt total maximum daily loads (TMDLs) for

pollutants on the 303(d) list. TMDLs establish wasteload allocations for point sources and load allocations for nonpoint sources and are established to achieve water quality standards.

San Pablo Bay and Central San Francisco Bay are listed as impaired waterbodies for chlordane, DDT, dieldrin, dioxin compounds, furan compounds, invasive species, mercury, PCBs, dioxin-like PCBs, and selenium. Central San Francisco Bay is also listed as impaired for trash. On February 12, 2008, U.S. EPA approved a TMDL for mercury in San Francisco Bay. On March 29, 2010, U.S. EPA approved a TMDL for PCBs in San Francisco Bay. On August 23, 2016, U.S. EPA approved a selenium TMDL for North San Francisco Bay (including San Pablo Bay). The TMDLs for mercury and PCBs are implemented through NPDES Permit CA0038849. This Order implements the selenium TMDL as it applies to the Discharger. According to the Discharger's Report of Waste Discharge submitted May 2021, chlordane, DDT, and dieldrin have not been detected in Facility discharges. This Order contains dioxin-TEQ effluent limitations to ensure that dioxins and furans in effluent are kept below water quality objectives. Facility discharges are not a source of invasive species because the California State Lands Commission sets conditions for approving ballast water disposal, as discussed in Fact Sheet section 6.3.4.5 below.

4. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants discharged into waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 C.F.R. 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 receiving waters.

4.1. Discharge Prohibitions

4.1.1. Prohibitions in this Order

- 4.1.1.1. **Discharge Prohibition 3.1 (No discharge other than as described):** This prohibition is based on 40 C.F.R. section 122.21(a) and Water Code section 13260, which require filing an application and Report of Waste Discharge before a discharge can occur. Discharges not described in the application and Report of Waste Discharge, and subsequently in this Order, are prohibited.
- 4.1.1.2. **Discharge Prohibition 3.2 (No discharge at Discharge Point 001 when treated wastewater does not receive initial dilution of at least 34:1):** This prohibition is based on Basin Plan Discharge Prohibition 1, which prohibits

discharges that do not receive a minimum initial dilution of at least 10:1 (10 parts total receiving water after mixing with 1 part effluent). Furthermore, this order allows a 10:1 dilution credit in the calculation of some water quality-based effluent limitations and a 34:1 dilution credit in the calculation of the ammonia water quality-based effluent limitations. These water quality-based effluent limitations would not be protective of water quality if the discharge did not actually achieve at least 34:1 dilution.

- 4.1.1.3. **Discharge Prohibition 3.3 (No bypass to waters of the United States):** This prohibition is based on 40 C.F.R. section 122.41(m) (see Attachment D section 1.7). This Order allows the Discharger to route peak wet weather flows around the 1A or 2A Separator directly to the bioreactor if the Discharger documents that stormwater constitutes at least 80 percent of the redirected water and the redirected water does not contain visible oil. Downstream treatment units can effectively treat process wastewater diluted to this extent.
- 4.1.1.4. **Discharge Prohibition 3.4 (No discharge of stormwater from Hensley Street Plant site unless a 24-hour, 25-year storm occurs):** This prohibition is retained from the previous order and is necessary to prevent discharge of contaminated stormwater from the former Hensley Street Plant site, where the Discharger manufactured and formulated fertilizers, pesticides, and fuel additives until 1996.
- 4.1.1.5. **Discharge Prohibition 3.5 (No discharge of Wetland effluent to Discharge Point 001):** This prohibition is retained from the previous order and is necessary to ensure that treated wastewater will not be toxic to aquatic life.
- 4.1.2 Basin Plan Discharge Prohibitions.** Basin Plan Discharge Prohibition 1 prohibits wastewater discharges having characteristics of particular concern that do not receive a minimum initial dilution of 10:1, the Basin Plan indicates that the prohibition is to address discharges of undiluted wastes or abnormal discharges caused by the malfunction or upset of a treatment process. This Order permits discharge of stormwater from Discharge Points 002 through 023 without an initial dilution of at least 10:1. Since these stormwater discharges do not contain process wastewaters that are undiluted or would be subject to upset, the prohibition does not apply.

Basin Plan Discharge Prohibition 8 prohibits discharge of floating oil or other materials to protect wildlife. This Order establishes effluent limits for oil and grease, and requires the Discharger to conduct acute toxicity tests that ensure that treated effluent is protective of wildlife.

Basin Plan Discharge Prohibition 13 prohibits discharge of oil except in accordance with waste discharge requirements. This Order establishes waste discharge requirements for oil and grease.

4.2. Technology-Based Effluent Limitations

4.2.1. Scope and Authority. CWA section 301(b) and 40 C.F.R. section 122.44(a) require that permits include applicable technology-based limitations based on several levels of control:

- Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants. Conventional pollutants include BOD₅, TSS, pH, and oil and grease.
- 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.
- Best conventional control technology (BCT) represents the control from existing industrial point sources of conventional pollutants. The BCT standard is established after considering the “cost reasonableness” of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.
- New source performance standards (NSPS) represent the best available demonstrated control technology standards for new sources. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

Where U.S. EPA has not yet developed technology-based standards for a particular industry or a particular pollutant, CWA section 402(a)(1) and 40 C.F.R. section 125.3 authorize the use of best professional judgement (BPJ) to derive technology-based effluent limitations on a case-by-case basis. When BPJ is used, the permit must reflect specific factors outlined at 40 C.F.R. section 125.3.

U.S. EPA has established standards of performance (technology-based limitations and standards) for the petroleum refining industry at 40 C.F.R. section 419, *Effluent Limitations Guidelines for the Petroleum Refining Point Source Category*. Subpart E of these regulations for the Integrated Subcategory applies to discharges from the Facility and have been used to develop this Order’s limitations and requirements (see Attachment F-1).

4.2.2. Technology-Based Effluent Limitations – Discharge Point 001. The effluent limitations guidelines established in 40 C.F.R. part 419 require that technology-based effluent limitations for Discharge Point 001 be derived based on refinery production (total crude oil throughput) and the treatment processes used.

Attachment F-1 presents the derivation of the production-based effluent limitations based on 40 C.F.R. part 419, subpart E. Crude oil throughput is currently 251,000 barrels per day (bbls/d).

The table below lists the most stringent of the calculated BPT, BAT, and BCT limitations. (NSPS limitations do not apply because the Facility was constructed prior to October 18, 1982.) The table also presents the previous order's limitations that were based on a lower crude oil throughput of 244,000 bbls/d. To avoid backsliding, this Order imposes the more stringent effluent limitations from the previous order.

Table F-6 Technology-Based Effluent Limitations for Process Wastewater

Pollutant	Newly Calculated Maximum Daily Limit (lbs/day)	Newly Calculated Average Monthly Limit (lbs/day)	Previous Maximum Daily Limit (lbs/day)	Previous Average Monthly Limit (lbs/day)
BOD ₅	11,000	6,000	11,000	5,800
TSS	7,800	5,000	7,600	4,800
COD	80,000	41,000	78,000	40,000
Oil and Grease	3,500	1,900	3,400	1,800
Sulfide	73	33	71	32
Phenolic Compounds, Total	85	40	80	20
Total Ammonia, as N	4,900	2,200	4,800	2,200
Chromium, Total Recoverable	170	100	67	23
Chromium (VI), Total Recoverable	15	6.5	4.3	1.9
pH	6.0 – 9.0 s.u. (instantaneous)	-	6.0 – 9.0 s.u. (instantaneous)	-

Because ballast water (e.g., cargo hold wash water) and contaminated runoff commingled with process wastewater may also be discharged through Discharge Point 001, Tables 3 and 4 of this Order provide additional allocations that may be applied to the mass-based effluent limitations in Table 2. These additional contaminated runoff allocations are based on 40 C.F.R. sections 419.52(e)(2), 419.53(f)(2), and 419.54(e)(2). The ballast water allocations are based on 40 C.F.R. sections 419.52(c), 419.53(d), and 419.54(c). Attachment F-1 explains these allocations.

- 4.2.3. **Technology-Based Effluent Limitations – Discharge Points 002 through 023.** The technology-based effluent limitations for the stormwater outfalls are based on 40 C.F.R. section 419, subpart E (see Attachment F-1). However, the pH limitations in this Order are based on Basin Plan section 3.3.9 because the water quality-based effluent limitations are more stringent than the technology-based effluent limitations required by 40 C.F.R. section 419, subpart E, and are necessary to achieve water quality standards. The stormwater discharges are also subject to the provisions of Attachment S,

which constitute narrative technology-based effluent limits. These requirements reflect BAT and BCT as CWA section 301(b) requires.

4.3. Water Quality-Based Effluent Limitations

4.3.1. **Scope and Authority.** CWA section 301(b) and 40 C.F.R. section 122.44(d) require permits to include limitations more stringent than federal technology-based requirements where necessary to achieve water quality standards. According to 40 C.F.R. section 122.44(d)(1)(i), permits must include effluent limitations for all pollutants that are or may be discharged at levels that have a 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, water quality-based effluent limitations (WQBELs) must be established using (1) U.S. EPA 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 a narrative criterion, supplemented with relevant information. The process for determining reasonable potential and calculating WQBELs when necessary is intended to achieve applicable water quality objectives and criteria, and thereby protect designated beneficial uses of receiving waters.

4.3.2. **Beneficial Uses and Water Quality Criteria and Objectives.** Fact Sheet section 3.3.1 identifies the beneficial uses of the receiving waters. Water quality criteria and objectives to protect these beneficial uses are described below.

4.3.2.1. **Basin Plan Objectives.** The Basin Plan specifies numerous water quality objectives, including numeric objectives for 10 priority pollutants, un-ionized ammonia, and pH, and narrative objectives for toxicity and bioaccumulation.

4.3.2.1.1. **Un-ionized Ammonia.** Basin Plan section 3.3.20 contains water quality objectives for un-ionized ammonia of 0.025 mg/L (as nitrogen) as an annual median and 0.4 mg/L (as nitrogen) as a maximum for Lower San Francisco Bay and upstream waters. Effluent and receiving water data are available for total ammonia, but not un-ionized ammonia, because (1) sampling and laboratory methods are unavailable to analyze for un-ionized ammonia, and (2) the fraction of total ammonia that exists in the toxic un-ionized form depends on pH, salinity, and temperature of the receiving water.

To translate the un-ionized ammonia objectives into total ammonia criteria, pH, salinity, and temperature collected at the Yerba Buena Island monitoring station (BC10) between 1993 and 2013 were used. The un-ionized fraction of the total ammonia was calculated using the following equations (*Ambient Water Quality Criteria for Ammonia (Saltwater)*—1989, EPA Publication 440/5-88-004, 1989):

Fraction of un-ionized ammonia = $(1 + 10^{[pK - pH]})^{-1}$

Where, for salinity greater than 10 ppt:

$pK = 9.245 + 0.116*(I) + 0.0324*(298-T) + 0.0415*(P)/T$

$I = \text{molal ionic strength of saltwater} = 19.9273*(S)/(1000-1.005109*S)$

S = salinity (parts per thousand)

T = temperature in Kelvin

P = pressure (one atmosphere)

The 90th percentile and median un-ionized ammonia fractions were then used to express the maximum and annual average un-ionized objectives as acute and chronic total ammonia criteria. This approach is consistent with U.S. EPA guidance on translating dissolved metal water quality objectives to total recoverable metal water quality criteria (*U.S. EPA, 1996, The Metals Translator: Guidance for Calculating a Total Recoverable Limit from a Dissolved Criterion*, EPA Publication 823-B96-007). The equivalent chronic and acute total ammonia criteria are 1.26 mg/L and 4.15 mg/L (as nitrogen).

4.3.2.1.2. **Bioaccumulation and Dioxin-TEQ.** Basin Plan section 3.3.2 contains the following narrative toxicity water quality objective:

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

Because it is the consensus of the scientific community that dioxins and furans associate with particulates, accumulate in sediments, and bioaccumulate in the fatty tissue of fish and other organisms, the Basin Plan's narrative bioaccumulation water quality objective applies to these pollutants. Elevated levels of dioxins and furans in San Francisco Bay fish tissue demonstrate that the narrative bioaccumulation water quality objective is not being met. U.S. EPA has therefore placed San Pablo Bay on its 303(d) list of receiving waters where water quality objectives are not being met after imposition of applicable technology-based requirements.

When the CTR was promulgated, U.S. EPA stated its support for the regulation of dioxin and dioxin-like compounds through the use of toxicity equivalencies (TEQs). U.S. EPA stated, "For California waters, if the discharge of dioxin or dioxin-like compounds has reasonable potential to cause or contribute to a violation of a narrative criterion, numeric water quality-based effluent limits for dioxin or dioxin-like compounds should be included in NPDES permits and should be expressed using a TEQ

scheme” (Fed. Reg. Vol. 65, No. 97, pages 31695-31696, May 18, 2000). This Order uses a TEQ scheme based on a set of toxicity equivalency factors (TEFs) the World Health Organization developed in 2005, and a set of bioaccumulation equivalency factors (BEFs) U.S. EPA developed for the Great Lakes region (40 C.F.R. § 132, Appendix F) to convert the concentration of any congener of dioxin or furan into an equivalent concentration of 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD). Although the 2005 World Health Organization scheme includes TEFs for dioxin-like PCBs, they are not included in this Order’s TEQ scheme. The CTR has established a specific water quality criterion for PCBs, and dioxin-like PCBs are included in the analysis of total PCBs.

The CTR establishes a numeric water quality objective for 2,3,7,8-TCDD of 1.4×10^{-8} µg/L for the protection of human health when water and aquatic organisms are consumed. This CTR criterion is used as a criterion for dioxin-TEQ because dioxin-TEQ represents a toxicity-weighted concentration equivalent to 2,3,7,8 TCDD, thus translating the narrative bioaccumulation objective into a numeric criterion.

- 4.3.2.2. **CTR Criteria.** The CTR specifies numeric aquatic life and human health criteria for numerous priority pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries. Some human health criteria are for consumption of “water and organisms” and others are for consumption of “organisms only.” The criteria applicable to “organisms only” apply to the San Pablo Bay because it is not a source of drinking water.
- 4.3.2.3. **NTR Criteria.** The NTR establishes numeric aquatic life and human health criteria for a number of toxic pollutants for San Francisco Bay waters upstream to and including Suisun Bay and the Sacramento-San Joaquin Delta. The NTR criteria apply to San Pablo Bay and San Francisco Bay.
- 4.3.2.4. **Toxicity Provisions.** The Toxicity Provisions establish numeric chronic and acute toxicity objectives that apply to all inland surface waters, enclosed bays, and estuaries in the State with aquatic life beneficial uses. The chronic toxicity water quality objective is as follows:

H_o:

mean response (ambient water) \leq 0.75 x mean response (control water)

H_a:

mean response (ambient water) $>$ 0.75 x mean response (control water)

Where:

H_o = null hypothesis

H_a = alternative hypothesis,

0.75 = regulatory management decision criterion (i.e., 75 percent)

H_0 means the ambient water is toxic when the test organism response in a bioassay is less than or equal to 75 percent of the control response; H_a means the ambient water is not toxic when the test organism response is greater than 75 percent of the control response. For example, if an average of 75 percent of bioassay test organisms or fewer survive when exposed to ambient water relative to the average number that survive when exposed to control water, the ambient water is toxic (i.e., the test result is “fail”). Conversely, if an average of more than 75 percent of bioassay test organisms survive relative to those exposed to control water, the ambient water is not toxic (i.e., the test result is “pass”).

4.3.2.5. **Sediment Quality Objectives.** The *Water Quality Control Plan for Enclosed Bays and Estuaries – Part 1, Sediment Quality* contains the following narrative water quality objectives:

4.3.2.5.1. “Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California.” This objective is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry. The policy requires that if the Regional Water Board determines that a discharge has reasonable potential to cause or contribute to an exceedance of this objective, it is to impose the objective as a receiving water limit.

4.3.2.5.2. “Pollutants shall not be present in sediments at levels that will bioaccumulate in aquatic life to levels that are harmful to human health in bays and estuaries of California.” This objective is to be implemented by a three-tiered procedure based on pollutant concentrations in sediment and fish tissue.

4.3.2.5.3. “Pollutants shall not be present in sediment at levels that alone or in combination are toxic to wildlife and resident finfish by direct exposure or bioaccumulate in aquatic life at levels that are harmful to wildlife or resident finfish by indirect exposure in bays and estuaries of California.” This objective is to be implemented on a case-by-case basis, based upon an ecological risk assessment.

4.3.2.6. **Receiving Water Salinity.** Basin Plan section 4.6.2 (like the CTR and NTR) states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water are to be considered in determining the applicable water quality objectives. Freshwater criteria apply to discharges to waters with salinities equal to or less than one part per thousand (ppt) at least 95 percent of the time. Saltwater criteria apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally-influenced freshwaters that support estuarine beneficial uses, the water quality objectives are the lower of the salt or freshwater

criteria (the latter calculated based on ambient hardness) for each substance.

San Pablo Bay, the receiving water for Discharge Point 001, is tidally-influenced. The Discharger collected receiving water salinity data from March 2016 to March 2021 at Monitoring Location RSW-001. These data showed that 100 percent of the samples exceeded 10 ppt, indicative of a marine environment. Therefore, the salt water criteria apply to the discharge. Discharge Point 002 through 023 discharge to tidally-influenced areas of San Francisco Bay, San Pablo Bay, or San Pablo Bay tributaries.

- 4.3.2.7. **Metals Translators.** Regulations at 40 C.F.R. section 122.45(c) require effluent limitations for metals to be expressed as total recoverable metal. Since the water quality objectives for metals are typically expressed as dissolved metal, translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. The CTR contains default translators; however, site-specific conditions, such as water temperature, pH, total suspended solids, and organic carbon may affect the form of metal (dissolved, non-filterable, or otherwise) present and therefore available to cause toxicity. In general, dissolved metals are more available and more toxic to aquatic life than other forms. Site-specific translators can account for site-specific conditions, thereby preventing overly stringent or under-protective water quality objectives. For copper, Basin Plan Table 7.2.1-2 contains site-specific translators for deep-water discharges of 0.38 for chronic conditions and 0.66 for acute conditions. For nickel, this Order uses site-specific translators the Clean Estuary Partnership developed, as set forth in North of Dumbarton Bridge Copper and Nickel Development and Selection of Final Translators report (March 2005): 0.27 and 0.57 (chronic and acute).

4.3.3. Reasonable Potential Analysis – Discharge Point 001

- 4.3.3.1. **Available Information.** The reasonable potential analysis is based on effluent monitoring data the Discharger collected from February 2017 through January 2022. For ambient background data, this reasonable potential analysis relies on the Regional Monitoring Program *San Francisco Bay California Toxics Rule Priority Pollutant Ambient Water Monitoring Report* (2017), which includes data collected through the RMP at the Yerba Buena RMP station (BC10) from 1993 through 2019, supplemented by additional Bay Area Clean Water Agencies data from *San Francisco Bay Ambient Water Monitoring Interim Report* (2003) and *Ambient Water Monitoring: Final CTR Sampling Update* (2004). For ammonia, the RPA was conducted and WQBELs were calculated using receiving water data collected at the Yerba Buena RMP monitoring station (BC10).

SIP section 1.4.3 requires that background water quality data be representative of the ambient receiving water that will mix with the discharge. For priority pollutants, the Yerba Buena RMP monitoring station (BC10),

relative to other RMP stations best fits SIP guidance for establishing background conditions at Discharge Point 001.

This Order does not contain WQBELs for constituents that do not demonstrate reasonable potential; however, the MRP still requires monitoring for those pollutants. If concentrations are found to have increased significantly, Provision 6.3.2.1 of this Order requires the Discharger to investigate the causes of the increases and implement remedial measures if the increases pose a threat to receiving water quality.

- 4.3.3.2. **Priority Pollutants, Ammonia, and Dioxin-TEQ.** SIP section 1.3 sets forth the methodology used to assess whether priority pollutants have reasonable potential to exceed CTR and NTR water quality objectives. Here, SIP section 1.3 is also used as guidance for dioxin-TEQ and ammonia.

The analysis begins with identifying the maximum effluent concentration (MEC) observed for each pollutant based on available effluent concentration data and the ambient background concentration (B). SIP section 1.4.3 states that ambient background concentrations are either the maximum ambient concentration observed or, for water quality objectives intended to protect human health, the arithmetic mean of observed concentrations. There are three triggers in determining reasonable potential:

- **Trigger 1** is activated if the maximum effluent concentration is greater than or equal to the lowest applicable water quality objective ($MEC \geq$ water quality objective).
- **Trigger 2** is activated if the ambient background concentration observed in the receiving water is greater than the lowest applicable water quality objective ($B >$ water quality objective) and the pollutant is detected in any effluent sample.
- **Trigger 3** is activated if a review of other information indicates that a WQBEL is needed to protect beneficial uses.

The maximum effluent concentrations, most stringent applicable water quality criteria and objectives, and ambient background concentrations used in the analysis are presented in the following table, along with the reasonable potential analysis results (yes, no, or unknown) for each pollutant. Based on this analysis, the priority pollutants that demonstrate reasonable potential are arsenic, copper, cyanide, nickel, ammonia, and dioxin-TEQ.

Table F-7. Reasonable Potential Analysis

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) ^[1]	B or Minimum DL (µg/L) ^[1]	RPA Result ^[2]
1	Antimony	4300	1.1	1.8	No
2	Arsenic	36	64	2.5	Yes
3	Beryllium	No Criteria	<0.09	0.22	No
4	Cadmium	1.0	0.08	0.13	No
5a	Chromium (III) ^[4]	186	3.3	4.4	No
5b	Chromium (VI)	11	5.5	4.4	No
6	Copper	14	3.5	2.5	Yes ^[6]
7	Lead	2.7	1.6	0.8	No
8	Mercury ^[5]	-	-	-	-
9	Nickel	30.4	76	3.7	Yes
10	Selenium ^[7]	-	-	-	-
11	Silver	2.2	0.03	0.052	No
12	Thallium	6.3	<0.05	0.023	No
13	Zinc	86	33	5.1	No
14	Cyanide	2.9	6.1	0.52	Yes ^[6]
15	Asbestos (fibers/L)	No Criteria	-	-	U
16	2,3,7,8-TCDD	1.4E-08	<4.9E-07	2.7E-08	U
	Dioxin-TEQ	1.4E-08	3.5E-06	4.1E-08	Yes ^[5]
17	Acrolein	780	<1.7	<0.5	No
18	Acrylonitrile	0.66	<1.8	0.03	U
19	Benzene	71	<0.18	<0.05	No
20	Bromoform	360	<0.15	<0.15	No
21	Carbon Tetrachloride	4.4	<0.16	0.06	No
22	Chlorobenzene	21000	<0.18	<0.18	No
23	Chlorodibromomethane	34	<0.17	<0.05	No
24	Chloroethane	No Criteria	<0.38	<0.38	U
25	2-Chloroethylvinyl ether	No Criteria	<0.28	<0.28	U
26	Chloroform	No Criteria	2.5	<0.19	U
27	Dichlorobromomethane	46	0.7	<0.05	No
28	1,1-Dichloroethane	No Criteria	<0.19	<0.05	No
29	1,2-Dichloroethane	99	<0.18	0.04	No
30	1,1-Dichloroethylene	3.2	<0.21	<0.21	U
31	1,2-Dichloropropane	39	<0.18	<0.05	No
32	1,3-Dichloropropylene	1700	<0.35	<0.16	No
33	Ethylbenzene	29000	<0.26	<0.26	No
34	Methyl Bromide	4000	<0.3	<0.3	No
35	Methyl Chloride	No Criteria	<0.3	<0.3	U
36	Methylene Chloride	1600	<0.4	22	No
37	1,1,2,2-Tetrachloroethane	11	<0.15	<0.05	No
38	Tetrachloroethylene	8.9	0.2	<0.05	No

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) ^[1]	B or Minimum DL (µg/L) ^[1]	RPA Result ^[2]
39	Toluene	200000	<0.19	<0.19	No
40	1,2-Trans-Dichloroethylene	140000	<0.22	<0.22	No
41	1,1,1-Trichloroethane	No Criteria	<0.19	<0.19	No
42	1,1,2-Trichloroethane	42	<0.16	<0.05	No
43	Trichloroethylene	81	<0.2	<0.2	No
44	Vinyl Chloride	525	<0.25	<0.25	No
45	2-Chlorophenol	400	<0.4	<0.7	No
46	2,4-Dichlorophenol	790	<0.9	<0.9	No
47	2,4-Dimethylphenol	2300	<0.4	<0.8	No
48	2-Methyl- 4,6-Dinitrophenol	765	<2	<0.6	No
49	2,4-Dinitrophenol	14000	<2	<0.7	No
50	2-Nitrophenol	No Criteria	<1	<0.8	U
51	4-Nitrophenol	No Criteria	<1	<0.5	U
52	3-Methyl 4-Chlorophenol	No Criteria	<0.5	<0.8	U
53	Pentachlorophenol	7.9	<0.4	<0.6	U
54	Phenol	4600000	<0.3	<0.5	No
55	2,4,6-Trichlorophenol	6.5	<2	<0.97	No
56	Acenaphthene	2700	<0.02	0.002	No
57	Acenaphthylene	No Criteria	<0.02	0.001	U
58	Anthracene	110000	<0.03	0.001	No
59	Benzidine	0.00054	<4	<0.0003	U
60	Benzo(a)Anthracene	0.049	<0.02	0.005	U
61	Benzo(a)Pyrene	0.049	<0.04	0.002	U
62	Benzo(b)Fluoranthene	0.049	<0.02	0.005	U
63	Benzo(ghi)Perylene	No Criteria	<0.05	0.003	U
64	Benzo(k)Fluoranthene	0.049	<0.02	0.002	U
65	Bis(2-Chloroethoxy)Methane	No Criteria	<0.5	<0.3	U
66	Bis(2-Chloroethyl)Ether	1.4	<0.9	<0.3	U
67	Bis(2-Chloroisopropyl)Ether	170000	<0.9	<0.6	No
68	Bis(2-Ethylhexyl)Phthalate	5.9	<0.5	<0.5	No
69	4-Bromophenyl Phenyl Ether	No Criteria	<2	<0.23	U
70	Butylbenzyl Phthalate	5200	<2	<0.5	No
71	2-Chloronaphthalene	4300	<1	<0.3	No
72	4-Chlorophenyl Phenyl Ether	No Criteria	<0.28	<0.3	U
73	Chrysene	0.049	<0.02	0.002	U
74	Dibenzo(a,h)Anthracene	0.049	<0.02	0.001	U
75	1,2-Dichlorobenzene	17000	<1	<0.27	No
76	1,3-Dichlorobenzene	2600	<0.9	<0.18	No
77	1,4-Dichlorobenzene	2600	<0.9	<0.18	No
78	3,3 Dichlorobenzidine	0.077	<5	<0.0002	U
79	Diethyl Phthalate	120000	<0.5	<0.2	No

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) ^[1]	B or Minimum DL (µg/L) ^[1]	RPA Result ^[2]
80	Dimethyl Phthalate	2900000	<0.5	<0.2	No
81	Di-n-Butyl Phthalate	12000	<0.4	<0.5	No
82	2,4-Dinitrotoluene	9.1	<0.9	<0.27	U
83	2,6-Dinitrotoluene	No Criteria	<0.4	<0.29	U
84	Di-n-Octyl Phthalate	No Criteria	<0.4	<0.38	U
85	1,2-Diphenylhydrazine	0.54	<0.5	0.004	U
86	Fluoranthene	370	<0.02	0.011	No
87	Fluorene	14000	<0.02	0.002	No
88	Hexachlorobenzene	0.00077	<1	0.00002	U
89	Hexachlorobutadiene	50	<0.4	<0.3	U
90	Hexachlorocyclopentadiene	17000	<0.9	<0.3	No
91	Hexachloroethane	8.9	<0.9	<0.2	No
92	Indeno(1,2,3-cd)Pyrene	0.049	<0.02	0.004	U
93	Isophorone	600	<0.5	<0.3	No
94	Naphthalene	No Criteria	<0.02	0.009	U
95	Nitrobenzene	1900	<0.5	<0.25	No
96	N-Nitrosodimethylamine	8.1	<0.7	<0.3	U
97	N-Nitrosodi-n-Propylamine	1.4	<0.5	<0.0002	U
98	N-Nitrosodiphenylamine	16	<0.7	<0.001	No
99	Phenanthrene	No Criteria	<0.02	0.006	U
100	Pyrene	11000	<0.02	0.019	No
101	1,2,4-Trichlorobenzene	No Criteria	<0.9	<0.3	No
102	Aldrin	0.00014	<0.02	<0.0000085	U
103	Alpha-BHC	0.013	<0.03	0.0005	No
104	Beta-BHC	0.046	<0.03	0.0004	No
105	Gamma-BHC	0.063	<0.03	0.001	No
106	Delta-BHC	No Criteria	<0.03	0.0001	U
107	Chlordane	0.00059	<0.2	0.0001	U
108	4,4'-DDT	0.00059	<0.02	0.0002	U
109	4,4'-DDE	0.00059	<0.02	0.001	U
110	4,4'-DDD	0.00084	<0.03	0.0003	U
111	Dieldrin	0.00014	<0.02	0.0003	U
112	Alpha-Endosulfan	0.0087	<0.03	0.0001	No
113	beta-Endosulfan	0.0087	<0.03	0.0001	No
114	Endosulfan Sulfate	240	<0.04	0.0001	No
115	Endrin	0.0023	<0.04	0.00004	No
116	Endrin Aldehyde	0.81	<0.04	<0.005	No
117	Heptachlor	0.00021	<0.03	0.00002	U
118	Heptachlor Epoxide	0.00011	<0.03	0.0001	U
119-125	PCBs sum ^[5]	-	-	-	-
126	Toxaphene	0.0002	<3	<0.0000082	U

CTR No.	Pollutant	C or Governing Criterion or Objective (µg/L)	MEC or Minimum DL (µg/L) ^[1]	B or Minimum DL (µg/L) ^[1]	RPA Result ^[2]
	Total Ammonia (mg/L)	1.2	6.1	0.43	Yes

Footnotes:

- [1] The MEC and ambient background concentration are the actual detected concentrations unless preceded by a “<” sign, in which case the value shown is the minimum detection level (MDL).
- [2] RPA Results = Yes, if MEC ≥ WQC, B > WQC and MEC is detected, or Trigger 3
= No, if MEC and B are < WQC or all effluent data are undetected
= Unknown (U) if no criteria have been promulgated or data are insufficient.
- [3] The maximum effluent and ambient background concentrations are the total chromium concentration. The chromium (III) concentrations are unknown but less than these values.
- [4] SIP section 1.3 excludes from its reasonable potential analysis procedure priority pollutants for which a TMDL has been developed. TMDLs have been developed for mercury and PCBs in San Francisco Bay. Mercury and PCBs from wastewater discharges are regulated by NPDES Permit CA0038849, which implements the San Francisco Bay Mercury and PCBs TMDLs.
- [5] Reasonable potential is based on Trigger 3 because San Francisco Bay is 303(d)-listed for dioxin-TEQ and elevated levels of dioxin-TEQ are found in San Francisco Bay fish tissue.
- [6] Reasonable potential is based in part on Basin Plan sections 7.2.1.2 and 4.7.2.2.
- [7] A TMDL has been developed for selenium in North San Francisco Bay, including San Pablo Bay. This Order implements the North San Francisco Bay Selenium TMDL by establishing mass-based selenium limitations consistent with the TMDL. See Fact Sheet section 4.3.4.4.

4.3.3.3. Chronic Toxicity. Toxicity Provisions section III.C.3.c states that reasonable potential exists if any of at least four chronic toxicity tests at the IWC within five years prior to permit reissuance (1) results in a “fail” or (2) has at least a 10 percent effect. If data from these tests were not analyzed using the TST, the data must be re-analyzed using the TST. If previous tests were not conducted at the IWC, then a concentration of effluent higher than the IWC may be used. Data from older tests may also be considered. If a minimum of four chronic toxicity tests is unavailable, the Regional Water Board is to require the Discharger to conduct a minimum of four chronic toxicity tests at the IWC and analyze the data using the TST.

The Discharger’s chronic toxicity screening included quarterly testing on one vertebrate, one invertebrate, and one aquatic plant/algae from Table 1 of Toxicity Provisions section III.B.2. The tests resulted in a fail at 100 percent effluent for three of the four tests. The highest percent effect observed at the 100 percent effluent treatment was a 77 percent effect. At the Instream Waste Concentration (IWC) of 10 percent, there was also one fail; with a percent effect of 22 percent. Based on Toxicity Provisions section III.C.3.c, the tests demonstrate that the discharge has a reasonable potential to contain toxicity above the water quality objectives in the Toxicity Provisions.

4.3.3.4. Acute Toxicity. During the previous order term, the Discharger monitored its effluent monthly for acute toxicity and all results showed 90 percent survival. Therefore, there is no reasonable potential for the discharge to cause or contribute to acute toxicity in the receiving water. However, this Order retains

the previous order's acute toxicity limits to ensure that the Discharger continues to properly operate and maintain its granular activated carbon treatment to remove residual toxicity at the end of its treatment process.

- 4.3.3.5. **Sediment Quality.** Pollutants in some receiving water sediments may be present in quantities that alone or in combination are toxic to benthic communities. The Sediment Quality Plan states that effluent limits to protect sediment quality are to be developed when: (1) a direct relationship between the discharge and degraded sediment has been established; (2) the pollutants causing degradation have been identified; and (3) the reductions in pollutant loading needed to restore sediment quality have been estimated.

However, to date there is no evidence directly linking compromised sediment conditions to the discharges subject to this Order; therefore, the Regional Water Board does not find reasonable potential for this discharge to cause or contribute to exceedances of the sediment quality objectives. Nevertheless, the Discharger continues to participate in the Regional Monitoring Program, which routinely monitors San Francisco Bay sediment and seeks to identify stressors responsible for degraded sediment quality.

- 4.3.4. **Reasonable Potential Analysis – Discharge Points 002 through 023.** Discharge Points 002 through 023 discharge stormwater from current and former areas of refinery operations and are subject to the technology-based requirements discussed in Fact Sheet section 4.2.3. These requirements, including development and implementation of a Stormwater Pollution Prevention Plan, ensure that stormwater discharges will not contain pollutants that cause or contribute to exceedances of narrative or numeric water quality objectives.
- 4.3.5. **Water Quality-Based Effluent Limitations (WQBELs).** WQBELs were developed for the pollutants determined to have reasonable potential to cause or contribute to exceedances of water quality objectives. The WQBEL calculations are based on the procedure in SIP section 1.4.

This Order does not contain WQBELs for constituents that do not demonstrate reasonable potential to exceed the water quality objectives; however, Provision 6.3.2 of the Order requires monitoring for such pollutants. If concentrations are found to have increased significantly, Provision 6.3.2 requires the Discharger to investigate the sources of the increases and implement remedial measures if the increases pose a threat to receiving water quality.

- 4.3.5.1. **WQBEL Expression.** NPDES regulations at 40 C.F.R. section 122.45(d) require that permit limits for industrial dischargers be expressed as maximum daily and average monthly limits, unless impracticable.
- 4.3.5.2. **Mixing Zones and Dilution Credits.** SIP section 1.4.2 allows dilution credits under certain circumstances. The outfall at Discharge Point 001 is designed

to achieve a minimum initial dilution ratio of at least 10:1. According to the Discharger's dilution study titled *Diffuser Dilution Study in Support of NPDES Permit Renewal* (Exponent, February 12, 2016), which relied on U.S. EPA's *Visual Plumes UM3* modeling software, a lowest conservative estimate of the initial dilution is 34:1. This study showed that the average initial dilution at the edge of the mixing zone, under a maximum observed flow and the assumption of conservative effluent and receiving water salinity and temperature conditions, is 52:1 (receiving water to effluent) during a range of seasonal slack tide conditions. The modeling study was based on ambient and effluent data collected between August 2010 and August 2015. The estimated minimum near-field dilution the Discharger modeled encompassed the maximum recorded daily flow at Discharge Point 001 (27.5 MGD, reported September 1, 2011) and the most conservative average seasonal receiving water temperature and salinity depth profiles. It also assumed slack tide conditions (i.e., zero ambient current), which occur daily in tidally-influenced estuary environments, such as San Pablo Bay. These worst-case conditions result in a minimum initial dilution ratio of 52:1, which would be expected to persist for about 3 minutes under a complete tidal cycle.

- 4.3.5.2.1. **Bioaccumulative Pollutants.** For certain bioaccumulative pollutants, dilution credit is significantly restricted or denied. Specifically, these pollutants include dioxin and furan compounds, which appear on the CWA section 303(d) list for San Francisco Bay, including Suisun Bay because, based on available data on the concentrations of these pollutants in aquatic organisms, sediment, and the water column, they impair San Francisco Bay beneficial uses. The following factors suggest insufficient assimilative capacity in San Francisco Bay for these pollutants.

Tissue samples taken from San Francisco Bay fish show the presence of these pollutants at concentrations greater than screening levels (Contaminant Concentrations in Fish from San Francisco Bay, May 1997). The results of a 1994 San Francisco Bay pilot study, presented in Contaminated Levels in Fish Tissue from San Francisco Bay (Regional Water Board, 1994), also show elevated levels of chemical contaminants in fish tissues. The Office of Environmental Health and Hazard Assessment completed a preliminary review of the data in the 1994 report and in December 1994 issued an interim consumption advisory covering certain fish species in San Francisco Bay due to the levels of some of these pollutants. The Office of Environmental Health and Hazard Assessment updated this advisory in a May 2011 report, Health Advisory and Safe Eating Guidelines for San Francisco Bay Fish and Shellfish, which still suggests insufficient assimilative capacity in San Francisco Bay for 303(d)-listed pollutants. Therefore, dilution credits are denied for bioaccumulative pollutants on the 303(d) list for which data are lacking on sources and significant uncertainty exists about how different sources contribute to bioaccumulation.

- 4.3.5.2.2. **Ammonia.** For ammonia, a conservative initial dilution of 34:1 (D=33) was used to calculate the effluent limitations. This is justified because ammonia, a nonpersistent pollutant, quickly disperses and degrades to a non-toxic state, and cumulative toxicity is unlikely. As such, cumulative toxicity associated with ammonia from other unrelated discharges is unlikely.
- 4.3.5.2.3. **Other Non-Bioaccumulative Pollutants.** This Order grants a conservative dilution credit of 10:1 (D =9) for other non-bioaccumulative pollutants (excluding ammonia), including chronic toxicity. This dilution credit is based, in part, on Basin Plan Discharge Prohibition 1 (Basin Plan Table 4-1), which prohibits discharges with less than 10:1 dilution, SIP section 1.4.2 allows for limiting the dilution credit. The dilution credit is limited for the following reasons:
- 4.3.5.2.3.1. San Francisco Bay is a complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs. SIP section 1.4.3 allows background conditions to be determined on a discharge-by-discharge or water body-by-water body basis. A water body-by-water body approach is taken here due to inherent uncertainties in characterizing ambient background conditions in a complex estuarine system on a discharge-by-discharge basis.
- 4.3.5.2.3.2. Because of the complex hydrology of San Francisco Bay, there are uncertainties in accurately determining an appropriate mixing zone. The models used to predict dilution do not consider the three-dimensional nature of San Francisco Bay currents resulting from the interaction of tidal flushes and seasonal freshwater outflows. Being heavier and colder than freshwater, ocean saltwater enters San Francisco Bay on a twice-daily tidal cycle, generally beneath the warmer freshwater that flows seaward. When these waters mix and interact, complex circulation patterns occur due to the varying densities of the fresh and ocean waters. The complex patterns occur throughout San Francisco Bay but are most prevalent in San Pablo Bay, Carquinez Strait, and Suisun Bay. The locations of this mixing and interaction change depending on the strength of each tide. Additionally, sediment loads from the Central Valley change on a long-term basis, affecting the depth of different parts of San Francisco Bay, resulting in alteration of flow patterns, mixing, and dilution at the outfall.
- 4.3.5.3. **Arsenic, Copper, Cyanide, Nickel, Ammonia, and Dioxin-TEQ.** The following table shows the WQBEL calculations for arsenic, copper, cyanide, nickel, ammonia, and dioxin-TEQ in accordance with SIP section 1.4, which is used as guidance for ammonia and dioxin-TEQ.

Table F-8. WQBEL Calculations

Pollutant	Arsenic	Copper	Cyanide	Nickel	Dioxin-TEQ	Ammonia
Units	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Basis and Criteria type	Basin Plan Salt Water Aquatic Life	Basin Plan Site Specific Objective	Basin Plan Site Specific Objective	Basin Plan and CTR saltwater	Basin Plan Narrative	Basin Plan Aquatic Life (Acute)
CTR Aquatic Life Criteria - Acute	69	-	-	74	-	4.15
CTR Aquatic Life Criteria - Chronic	36	-	-	8.2	-	-
CTR Human Health Criteria - Organisms Only	-	-	-	-	-	-
Site-Specific Objective Criteria - Acute	-	3.9	9.4	-	-	-
Site-Specific Objective Criteria - Chronic	-	2.5	2.9	-	-	-
Water Effects Ratio (WER)	1	2.4	1	1	1	1
Lowest WQO	36	2.5	2.9	8.2	1.4E-08	4.2
Site Specific Translator – MDEL	-	0.66	-	0.57	-	-
Site Specific Translator – AMEL	-	0.38	-	0.27	-	-
Dilution Factor (D)	9	9	9	9	0	33
No. of samples per month	4	4	4	4	4	4
Aquatic life criteria analysis required? (Y/N)	Y	Y	Y	Y	N	Y
HH criteria analysis required? (Y/N)	N	N	Y	N	Y	N
Applicable Acute WQO	69	14	9.4	130	-	4.2
Applicable Chronic WQO	36	16	2.9	30.0	-	-
HH Criteria	-	-	220000	4600	1.4E-08	N
Background (Maximum Conc. for Aquatic Life Calc.)	2.5	2.5	0.52	3.7	-	0.22
Background (Average Conc. for Human Health Calc.)	-	-	0.44	-	2.2E-08	-
Is the pollutant on the 303d list and/or bioaccumulative (Y/N)?	N	N	N	N	Y	N
ECA Acute	667.5	119	89	1265	-	127
ECA Chronic	337.5	135.4	24	270	-	-
ECA HH		-	2199996	-	1.4E-08	-
No. of data points <10 or at least 80% of data reported non-detect? (Y/N)	N	N	N	N	Y	N
Avg of effluent data points	23.84	1.58	2.0	23.9	3.8E-07	0.68
Std Dev of effluent data points	17.75	0.52	0.89	12.81	1.15E-06	1.26
CV Calculated	0.74	0.33	0.44	0.54	N/A	1.87
CV (Selected) – Final	0.74	0.33	0.44	0.54	0.60	1.87

Pollutant	Arsenic	Copper	Cyanide	Nickel	Dioxin-TEQ	Ammonia
ECA Acute Mult99	0.27	0.50	0.41	0.35	-	0.12
ECA Chronic Mult99	0.46	0.69	0.62	0.56	-	----
LTA Acute	177.6	59.57	36.6	445.7	-	15.5
LTA Chronic	155.8	93.81	15.0	151.7	-	----
Minimum of LTAs	155.8	59.57	15.0	151.7	-	15.5
AMEL Mult95	1.7	1.3	1.4	1.49	1.55	2.69
MDEL Mult99	3.8	2.0	2.4	2.84	3.11	8.16
AMEL (Aquatic Life)	264.1	76.9	21.0	226.0	-	41.80
MDEL (Aquatic Life)	585.7	119.3	36.6	430.4	-	126.90
MDEL/AMEL Multiplier	2.22	1.55	1.74	1.90	2.01	3.04
AMEL (Human Health)	-	-	2.2.E+06	4.60E+04	1.40E-08	-
MDEL (Human Health)	-	-	3.8.E+06	8.76E+04	2.81E-08	-
Minimum of AMEL for Aq. Life vs HH	260	77	21	230	1.40E-08	42
Minimum of MDEL for Aq. Life vs HH	590	120	37	430	2.81E-08	130
Previous Order Limit – AMEL	-	71	19	240	1.40E-08	50
Previous Order Limit – MDEL	-	120	38	380	2.80E-08	150
Final Limit – AMEL	260	71	19	230	1.40E-08	42
Final Limit – MDEL	590	120	37	380	2.80E-08	130

4.3.5.4. **Selenium.** A TMDL for selenium has been adopted for North San Francisco Bay, including a portion of the Sacramento/San Joaquin Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, and Central San Francisco Bay. The TMDL establishes a wasteload allocation of 111 kg/year for the Discharger. Basin Plan section 7.2.4.5 allows the Discharger to discharge no more than its current load based on its selenium concentration and discharge volumes as reported from 2000 through 2012. Specifically, it says selenium WQBELs are to be calculated as the 95th percentile daily load based on representative data reported during 2000 through 2012 and are to be expressed in units of kilograms per day (kg/day). The 95th percentile daily load for this period, after excluding outliers greater than 0.90 kg/day, was 0.68 kg/day. Therefore, this Order establishes a limitation of 0.68 kg/day.

4.3.5.5. **Acute Toxicity.** This Order retains the previous order’s acute toxicity limits to ensure that existing treatment performance is maintained.

4.3.5.6. **Chronic Toxicity.** This Order includes chronic toxicity limitations based on Toxicity Provisions section III.C.5. This Order grants a mixing zone for chronic toxicity corresponding to a dilution ratio of at least 10:1 (D=9),

equivalent to an IWC of 10 percent effluent. This Order imposes a maximum daily effluent limit (MDEL) and median monthly effluent limit (MMEL) based on testing at the IWC.

4.3.5.7. **Recycled Water Use Effluent Limitation Adjustments for North Richmond Water Reclamation Plant and Richmond Advanced Recycled Expansion.** This Order provides effluent limitation adjustments for recycled water use to encourage wastewater recycling, consistent with Basin Plan section 4.16 and State Water Board Resolutions 77-1 and 2009-0011, by accounting for increased pollutant concentrations that may result from recycled water use. In this sense, “recycled water” does not include treated wastewater used onsite for landscape irrigation. To justify effluent limitation adjustments for recycled water, the Discharger submitted a technical report titled *Permit Provision C.6 Recycled Water Credits Technical Report* (October 2006) to the Regional Water Board. Relevant report findings are summarized below:

- 4.3.5.7.1. The Discharger uses approximately 3.4 MGD of tertiary-treated recycled water from EBMUD’s North Richmond Water Reclamation Plant in refinery cooling towers.
- 4.3.5.7.2. The Discharger generates approximately 3.5 MGD of recycled water from the Richmond Advanced Recycled Expansion (RARE) suitable for use as boiler feedwater at the Facility by treating secondary effluent from the West County Wastewater District Water Pollution Control Plant through microfiltration and reverse osmosis. This treatment produces two waste streams:
 - 4.3.5.7.2.1. Microfiltration backwash is returned to the West County Wastewater District Water Pollution Control Plant for treatment, and
 - 4.3.5.7.2.2. Reverse osmosis reject water (approximately 0.525 MGD) is sent to the bioreactor prior to discharge at Discharge Point No. 001.
- 4.3.5.7.3. The Discharger calculated the total mass of pollutants for which it wishes to receive effluent limitation adjustments using pollutant concentrations in the North Richmond Water Reclamation Plant’s tertiary effluent (including flows from the West County Wastewater District Water Pollution Control Plant). The use of the higher quality tertiary-treated effluent results in a conservative estimate for the recycled water adjustments.
- 4.3.5.7.4. The Discharger performed acute and chronic whole effluent toxicity tests and two priority pollutant scans on reverse osmosis reject water and reverse osmosis reject water blended with the Discharger’s effluent. The priority pollutant scans did not reveal any new priority pollutants that would need to be regulated. Further, the whole effluent toxicity tests showed compliance with acute and chronic toxicity objectives.

Provision 4.1.6.1. of this Order continues use of the effluent limitation adjustments for copper, cyanide, nickel, and selenium described in the Discharger's October 2006 technical report, and adds an adjustment for arsenic.

The maximum adjustments are based on the WQBELs that would apply if a more liberal dilution of 20:1 was granted. This dilution is still less than the conservative estimate of 34:1 initial dilution demonstrated in the Discharger's dilution study (see Fact Sheet section 4.3.5.2).

- 4.3.6. **WQBELs – Discharge Points 002 through 023.** For stormwater discharged from Discharge Points 002 through 023, this Order retains from the previous order the narrative WQBELs of no visible oil or grease, no visible color, and the requirements set forth in Provision 6.3.4.3. This Order also imposes pH WQBELs based on Basin Plan section 3.3.9 because they are more stringent than the technology-based pH effluent limitations.

4.4. Discharge Requirement Considerations

- 4.4.1. **Anti-backsliding.** CWA sections 402(o) and 303(d)(4) and 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations, standards, and conditions in a reissued permit be as stringent as those in the previous permit, with some exceptions in which requirements may be relaxed. This Order complies with the anti-backsliding provisions. The requirements of this Order are at least as stringent as those in the previous order, except for the stormwater allocation for hexavalent chromium as explained below. The changes to chronic toxicity requirements are as stringent as the requirements in the previous permit and are also discussed below.

This Order allows for a small increase in the stormwater allocation for hexavalent chromium. The previous order used a concentration of 0.026 mg/L to determine additional allocations for hexavalent chromium from stormwater—this was a typographical error. To be consistent with the technology-based effluent limits prescribed in 40 C.F.R. sections 419.52 and 419.53, this Order uses a concentration average monthly limit of 0.028 mg/L. CWA section 402(o)(2)(B)(ii) allows such backsliding to correct a technical error.

This Order imposes new chronic toxicity effluent limits and does not retain the chronic toxicity effluent limits in place prior to the new Toxicity Provisions. This complies with anti-backsliding requirements because the new chronic toxicity effluent limits, based on the TST, are comparable to the chronic toxicity effluent limits in the previous permit, which were based on point estimates of chronic toxicity. The AMELs and the MDELs in place prior to the new Toxicity Provisions allow for a 10:1 dilution credit. Similarly, the new MDEL and MMEL are based on an IWC of 10 percent effluent, corresponding to dilution of 10:1. Thus, the use of the TST will not relax effluent limitations. There is no

backsliding for acute toxicity because this Order retains the previous order's acute toxicity limits as a special provision.

- 4.4.2. **Antidegradation.** This Order complies with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16. This Order does not allow for an increased volume, increased concentration of pollutants, or reduced level of treatment relative to the previous order. It continues the status quo with respect to the level of discharge authorized in the previous order (i.e., imposes limits that are at least as stringent as those in the previous order except for a small increase in the stormwater allocation for hexavalent chromium that the Discharger has not previously used), which was adopted in accordance with the antidegradation policies and thus serves as the baseline by which to measure whether degradation will occur.
- 4.4.3. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based requirements implement best professional judgement and applicable federal technology-based requirements. In addition, this Order contains more stringent effluent limitations as necessary to meet water quality standards. Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement CWA requirements.

This Order's WQBELs have been derived to implement water quality objectives that protect beneficial uses. The beneficial uses and water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating these WQBELs are based on the CTR, as implemented in accordance with the SIP, which U.S. EPA approved on May 18, 2000. U.S. EPA approved most Basin Plan beneficial uses and water quality objectives prior to May 30, 2000. Beneficial uses and water quality objectives submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 C.F.R. section 131.21(c)(1). U.S. EPA approved the remaining beneficial uses and water quality objectives, so they are also applicable water quality standards pursuant to 40 C.F.R. section 131.21(c)(2).

5. RATIONALE FOR RECEIVING WATER LIMITATIONS

The receiving water limitations in sections 5.1 and 5.2 of the Order are based on Basin Plan narrative and numeric water quality objectives. The receiving water limitation in section 5.3 of the Order requires compliance with federal and State water quality standards in accordance with the CWA and regulations adopted thereunder.

6. RATIONALE FOR PROVISIONS

6.1. Standard Provisions

Attachment D contains standard provisions that apply to all NPDES permits in accordance with 40 C.F.R. section 122.41 and additional conditions applicable to specific categories of permits in accordance with 40 C.F.R. section 122.42. The Discharger must comply with these provisions. The conditions set forth in 40 C.F.R. sections 122.41(a)(1) and (b) through (n) apply to all state-issued NPDES permits and must be incorporated into permits either expressly or by reference.

In accordance with 40 C.F.R. section 123.25(a)(12), states may omit or modify conditions to impose more stringent requirements. Attachment G contains standard provisions that supplement the provisions in Attachment D. This Order omits the federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the State's enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates Water Code section 13387(e) by reference.

Attachment S contains stormwater provisions consistent with the State Water Board's General Permit for Stormwater Discharges Associated with Industrial Activities (NPDES CAS000001) (Industrial General Permit), including requirements for the Discharger to prepare a Stormwater Pollution Prevention Plan, to evaluate BMP performance using stormwater action levels (stormwater action levels are not effluent limitations), and to submit an annual stormwater report.

6.2. Monitoring and Reporting Provisions

CWA section 308 and 40 C.F.R. sections 122.41(h), 122.41(j)-(l), 122.44(i), and 122.48 require that NPDES permits specify monitoring and reporting requirements. Water Code section 13383 also authorizes the Regional Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The MRP establishes monitoring, reporting, and recordkeeping requirements that implement federal and State requirements. For more information, see Fact Sheet section 7.

6.3. Special Provisions

6.3.1. Reopener Provisions

These provisions are based on 40 C.F.R. sections 122.62 and 122.63 and allow modification of this Order and its effluent limitations as necessary in response to updated water quality objectives, regulations, or other new and relevant information that may become available in the future, and other circumstances as allowed by law.

6.3.2. **Effluent Characterization Study and Report**

This Order does not include WQBELs for pollutants that do not demonstrate reasonable potential, but this provision requires the Discharger to evaluate monitoring data to verify that the reasonable potential analysis conclusions of this Order remain valid. This requirement is authorized pursuant to 40 C.F.R. section 122.41(h) and Water Code section 13383, and is necessary to inform the next permit reissuance and to ensure that the Discharger takes timely steps in response to any unanticipated change in effluent quality during the term of this Order.

6.3.3. **Pollutant Minimization Program**

This provision is based on Basin Plan section 4.13.2 and SIP section 2.4.5.

6.3.4. **Other Special Provisions**

- 6.3.4.1. **Copper Action Plan.** This provision is based on Basin Plan section 7.2.1.2 and is necessary to ensure that use of copper site-specific objectives is consistent with antidegradation policies. This Order requires the Discharger to implement pretreatment, source control, and pollution prevention for identified sources. Additional actions may be necessary depending on the three-year rolling mean copper concentration in San Pablo Bay. Data the San Francisco Estuary Institute compiled for 2015-2019 indicate no degradation of San Francisco Bay water quality with respect to copper (sfei.org/pages/copper-site-specific-objective-3-year-rolling-averages-0).
- 6.3.4.2. **Cyanide Action Plan.** This provision is based on Basin Plan section 4.7.2.2 and is necessary to ensure that use of cyanide site-specific objectives is consistent with antidegradation policies.
- 6.3.4.3. **Stormwater Pollution Prevention Plan and Annual Report.** This provision supplements Attachment S. It is based on Basin Plan section 4.8 and is consistent with the requirements of *NPDES General Permit for Storm Water Discharges Associated with Industrial Activities* (NPDES Permit CAS000001, State Water Board Order 2014-0057-DWQ). These narrative requirements include implementation of best management practices in accordance with 40 C.F.R. section 122.44(k).
- 6.3.4.4. **Average Selenium Load.** This provision is based on Basin Plan section 7.2.4.5. The information will be used to confirm that selenium loads are consistent with wasteload allocations. The requirements regarding treatment of estimated and non-detect values are consistent with the load calculations performed for the North San Francisco Bay Selenium TMDL.
- 6.3.4.5. **Acceptance of Ballast Water.** This provision is necessary to ensure that ballast water discharges are not a pathway for invasive species to reach San Francisco Bay. It is consistent with California Code of Regulations, title 2,

section 2284(a)(4), which requires approval by the California State Lands Commission to discharge ballast water to a facility. Such approval requires a treatment process adequate to ensure that the discharge of treated ballast water does not release invasive species.

- 6.3.4.6. **Construction and Development Requirements for Stormwater.** This provision clarifies when the Discharger must apply for coverage under the *NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (NPDES Permit CAS000002, State Waterboard Order 2022-0057-DWQ).
- 6.3.4.7. **Wastewater Discharges from the Wetland.** This provision ensures that discharges of Wetland effluent directly through Discharge Point 001 without GAC treatment will not pose a threat to water quality. For intermittent discharges, Basin Plan Table 4-3 requires that acute toxicity tests meet a minimum of 70 percent survival. A Consent Decree *United States v. Chevron Industries Inc.*, Civil No. C98-3966-MEJ and DOJ No. 90-11-3-1398 that was terminated in 2001 allowed Chevron to discharge 3.0 MGD from the Wetland directly to Discharge Point 001 as long as acute toxicity tests of Wetland effluent had at least 80 percent survival. To satisfy anti-backsliding requirements, this Order requires that acute toxicity tests of Wetland effluent meet a minimum of at least 80 percent survival. During the previous permit term, there was one incident of Wetland effluent bypassing GAC filters, due to a severe storm event.
- 6.3.4.8. **Richmond Advanced Recycled Expansion (RARE) Enhancement Project.** This provision specifies conditions the Discharger must comply with before and after it begins operations of the RARE Enhancement Project. To ensure the Discharger will be able to collect representative samples, this provision requires documentation that there will be complete mixing of treated wastewater and reverse osmosis concentrate prior to Monitoring Location EFF-001.
- By reducing effluent flows, the RARE Enhancement Project may increase the toxicity of the discharge and concentration of pollutants in refinery effluent. To evaluate whether there is reasonable potential for an exceedance of water quality objectives, Provision 6.3.4.8.2. requires the Discharger to conduct acute and chronic toxicity tests under worst-case conditions and to monitor reverse osmosis concentrate for pollutants listed in Regional Standard Provisions Table B.
- 6.3.4.9. **Conditions for Recycled Water Use Adjustment for RARE Enhancement Project.** This provision protects beneficial uses by requiring the Discharger to ensure that recycled water use adjustments, if any are applied, will not cause toxicity. This provision does not authorize any increase in pollutant mass to the receiving water. It authorizes recycling of treated wastewater that

could otherwise be discharged to the receiving water without further treatment.

7. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

The following provides the rationale for the monitoring and reporting requirements in the MRP.

7.1 Monitoring Requirements Rationale

- 7.1.1. **Influent Monitoring.** This Order does not require the Discharger to conduct monitoring of Facility influent. However, the Discharger has the option of using recycled water in exchange for effluent limitation adjustments, in which case the Discharger will need to conduct monitoring at Monitoring Locations INF-001 and INF-002 (recycled water and raw water intakes).
- 7.1.2. **Effluent Monitoring.** Effluent flow monitoring is necessary to understand Facility operations. Monitoring for other parameters is necessary to evaluate compliance with this Order's effluent limitations and to conduct future reasonable potential analyses.
- 7.1.3. **Toxicity Monitoring.** Acute and chronic toxicity tests are necessary to evaluate compliance with this Order's effluent limitations, evaluate whether the Toxicity Provisions' chronic toxicity water quality objectives are met, and to conduct future reasonable potential analyses. Chronic toxicity tests are also necessary to evaluate whether Toxicity Reduction Evaluations are needed. The Discharger conducted a chronic toxicity species sensitive screening on March 3, 2022, which satisfies the minimum screening requirements in Toxicity Provisions section III.C.2.a.
- 7.1.4. **Receiving Water Monitoring.** The Discharger is required to continue participating in the Regional Monitoring Program, which involves collecting data on pollutants and toxicity in San Francisco Bay water, sediment, and biota. The monitoring is necessary to characterize the receiving water and the effects the discharge has on it.
- 7.1.5. **Other Monitoring Requirements.** Pursuant to CWA section 308, U.S. EPA requires some dischargers to participate in a Discharge Monitoring Report-Quality Assurance (DMR-QA) Study Program that evaluates the analytical abilities of laboratories that perform or support NPDES permit-required monitoring. The program applies to discharger laboratories and contract laboratories, and evaluates each laboratory's ability to analyze wastewater samples to produce quality data that ensure the integrity of the NPDES program. There are two options to comply: (1) the Discharger may obtain and analyze DMR-QA samples, or (2) pursuant to a waiver U.S. EPA issued to the State Water Board, the Discharger may submit results from the most recent Water Pollution Performance Evaluation Study. MRP section 1.4 requires the Discharger to ensure that the results of the DMR-QA Study or most recent

Water Pollution Performance Evaluation Study are submitted to the State Water Board, which forwards the results to U.S. EPA.

7.2. Monitoring Requirements Summary. The table below summarizes routine monitoring requirements. This table is for informational purposes only. The actual requirements are specified in the MRP and elsewhere in this Order. In addition to undertaking the monitoring below, the Discharger must also conduct receiving water monitoring by continuing to participate in the Regional Monitoring Program.

Table F-9. Monitoring Requirements Summary

Parameter	Influent INF-001	Influent INF-002	Effluent EFF-001	Effluent EFF-002 to 003, EFF-009 to 010, EFF-014, and EFF-017 to 023	Effluent EFF-008, and EFF-011	Effluent EFF-004 to EFF-007	Receiving Water RWS-001
Flow	Continuous	-	Continuous	-	-	-	
pH	-	-	Continuous	2/Wet Weather Season or 1/Day	Each Discharge Event	Once	
Temperature	-	-	Continuous	-	-	-	
Specific Conductance	-	-	-	2/Wet Weather Season or 1/Day	Each Discharge Event	Once	
BOD ₅	1/Month	1/Year ^[2]	1/Month	Daily during discharge event ^[3]	Daily during discharge event ^[3]	Daily during discharge event ^[3]	
TSS	1/Week	1/Year ^[2]	1/Month	2/Wet Weather Season or 1/Day	-	Once	
COD	1/Month	1/Year ^[2]	1/Month	Daily during discharge event ^[3]	Daily during discharge event ^[3]	Daily during discharge event ^[3]	
TOC	-	-	-	2/Wet Weather Season or 1/Day	Each Discharge event	Once	
Oil and Grease	1/Month	1/Year ^[2]	1/Month	2/Wet Weather Season or 1/Day	Each Discharge Event	Once	
Sulfide, Total	1/Month ^l	1/Year ^[2]	1/Month	-	-	-	
Phenolic Compounds, Total	1/Month	1/Year ^[2]	1/Month	Daily during discharge event ^[3]	Daily during discharge event ^[3]	Daily during discharge event ^[3]	
Ammonia Nitrogen, Total (as N)	1/Month	1/Year ^[2]	1/Month	-	-	-	
Chromium, Total Recoverable	1/Month	1/Year ^[2]	1/Month	Daily during discharge event ^[3]	Daily during discharge event ^[3]	Daily during discharge event ^[3]	

Parameter	Influent INF-001	Influent INF-002	Effluent EFF-001	Effluent EFF-002 to 003, EFF-009 to 010, EFF-014, and EFF-017 to 023	Effluent EFF-008, and EFF-011	Effluent EFF-004 to EFF-007	Receiving Water RWS-001
Chromium (VI), Total Recoverable	1/Month	1/Year ^[2]	1/Month	Daily during discharge event ^[3]	Daily during discharge event ^[3]	Daily during discharge event ^[3]	
Arsenic, Total	1/Month	1/Year ^[2]	1/Month	-	-	-	
Copper, Total Recoverable	1/Month	1/Year ^[2]	1/Month	-	-	-	
Cyanide, Total	1/Month	1/Year ^[2]	1/Month	-	-	-	
Nickel, Total Recoverable	1/Month	1/Year ^[2]	1/Month	-	-	-	
Nitrate-nitrite	-	-	1/Month	-	-	-	
Phosphorus, Total	-	-	1/Month	-	-	-	
Selenium, Total Recoverable	1/Week	1/Year ^[2]	1/Week	-	-	-	
Dioxin-TEQ	2/Year	1/Year ^[2]	2/Year	-	-	-	-
Salinity	-	-	1/Month	-	-	-	1/Quarter
Hardness							1/Quarter
Acute Toxicity	-	-	1/Week	-	-	-	
Chronic Toxicity	-	-	1/Month	-	-	-	
All other priority pollutant	-	-	2/Year	-	First discharge event of wet season	-	
Standard Observations	-	-	-	Each discharge event	-	Once	

Footnotes:

- ^[1] The Discharger must also comply with the monitoring requirements in the Mercury and PCBs Watershed Permit (NPDES Permit CA0038849).
- ^[2] The Discharger shall sample and analyze influent raw water at least once per year at Monitoring Location INF-001 for any constituents for which it seeks recycled water use adjustments.
- ^[3] If and when supplemental effluent limitations for the pollutants in Table 7 of this Order become effective, the Discharger shall begin monitoring at outfalls where the limitations are in effect. The Discharger shall continue monitoring each storm event until two consecutive samples show compliance with the TOC and oil and grease limitations in Table 6 of this Order.

8. PUBLIC PARTICIPATION

The Regional Water Board considered the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, Regional Water Board staff developed tentative WDRs and encouraged public participation in the WDR adoption process.

8.1. Notification of Interested Parties. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge, and provided an opportunity to submit written comments and recommendations. The public had access to the agenda and any changes in dates and locations through the [Regional Water Board's website](https://waterboards.ca.gov/sanfranciscobay) (waterboards.ca.gov/sanfranciscobay).

Water Code sections 189.7 and 13149.2 require specific outreach and findings related to potential environmental justice, tribal impact, and racial equity considerations for reissued individual WDRs that include time schedules for achieving compliance with water quality objectives. This Order does not contain such a time schedule; therefore, the specified outreach and findings are not required.

8.2. Written Comments. Interested persons were invited to submit written comments concerning the tentative WDRs as explained through the notification process. Comments were to be submitted either in person or by mail to the Executive Office at the Regional Water Board at 1515 Clay Street, Suite 1400, Oakland, California 94612, to the attention of William Burrell.

Written comments were due at the Regional Water Board office by 5:00 p.m. on September 15, 2023.

8.3. Public Hearing. The Regional Water Board held a public hearing on the tentative WDRs during its meeting at the following date and time:

Date: October 11, 2023
Time: 9:00 a.m.

Contact: William Burrell, (510) 622-2317, william.burrell@waterboards.ca.gov

Interested persons were provided notice of the hearing and information on how to participate. At the public hearing, the Regional Water Board heard testimony pertinent to the discharge and Order.

Dates and venues can change. The [Regional Water Board's website](https://waterboards.ca.gov/sanfranciscobay) (waterboards.ca.gov/sanfranciscobay), where one can access the current agenda for changes.

8.4. Reconsideration of Waste Discharge Requirements. Any person aggrieved by this Regional Water Board action may petition the State Water Board to review the

action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050. The State Water Board must receive the petition at the following address within 30 calendar days of the date of Regional Water Board action:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

A petition may also be filed by email at waterqualitypetitions@waterboards.ca.gov.

For instructions on how to file a water quality petition for review, see the [Water Board's petition instructions](#) (waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml).

- 8.5. Information and Copying.** The Report of Waste Discharge, related supporting documents, and comments received are on file and may be inspected at the Regional Water Board address above at any time online or by making an appointment with the Regional Water Board's custodian of records. Document copying may be arranged by calling (510) 622-2300 or emailing Melinda.Wong@waterboards.ca.gov.
- 8.6. Register of Interested Persons.** Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference the Facility, and provide a name, address, and phone number.
- 8.7. Additional Information.** Requests for additional information or questions regarding this Order should be directed to William Burrell, (510) 622-2317, william.burrell@waterboards.ca.gov.

ATTACHMENT F-1

Derivation of Technology-Based Effluent Limitations Chevron Richmond Refining

References

1. 40 C.F.R. section 419, subpart E – Integrated Subcategory, *Effluent Limitation Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category* (2006)
2. *Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Petroleum Refining Point Source Category*, EPA/4401-82/014 (1982)
3. *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry*, U.S. EPA Office of Water Regulations and Standards (1985)
4. Chevron Products Company, NPDES Application for Permit Renewal, NPDES Permit CA0005789 (May 5, 2021)

Definitions

Process Wastewater means any water, which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. [40 C.F.R. § 401.11(q)]

Runoff means the flow of stormwater resulting from precipitation coming into contact with petroleum refinery property. [40 C.F.R. § 419.11(b)]

Ballast means the flow of waters, from a ship, that is treated along with refinery wastewaters in the main treatment system. [40 C.F.R. § 419.11(c)]

Contaminated Runoff means runoff that comes into contact with any raw material, intermediate product, finished product, by-product or waste product located on petroleum refinery property. [40 C.F.R. section 419.11(g)]

Background

According to the Effluent Limitation Guidelines (ELGs) for the Integrated Subcategory of the Petroleum Refining Point Source Category at 40 C.F.R. part 419, subpart E, technology-based effluent limitations are to be based in part on a discharger's production rate. The Discharger's current production rate is 251,000 barrels per day (bbls/d) (the highest annual average production rate from 2017 through 2021). The ELGs also take into account a discharger's specific refinery processes and configuration as explained below.

Process Wastewaters. The ELGs include limits for process wastewaters based on best practicable control technology currently available (BPT), best available technology economically achievable (BAT), and best conventional pollutant control technology (BCT). The most stringent of the BPT, BAT, and BCT limits apply. New Source Performance Standard limitations do not apply because the Facility was constructed prior to October 18, 1982.

The ELGs call for many limits to be calculated based on size factors and process factors. For the process wastewaters discharged at Discharge Point 001, the size factor and process factor are determined as follows:

Size Factor. Based on process data collected between February 2017 through May 2021, the Facility’s crude processing rate is 251,100 bbls/day. Pursuant to the ELGs at 40 C.F.R. section 419.52(b)(1) for BPT, at 40 C.F.R. section 419.53(b)(1) for BAT, and at 40 C.F.R. section 419.54(b)(1) for BCT, the size factor for deriving technology-based effluent limitations is 1.04.

Process Factor. The process factor is derived from the total process configuration. To calculate the total process configuration, the process feedstock rate for each crude, cracking and coking, lube, and asphalt process¹ is divided by the overall production rate (251,100 bbls/d). The resulting ratios (process feedstock divided by overall production rate) are then added together, and the result is multiplied by a weight factor specific to each process. Derivation of the Facility’s total process configuration is shown in the following table:

Table F-1A. Process Configurations

Process	Process Feedstock Rate (bbls/d)	Process Feedstock / Production Ratio	Weight Factor	Process Configuration
Crude	-	-	-	-
Atm. Dist.	251.1	1	-	-
Vac. Dist.	110.3	0.439	-	-
Desalting	251.1	1	-	-
<i>Total</i>	<i>612.5</i>	<i>2.439</i>	<i>1</i>	<i>2.439</i>
Cracking and Coking	-	-	-	-
Fluid Catalytic Cracking	76.8	0.306	-	-
Hydrocracking	126.3	0.503		
Hydrotreating Products	180.6	0.719		
<i>Total</i>	<i>383.7</i>	<i>1.528</i>	<i>6</i>	<i>9.168</i>
Lube	-	-	-	-

¹ The specific process groups are listed in the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry* (page 19).

Process	Process Feedstock Rate (bbls/d)	Process Feedstock / Production Ratio	Weight Factor	Process Configuration
Lube Hydrofining	21.9	0.087		
Total	21.9	0.087	13	1.134
Asphalt Processes				
Asphalt Production	39	0.155		
Total	39	0.155	12	1.864
Reforming and Alkylation Processes				
Catalytic Reforming	44.5	0.177	-	-
H ₂ SO ₄ Alkylation	27.9	0.111	-	-
Total	72.4	0.288	0	0
-	-	-	-	-
Total	-	-	-	14.61

Pursuant to the ELGs at 40 C.F.R. section 419.22(b)(2) for BPT, 40 C.F.R. section 419.232(b)(2) for BAT, and 40 C.F.R. section 419.22(b)(2) for BCT, the process factor for a total process configuration of 14.61 is 2.26.

To determine BAT limitations for total and hexavalent chromium and phenolic compounds in process wastewaters, the ELGs require consideration of effluent factors and refinery processes as explained in 40 C.F.R. section 419.53(c)(1) and the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining*.

Contaminated Runoff. The ELGs include limits for contaminated runoff based on BPT, BAT, and BCT. These limits apply to all stormwater discharges, except stormwater treated and discharged with process wastewaters through Discharge Point 001. The ELGs at 40 C.F.R. section 419.22(e)(2) and 419.23(f)(2) establish limits for oil and grease and total organic carbon (TOC). They also establish additional limits for biochemical oxygen demand (BOD₅), chemical oxygen demand (COD), total suspended solids (TSS), phenolic compounds, pH, hexavalent chromium, and total chromium that apply if the limits for oil and grease or TOC are exceeded.

Process Wastewater Effluent Limitations

BPT. The following table shows the derivation of the process wastewater BPT limits for the Facility based on the following equation:

$$\text{Effluent Limitation} = (\text{Maximum Daily or Average Monthly Factor}) \times (\text{Size Factor}) \times (\text{Process Factor}) \times (\text{Feed Stock Rate})$$

Table F-1B. BPT Limitations for Process Wastewaters

Pollutant	Maximum Daily Factor ^[1]	Average Monthly Factor ^[1]	Size Factor	Process Factor	Feed Stock Rate ^[2]	Maximum Daily Limit ^[3]	Average Monthly Limit ^[3]
BOD ₅	19.2	10.2	1.04	2.26	251.1	11,000	6,000
TSS	13.2	8.4	1.04	2.26	251.1	7,800	50,000
COD	136	70	1.04	2.26	251.1	80,000	41,000
Oil and Grease	6	3.2	1.04	2.26	251.1	3,500	1,900
Phenolics (4AAP)	0.14	0.068	1.04	2.26	251.1	83	40
Ammonia (as N)	8.3	3.8	1.04	2.26	251.1	4,900	2,200
Sulfide	0.124	0.056	1.04	2.26	251.1	73	33
Total Chromium	0.29	0.17	1.04	2.26	251.1	170	100
Hexavalent Chromium	0.025	0.0011	1.04	2.26	251.1	15	6.5

Footnotes:

- ^[1] From 40 C.F.R. § 419.22(a) (pounds per 1,000 bbls of feedstock)
- ^[2] 1,000 bbls/d
- ^[3] Pounds per day (lbs/d)

BAT. The following table shows the derivation of the process wastewater BAT limits for the Facility based on the following equation:

Effluent Limitation =
(Maximum Daily or Average Monthly Factor) x (Size Factor) x (Process Factor) x (Feed Stock Rate)

Table F-1C. Process Wastewater BAT Limitations

Pollutant	Maximum Daily Factor ^[1]	Average Monthly Factor ^[1]	Size Factor	Process Factor	Feed Stock Rate ^[2]	Maximum Daily Limit ^[3]	Average Monthly Limit ^[3]
COD	136	70	1.04	2.26	251.1	80,000	41,000
Ammonia (as N)	8.3	3.8	1.04	2.26	251.1	4,900	2,200
Sulfide	0.124	0.056	1.04	2.26	251.1	73	33
pH	-	-	-	-	-	^[4]	^[4]

Footnotes:

- ^[1] From 40 C.F.R. § 419.23(a) (pounds per 1,000 bbls feedstock)
- ^[2] 1,000 bbls/d
- ^[3] Pounds per day (lbs/d)
- ^[4] The pH is to be within the range of 6.0 to 9.0 as instantaneous limits.

To determine BAT limits for total and hexavalent chromium and phenolic compounds in process wastewaters, the ELGs require consideration of effluent factors and refinery processes. BAT effluent factors are presented at 40 C.F.R. section 419.23(c)(1); the refinery processes considered are the crude, cracking and coking, and reforming and alkylation processes, which correspond to those identified within the *Guide for the Application of Effluent Limitations Guidelines for the Petroleum Refining Industry* (page 20).

Table F-1D. Process Feedstock Rates (bbls/d)

Crude	-
Crude Distillation	251.1
Vacuum Distillation	110.3
Crude Desalting	251.1
Total	612.5
Cracking and Coking	-
Fluid Catalytic Cracking	76.8
Hydrocracking	126.3
Hydrotreating Products	180.6
Total	383.7
Lubes	
Lube Hydrofining	21.9
Total	21.9
Asphalt	
Asphalt Production	39
Total	39
Reforming and Alkylation	-
Catalytic Reforming	44.5
H ₂ SO ₄ Alkylation	27.9
Total	72.4

Based on the total feedstock rates for each process shown above, the following table shows the derivation of the BAT limits for total and hexavalent chromium and phenolic compounds using the following equation:

$$\text{Effluent Limitation} = (\text{Maximum Daily or Average Monthly Factor}) \times (\text{Process Feedstock Rate})$$

Table F-1E. Process Wastewater BAT Limitations (Chromium and Phenolics)

Process	Maximum Daily Factor ^[1]	Average Monthly Factor ^[1]	Process Feedstock Rate ^[2]	Maximum Daily Limit ^[3]	Average Monthly Limit ^[3]
Phenolic Compounds	-	-	-	-	-
Crude	0.013	0.0030	612.5	8.0	1.8
Cracking and Coking	0.147	0.036	1383.7	56	14
Lube	0.079	0.019	21.9	3.1	0.74
Asphalt	0.369	0.09	39	8.1	2.0
Reforming and Alkylation	0.132	0.032	72.4	9.6	2.3
Limit (Sum)	-	-	-	85	21
Total Chromium	-	-	-	-	-
Crude	0.011	0.0040	612.5	6.7	2.5
Cracking and Coking	0.119	0.041	383.7	46	16
Lube	0.064	0.022	21.9	2.5	0.86
Asphalt	0.299	0.104	39	6.6	2.3
Reforming and Alkylation	0.107	0.037	72.4	7.8	2.7
Limit (Sum)	-	-	-	69	24

Hexavalent Chromium	-	-	-	-	-
Crude	0.0007	0.0003	612.5	0.0003	0.18
Cracking and Coking	0.0076	0.0034	383.7	0.0034	1.30
Lube	0.0041	0.0019	21.9	0.0019	0.07
Asphalt	0.0192	0.0087	39	0.0087	0.19
Reforming and Alkylation	0.0069	0.0031	72.4	0.0031	0.22
Limit (Sum)	-	-	-	0.02	2.0

Footnotes:

- [1] From 40 C.F.R. § 419.23(c), lbs per 1,000 barrels feedstock
- [2] 1,000 bbls/d
- [3] Pounds per day (lbs/d)

BCT. The following table shows the derivation of the process wastewater BCT limits for the Facility based on the following equation:

Effluent Limitation =
(Maximum Daily or Average Monthly Factor) x (Size Factor) x (Process Factor) x (Feed Stock Rate)

Table F-1F. Process Wastewater BCT Limitations

Pollutant	Maximum Daily Factor ^[1]	Average Monthly Factor ^[1]	Size Factor	Process Factor	Feed Stock Rate ^[2]	Maximum Daily Limit ^[3]	Average Monthly Limit ^[3]
BOD ₅	19.2	10.2	1.04	2.26	251.1	11,000	6,000
TSS	13.2	8.4	1.04	2.26	251.1	7,800	5,000
Oil and Grease	6	3.2	1.04	2.26	251.1	3,500	1,900
pH	-	-	-	-	-	[4]	[4]

Footnotes:

- [1] From 40 C.F.R. § 419.24(a), pounds per 1,000 barrels feedstock
- [2] 1,000 bbls/d
- [3] Pounds per day (lbs/d)
- [4] The pH is to be within the range of 6.0 to 9.0 as instantaneous limits.

Most Stringent Technology-Based Effluent Limitations for Process Wastewater.

The following table presents the technology-based process wastewater effluent limitations that apply to the Discharger. The limitations are the most stringent of the BPT, BAT, and BCT limitations required by the ELGs and are expressed in units of lbs/day based on a production rate of 251,100 bbls/day.

Table F-1G. Summary of Technology-Based Effluent Limitations for Process Wastewater

Pollutant	Maximum Daily Limit (lbs/day)	Average Monthly Limit (lbs/day)
BOD ₅	11,000	6,000
TSS	7,800	5,000
COD	80,000	41,000
Oil and Grease	3,500	1,900
Phenolics (4AAP)	85	21
Ammonia (as N)	5,000	2,200

Pollutant	Maximum Daily Limit (lbs/day)	Average Monthly Limit (lbs/day)
Sulfide	73	33
Total Chromium	69	24
Hex Chromium	4.4	2.0
pH	[1]	[1]

Footnote:

[1] The pH is to be within the range of 6.0 to 9.0 as instantaneous limits.

Contaminated Runoff Effluent Limitations

The ELGs at 40 C.F.R. section 419.22(e)(2) and 419.23(f)(2) establish a limit of 15 mg/L for oil and grease and 110 mg/L for total organic carbon (TOC). If contaminated stormwater discharges exceed the oil and grease limit or the total organic carbon limit, additional concentration-based limits for BOD₅, TSS, COD, phenolic compounds, total chromium, hexavalent chromium, and pH become effective immediately. The effluent limits for these pollutants are derived from the most stringent of the BAT and BPT effluent concentration-based limits provided in the ELGs found at 40 C.F.R. section 419.22(e)(2) and 419.23(f)(2). These additional effluent limits are shown below:

Table F-1H. Effluent Limitations for Contaminated Runoff

Pollutant	Daily Maximum (mg/L)	Average Monthly (mg/L)
BOD ₅	48	26
TSS	33	21
COD	360	180
Oil and Grease	15	8.0
Phenolic Compounds	0.35	0.17
Total Chromium	0.60	0.21
Hexavalent Chromium	0.062	0.028
pH	[1]	[1]

Footnote:

[1] Within the range of 6.0 to 9.0

Additional Effluent Limitation Allocations

If contaminated runoff or ballast water is comingled with process wastewater, additional mass-based effluent limitation allocations may be added to the mass-based process wastewater limits indicated in Provision 4.1.1 of the Order. These additional effluent limitation allocations are derived from the most stringent concentration-based limits for contaminated runoff (see Table F-1H) or the table below for ballast water:

Table F-1I. Additional Ballast Water Effluent Limitation Allocations

Pollutant	Daily Maximum (mg/L) [1]	Average Monthly (mg/L) [1]
BOD ₅	48	26
TSS	33	21
COD	470	240
Oil and Grease	15	8.0

Footnote:

[1] These values reflect the BPT-based effluent limits of 40 C.F.R. § 419.22(c).

**ATTACHMENT G – REGIONAL STANDARD PROVISIONS,
AND MONITORING AND REPORTING REQUIREMENTS
(SUPPLEMENT TO ATTACHMENT D)**

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ATTACHMENT G – REGIONAL STANDARD PROVISIONS, AND MONITORING AND REPORTING REQUIREMENTS (SUPPLEMENT TO ATTACHMENT D)

APPLICABILITY

This document supplements the requirements of Federal Standard Provisions (Attachment D). For clarity, these provisions are arranged using the same headings as those used in Attachment D.

1. STANDARD PROVISIONS – PERMIT COMPLIANCE

1.1. Duty to Comply – Not Supplemented

1.2. Need to Halt or Reduce Activity Not a Defense – Not Supplemented

1.3. Duty to Mitigate – Supplement to Attachment D, Provision 1.3.

1.3.1. Contingency Plan. The Discharger shall maintain a Contingency Plan as prudent in accordance with current facility emergency planning. The Contingency Plan shall describe procedures to ensure that existing facilities remain in, or are rapidly returned to, operation in the event of a process failure or emergency incident, such as employee strike, strike by suppliers of chemicals or maintenance services, power outage, vandalism, earthquake, or fire. The Discharger may combine the Contingency Plan and Spill Prevention Plan (see Provision 1.3.2, below) into one document. In accordance with Regional Water Board Resolution No. 74-10, discharge in violation of the permit where the Discharger has failed to develop and implement a Contingency Plan as described below may be the basis for considering the discharge a willful and negligent violation of the permit pursuant to California Water Code section 13387. The Contingency Plan shall, at a minimum, provide for the following:

- 1.3.1.1. Sufficient personnel for continued facility operation and maintenance during employee strikes or strikes against contractors providing services;
- 1.3.1.2. Maintenance of adequate chemicals or other supplies, and spare parts necessary for continued facility operations;
- 1.3.1.3. Emergency standby power;
- 1.3.1.4. Protection against vandalism;
- 1.3.1.5. Expedient action to repair failures of, or damage to, equipment, including any sewer lines;

- 1.3.1.6. Reporting of spills and discharges of untreated or inadequately treated wastes, including measures taken to clean up the effects of such discharges; and
- 1.3.1.7. Maintenance, replacement, and surveillance of physical condition of equipment and facilities, including any sewer lines.
- 1.3.2. **Spill Prevention Plan.** The Discharger shall maintain a Spill Prevention Plan to prevent accidental discharges and to minimize the effects of any such discharges. The Spill Prevention Plan shall do the following:
 - 1.3.2.1. Identify the possible sources of accidental discharge, untreated or partially-treated waste bypass, and polluted drainage;
 - 1.3.2.2. State when current facilities and procedures became operational and evaluate their effectiveness; and
 - 1.3.2.3. Predict the effectiveness of any proposed facilities and procedures and provide an implementation schedule with interim and final dates when the proposed facilities and procedures will be constructed, implemented, or operational.
- 1.4. **Proper Operation and Maintenance** – Supplement to Attachment D, Provision 1.4
 - 1.4.1. **Operation and Maintenance Manual.** The Discharger shall maintain an Operation and Maintenance Manual to provide the plant and regulatory personnel with a source of information describing all equipment, recommended operational strategies, process control monitoring, and maintenance activities. To remain a useful and relevant document, the Operation and Maintenance Manual shall be kept updated to reflect significant changes in treatment facility equipment and operational practices. The Operation and Maintenance Manual shall be maintained in usable condition and be available for reference and use by all relevant personnel and Regional Water Board staff.
 - 1.4.2. **Wastewater Facilities Status Report.** The Discharger shall maintain a Wastewater Facilities Status Report and regularly review, revise, or update it, as necessary. This report shall document how the Discharger operates and maintains its wastewater collection, treatment, and disposal facilities to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary to provide adequate and reliable transport, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.
 - 1.4.3. **Proper Supervision and Operation of Publicly-Owned Treatment Works (POTWs).** POTWs shall be supervised and operated by persons possessing

certificates of appropriate grade pursuant to Title 23, section 3680, of the California Code of Regulations.

1.5. Property Rights – Not Supplemented

1.6. Inspection and Entry – Not Supplemented

1.7. Bypass – Not Supplemented

1.8. Upset – Not Supplemented

1.9. Other – Addition to Attachment D

- 1.9.1. Neither the treatment nor the discharge of pollutants shall create pollution, contamination, or nuisance as defined by California Water Code section 13050.
- 1.9.2. Collection, treatment, storage, and disposal systems shall be operated in a manner that precludes public contact with wastewater. If public contact with wastewater could reasonably occur on public property, warning signs shall be posted.
- 1.9.3. If the Discharger submits a timely and complete Report of Waste Discharge for permit reissuance, this permit shall continue in force and effect until the permit is reissued or the Regional Water Board rescinds the permit.

2. STANDARD PROVISIONS – PERMIT ACTION – NOT SUPPLEMENTED

3. STANDARD PROVISIONS – MONITORING

3.1. Sampling and Analyses – Supplement to Attachment D, Provisions 3.1 and 3.2

- 3.1.1. **Certified Laboratories.** Water and waste analyses shall be performed by a laboratory certified for these analyses in accordance with California Water Code section 13176.
- 3.1.2. **Minimum Levels.** For the 126 priority pollutants, the Discharger should use the analytical methods listed in Table B unless the Monitoring and Reporting Program (MRP, Attachment E) requires a particular method or minimum level (ML). All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.
- 3.1.3. **Monitoring Frequency.** The MRP specifies the minimum sampling and analysis schedule.
 - 3.1.3.1. **Sample Collection Timing**
 - 3.1.3.1.1. The Discharger shall collect influent samples on varying days selected at random and shall not include any plant recirculation or other sidestream wastes, unless otherwise stipulated in the MRP. The Executive Officer

may approve an alternative influent sampling plan if it is representative of plant influent and complies with all other permit requirements.

- 3.1.3.1.2. The Discharger shall collect effluent samples on days coincident with influent sampling, unless otherwise stipulated by the MRP. If influent sampling is not required, the Discharger shall collect effluent samples on varying days selected at random, unless otherwise stipulated in the MRP. The Executive Officer may approve an alternative effluent sampling plan if it is representative of plant discharge and in compliance with all other permit requirements.
- 3.1.3.1.3. The Discharger shall collect effluent grab samples during periods of daytime maximum peak flows (or peak flows through secondary treatment units for facilities that recycle effluent).
- 3.1.3.1.4. Effluent sampling for conventional pollutants shall occur on at least one day of any multiple-day bioassay the MRP requires. During the course of the bioassay, on at least one day, the Discharger shall collect and retain samples of the discharge. In the event that a bioassay result does not comply with effluent limitations, the Discharger shall analyze the retained samples for pollutants that could be toxic to aquatic life and for which it has effluent limitations.
 - 3.1.3.1.4.1. The Discharger shall perform bioassays on final effluent samples; when chlorine is used for disinfection, bioassays shall be performed on effluent after chlorination and dechlorination; and
 - 3.1.3.1.4.2. The Discharger shall analyze for total ammonia nitrogen and calculate the amount of un-ionized ammonia whenever test results fail to meet effluent limitations.
- 3.1.3.2. **Conditions Triggering Accelerated Monitoring**
 - 3.1.3.2.1. **Average Monthly Effluent Limitation Exceedance.** If the results from two consecutive samples of a constituent monitored in a particular month exceed the average monthly effluent limitation for any parameter (or if the required sampling frequency is once per month or less and the monthly sample exceeds the average monthly effluent limitation), the Discharger shall, within 24 hours after the results are received, increase its sampling frequency to daily until the results from the additional sampling show that the parameter complies with the average monthly effluent limitation.
 - 3.1.3.2.2. **Maximum Daily Effluent Limitation Exceedance.** If a sample result exceeds a maximum daily effluent limitation, the Discharger shall, within 24 hours after the result is received, increase its sampling frequency to daily until the results from two samples collected on consecutive days show compliance with the maximum daily effluent limitation.

- 3.1.3.2.3. **Acute Toxicity.** If final or intermediate results of an acute bioassay indicate a violation or threatened violation (e.g., the percentage of surviving test organisms of any single acute bioassay is less than 70 percent), the Discharger shall initiate a new test as soon as practical or as described in applicable State Water Board plan provisions that become effective after adoption of these Regional Standard Provisions. The Discharger shall investigate the cause of the mortalities and report its findings in the next self-monitoring report.
- 3.1.3.2.4. **Chlorine.** The Discharger shall calibrate chlorine residual analyzers against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, the Discharger shall collect grab samples at least every 30 minutes until compliance with the limitation is achieved, unless the Discharger monitors chlorine residual continuously. In such cases, the Discharger shall continue to conduct continuous monitoring.
- 3.1.3.2.5. **Bypass.** Except as indicated below, if a Discharger bypasses any portion of its treatment facility, it shall monitor flows and collect samples at affected discharge points and analyze samples for all constituents with effluent limitations on a daily basis for the duration of the bypass. The Discharger need not accelerate chronic toxicity monitoring. The Discharger also need not collect and analyze samples for mercury, dioxin-TEQ, and PCBs after the first day of the bypass. The Discharger may satisfy the accelerated acute toxicity monitoring requirement by conducting a flow-through test or static renewal test that captures the duration of the bypass (regardless of the method specified in the MRP). If bypassing disinfection units only, the Discharger shall only monitor bacteria indicators daily.
- 3.1.3.2.5.1. **Bypass for Essential Maintenance.** If a Discharger bypasses a treatment unit for essential maintenance pursuant to Attachment D section 1.7.2, the Executive Officer may reduce the accelerated monitoring requirements above if the Discharger (i) monitors effluent at affected discharge points on the first day of the bypass for all constituents with effluent limitations, except chronic toxicity; and (ii) identifies and implements measures to ensure that the bypass will continue to comply with effluent limitations.
- 3.1.3.2.5.2. **Approved Wet Weather Bypasses.** If a Discharger bypasses a treatment unit or permitted outfall during wet weather with Executive Officer approval pursuant to Attachment D section 1.7.4, the Discharger shall monitor flows and collect and retain samples for affected discharge points on a daily basis for the duration of the bypass. The Discharger shall analyze daily for TSS using 24 hour composites (or more frequent increments) and for bacteria indicators with effluent limitations using grab samples. If TSS exceeds 45 mg/L in any

composite sample, the Discharger shall also analyze daily the retained samples for all other constituents with effluent limitations, except oil and grease, mercury, PCBs, dioxin-TEQ, and acute and chronic toxicity. Additionally, at least once each year, the Discharger shall analyze the retained samples for one approved bypass for all other constituents with effluent limitations, except oil and grease, mercury, PCBs, dioxin-TEQ, and acute and chronic toxicity. This monitoring shall be in addition to the minimum monitoring specified in the MRP.

3.2. Standard Observations – Addition to Attachment D

- 3.2.1. **Receiving Water Observations.** The following requirements only apply when the MRP requires standard observations of receiving waters. Standard observations shall include the following:
- 3.2.1.1. **Floating and Suspended Materials (e.g., oil, grease, algae, and other macroscopic particulate matter)** — presence or absence, source, and size of affected area.
 - 3.2.1.2. **Discoloration and Turbidity** — color, source, and size of affected area.
 - 3.2.1.3. **Odor** — presence or absence, characterization, source, and distance of travel.
 - 3.2.1.4. **Beneficial Water Use** — estimated number of water-associated waterfowl or wildlife, fisherpeople, and other recreational activities.
 - 3.2.1.5. **Hydrographic Condition** — time and height of high and low tides (corrected to nearest National Oceanic and Atmospheric Administration location for the sampling date and time).
 - 3.2.1.6. **Weather Conditions** — wind direction, air temperature, and total precipitation during five days prior to observation.
- 3.2.2. **Wastewater Effluent Observations.** The following requirements only apply when the MRP requires standard observations of wastewater effluent. Standard observations shall include the following:
- 3.2.2.1. **Floating and Suspended Material of Wastewater Origin** (e.g., oil, grease, algae, and other macroscopic particulate matter) — presence or absence.
 - 3.2.2.2. **Odor** — presence or absence, characterization, source, distance of travel, and wind direction.
- 3.2.3. **Beach and Shoreline Observations.** The following requirements only apply when the MRP requires standard observations of beaches or shorelines. Standard observations shall include the following:

- 3.2.3.1. **Material of Wastewater Origin** — presence or absence, description of material, estimated size of affected area, and source.
- 3.2.3.2. **Beneficial Use** — estimate of number of people participating in recreational water contact, non-water contact, and fishing activities.
- 3.2.4. **Waste Treatment and/or Disposal Facility Periphery Observations.**
The following requirements only apply when the MRP requires standard observations of the periphery of waste treatment or disposal facilities. Standard observations shall include the following:
 - 3.2.4.1. **Odor** — presence or absence, characterization, source, and distance of travel.
 - 3.2.4.2. **Weather Conditions** — wind direction and estimated velocity.

4. STANDARD PROVISIONS – RECORDS

4.1. Records to be Maintained – Supplement to Attachment D, Provision 4.1

The Discharger shall maintain records in a manner and at a location (e.g., the wastewater treatment plant or the Discharger's offices) such that the records are accessible to Regional Water Board staff. The minimum retention period specified in Attachment D, Provision IV, shall be extended during the course of any unresolved litigation regarding permit-related discharges, or when requested by Regional Water Board or U.S. EPA, Region IX, staff.

A copy of the permit shall be maintained at the discharge facility and be available at all times to operating personnel.

4.2. Records of Monitoring – Supplement to Attachment D, Provision 4.2

Monitoring records shall include the following:

- 4.2.1. **Analytical Information.** Records shall include analytical method detection limits, minimum levels, reporting levels, and related quantification parameters.
- 4.2.2. **Disinfection Process.** For the disinfection process, records shall include the following:
 - 4.2.2.1. For bacteriological analyses:
 - 4.2.2.1.1. Wastewater flow rate at the time of sample collection; and
 - 4.2.2.1.2. Required statistical parameters for cumulative bacterial values (e.g., moving median or geometric mean for the number of samples or sampling period identified in the MRP).

4.2.2.2. For the chlorination process (when chlorine is used for disinfection), at least daily average values for the following:

4.2.2.2.1. Chlorine residual of treated wastewater as it enters the chlorine contact basin (mg/L);

4.2.2.2.2. Chlorine dosage (kg/day); and

4.2.2.2.3. Dechlorination chemical dosage (kg/day).

4.2.3. **Wastewater Treatment Process Solids.** For each treatment unit process that involves solids removal from the wastewater stream, records shall include the following:

4.2.3.1. Total volume or mass of solids removed from each collection unit (e.g., grit, skimmings, undigested biosolids, or combination) for each calendar month or other time period as appropriate, but not to exceed annually; and

4.2.3.2. Final disposition of such solids (e.g., landfill, other subsequent treatment unit).

4.2.4. **Treatment Process Bypasses.** For all treatment process bypasses, including wet weather blending, records shall include the following:

4.2.4.1. Chronological log of treatment process bypasses;

4.2.4.2. Identification of treatment processes bypassed;

4.2.4.3. Beginning and ending dates and times of bypasses;

4.2.4.4. Bypass durations;

4.2.4.5. Estimated bypass volumes; and

4.2.4.6. Description of, or reference to other reports describing, the bypasses, their cause, the corrective actions taken (except for wet weather blending explicitly approved within the permit and in compliance with any related permit conditions), and any additional monitoring conducted.

4.2.5. **Treatment Plant Overflows.** The Discharger shall retain a chronological log of overflows at the treatment plant, including the headworks and all units and appurtenances downstream, and records supporting the information provided in accordance with Provision 5.5.2, below.

4.3. Claims of Confidentiality – Not Supplemented

5. STANDARD PROVISIONS – REPORTING

5.1. Duty to Provide Information – Not Supplemented

5.2. Signatory and Certification Requirements – Not Supplemented

5.3. Monitoring Reports – Supplement to Attachment D, Provision 5.3

5.3.1. **Self-Monitoring Reports.** For each reporting period established in the MRP, the Discharger shall submit a self-monitoring report to the Regional Water Board in accordance with the requirements listed in the MRP and below:

5.3.1.1. **Transmittal Letter.** Each self-monitoring report shall be submitted with a transmittal letter that includes the following:

- 5.3.1.1.1. Identification of all violations of effluent limitations or other waste discharge requirements found during the reporting period;
- 5.3.1.1.2. Details regarding the violations, such as parameters, magnitude, test results, frequency, and dates;
- 5.3.1.1.3. Causes of the violations;
- 5.3.1.1.4. Corrective actions taken or planned to resolve violations and prevent recurrences, and dates or time schedules for implementation (the Discharger may refer to previously submitted reports that address the corrective actions);
- 5.3.1.1.5. Explanation for any data invalidation. Data should not be submitted in a self-monitoring report if it does not meet quality assurance/quality control standards. However, if the Discharger wishes to invalidate a measurement after submitting it in a self-monitoring report, the Discharger shall identify the measurement suspected to be invalid and state the Discharger's intent to submit, within 60 days, a formal request to invalidate the measurement. The formal request shall include the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports invalidation (e.g., laboratory sheet, log entry, test results), and a discussion of the corrective actions taken or planned (with a time schedule for completion) to prevent recurrence of the sampling or measurement problem;
- 5.3.1.1.6. Description of blending, if any. If the Discharger blends, it shall describe the duration of blending events and certify whether the blending complied with all conditions for blending;

- 5.3.1.1.7. Description of other bypasses, if any. If the Discharger bypasses any treatment units (other than blending), it shall describe the duration of the bypasses and effluent quality during those times; and
- 5.3.1.1.8. Signature. The transmittal letter shall be signed in accordance with Attachment D, Provision 5.2.
- 5.3.1.2. **Compliance Evaluation Summary.** Each self-monitoring report shall include a compliance evaluation summary that addresses each parameter for which the permit specifies effluent limitations, the number of samples taken during the monitoring period, and the number of samples that exceed the effluent limitations.
- 5.3.1.3. **More Frequent Monitoring.** If the Discharger monitors any pollutant more frequently than required by the MRP, the Discharger shall include the results of such monitoring in the calculation and reporting of the data submitted in the self-monitoring report.
- 5.3.1.4. **Analysis Results**
- 5.3.1.4.1. **Tabulation.** Each self-monitoring report shall include tabulations of all required analyses and observations, including parameters, dates, times, sample stations, types of samples, test results, method detection limits, method minimum levels, and method reporting levels (if applicable), signed by the laboratory director or other responsible official.
- 5.3.1.4.2. **Multiple Samples.** Unless the MRP specifies otherwise, when determining compliance with effluent limitations (other than instantaneous effluent limitations) and more than one sample result is available, the Discharger shall compute the arithmetic mean. If the data set contains one or more results that are “Detected, but Not Quantified (DNQ) or “Not Detected” (ND), the Discharger shall instead compute the median in accordance with the following procedure:
- 5.3.1.4.2.1. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
- 5.3.1.4.2.2. The median of the data set shall be determined. If the data set has an odd number of data points, the median is the middle value. If the data set has an even number of data points, the median is the average of the two values around the middle, unless one or both of these values is ND or DNQ, in which case the median shall be the lower of the two results (where DNQ is lower than a quantified value and ND is lower than DNQ).

5.3.1.4.3. **Duplicate Samples.** The Discharger shall report the average of duplicate sample analyses when reporting for a single sample result (or the median if one or more of the duplicates is DNQ or ND [see Provision 5.3.1.4.2, above]). For bacteria indicators, the Discharger shall report the geometric mean of the duplicate analyses.

5.3.1.4.4. **Dioxin-TEQ.** The Discharger shall report for each dioxin and furan congener the analytical results of effluent monitoring, including the reporting level, the method detection limit, and the measured concentration. The Discharger shall report all measured values of individual congeners, including data qualifiers. When calculating dioxin-TEQ, the Discharger shall set congener concentrations below the minimum levels (MLs) to zero. The Discharger shall calculate and report dioxin-TEQ using the following formula, where the MLs, toxicity equivalency factors (TEFs), and bioaccumulation equivalency factors (BEFs) are as provided in Table A:

$$\text{Dioxin-TEQ} = \sum (C_x \times \text{TEF}_x \times \text{BEF}_x)$$

where: C_x = measured or estimated concentration of congener x

TEF_x = toxicity equivalency factor for congener x

BEF_x = bioaccumulation equivalency factor for congener x

Table A
Minimum Levels, Toxicity Equivalency Factors,
and Bioaccumulation Equivalency Factors

Dioxin or Furan Congener	Minimum Level (pg/L)	2005 Toxicity Equivalency Factor (TEF)	Bioaccumulation Equivalency Factor (BEF)
2,3,7,8-TCDD	10	1.0	1.0
1,2,3,7,8-PeCDD	50	1.0	0.9
1,2,3,4,7,8-HxCDD	50	0.1	0.3
1,2,3,6,7,8-HxCDD	50	0.1	0.1
1,2,3,7,8,9-HxCDD	50	0.1	0.1
1,2,3,4,6,7,8-HpCDD	50	0.01	0.05
OCDD	100	0.0003	0.01
2,3,7,8-TCDF	10	0.1	0.8
1,2,3,7,8-PeCDF	50	0.03	0.2
2,3,4,7,8-PeCDF	50	0.3	1.6
1,2,3,4,7,8-HxCDF	50	0.1	0.08
1,2,3,6,7,8-HxCDF	50	0.1	0.2
1,2,3,7,8,9-HxCDF	50	0.1	0.6
2,3,4,6,7,8-HxCDF	50	0.1	0.7
1,2,3,4,6,7,8-HpCDF	50	0.01	0.01
1,2,3,4,7,8,9-HpCDF	50	0.01	0.4
OCDF	100	0.0003	0.02

- 5.3.1.5. **Results Not Yet Available.** The Discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. Certain analyses may require additional time to complete analytical processes and report results. In these cases, the Discharger shall describe the circumstances in the self-monitoring report and include the data for these parameters and relevant discussions of any violations in the next self-monitoring report due after the results are available.
- 5.3.1.6. **Annual Self-Monitoring Reports.** By the date specified in the MRP, the Discharger shall submit an annual self-monitoring report covering the previous calendar year. The report shall contain the following:
- 5.3.1.6.1. Comprehensive discussion of treatment plant performance, including documentation of any blending or other bypass events, and compliance with the permit. This discussion shall include any corrective actions taken or planned, such as changes to facility equipment or operation practices that may be needed to achieve compliance, and any other actions taken or planned that are intended to improve the performance and reliability of wastewater collection, treatment, or disposal practices;
- 5.3.1.6.2. List of approved analyses, including the following:
- 5.3.1.6.2.1. List of analyses for which the Discharger is certified;
- 5.3.1.6.2.2. List of analyses performed for the Discharger by a separate certified laboratory (copies of reports signed by the laboratory director of that laboratory need not be submitted but shall be retained onsite); and
- 5.3.1.6.2.3. List of “waived” analyses, as approved;
- 5.3.1.6.3. Plan view drawing or map showing the Discharger’s facility, flow routing, and sampling and observation station locations; and
- 5.3.1.6.4. Results of facility report reviews. The Discharger shall regularly review, revise, and update, as necessary, the Operation and Maintenance Manual, Contingency Plan, Spill Prevention Plan, and Wastewater Facilities Status Report so these documents remain useful and relevant to current practices. At a minimum, reviews shall be conducted annually. The Discharger shall describe or summarize its review and evaluation procedures, recommended or planned actions, and estimated time schedule for implementing these actions. The Discharger shall complete changes to these documents to ensure that they remain up-to-date.

5.4. Compliance Schedules – Not supplemented

5.5. Twenty-Four Hour Reporting – Supplement to Attachment D, Provision 5.5

5.5.1. Oil or Other Hazardous Material Spills

5.5.1.1. Within 24 hours of becoming aware of a spill of oil or other hazardous material not contained onsite and completely cleaned up, the Discharger shall report as follows:

5.5.1.1.1. If the spill exceeds reportable quantities for hazardous materials listed in 40 C.F.R. part 302. The Discharger shall call the California Office of Emergency Services (800 852-7550).

5.5.1.1.2. If the spill does not exceed reportable quantities for hazardous materials listed in 40 C.F.R., part 302, the Discharger shall call the Regional Water Board (510-622-2369).

5.5.1.2. The Discharger shall submit a written report to the Regional Water Board within five working days following either of the above telephone notifications unless directed otherwise by Regional Water Board staff. A report submitted electronically is acceptable. The written report shall include the following:

5.5.1.2.1. Date and time of spill, and duration if known;

5.5.1.2.2. Location of spill (street address or description of location);

5.5.1.2.3. Nature of material spilled;

5.5.1.2.4. Quantity of material spilled;

5.5.1.2.5. Receiving water body affected, if any;

5.5.1.2.6. Cause of spill;

5.5.1.2.7. Estimated size of affected area;

5.5.1.2.8. Observed impacts to receiving waters (e.g., oil sheen, fish kill, water discoloration);

5.5.1.2.9. Corrective actions taken to contain, minimize, or clean up the spill;

5.5.1.2.10. Future corrective actions planned to prevent recurrence, and implementation schedule; and

5.5.1.2.11. Persons or agencies notified.

5.5.2. **Unauthorized Municipal Wastewater Treatment Plant Discharges**¹

5.5.2.1. **Two-Hour Notification.** For any unauthorized discharge that enters a drainage channel or surface water, the Discharger shall, as soon as possible, but not later than two hours after becoming aware of the discharge, notify the California Office of Emergency Services (800-852-7550) and the local health officer or director of environmental health with jurisdiction over the affected water body. Notification shall include the following:

- 5.5.2.1.1. Incident description and cause;
- 5.5.2.1.2. Location of threatened or involved waterways or storm drains;
- 5.5.2.1.3. Date and time that the unauthorized discharge started;
- 5.5.2.1.4. Estimated quantity and duration of the unauthorized discharge (to the extent known), and estimated amount recovered;
- 5.5.2.1.5. Level of treatment prior to discharge (e.g., raw wastewater, primary-treated wastewater, or undisinfected secondary-treated wastewater); and
- 5.5.2.1.6. Identity of person reporting the unauthorized discharge.

5.5.2.2. **Five-Day Written Report.** Within five business days following the two-hour notification, the Discharger shall submit a written report that includes, in addition to the information listed in Provision 5.5.2.1, above, the following:

- 5.5.2.2.1. Methods used to delineate the geographical extent of the unauthorized discharge within receiving waters;
- 5.5.2.2.2. Efforts implemented to minimize public exposure to the unauthorized discharge;
- 5.5.2.2.3. Visual observations of the impacts (if any) noted in the receiving waters (e.g., fish kill, discoloration of receiving water) and extent of sampling if conducted;
- 5.5.2.2.4. Corrective measures taken to minimize the impact of the unauthorized discharge;

¹ California Code of Regulations, Title 23, section 2250(b), defines an unauthorized discharge to be a discharge, not regulated by waste discharge requirements, of treated, partially-treated, or untreated wastewater resulting from the intentional or unintentional diversion of wastewater from a collection, treatment, or disposal system.

- 5.5.2.2.5. Measures to be taken to minimize the potential for a similar unauthorized discharge in the future;
- 5.5.2.2.6. Summary of Spill Prevention Plan or Operation and Maintenance Manual modifications to be made, if necessary, to minimize the potential for future unauthorized discharges; and
- 5.5.2.2.7. Quantity and duration of the unauthorized discharge, and the amount recovered.

5.6. Planned Changes – Not supplemented

5.7. Anticipated Noncompliance – Not supplemented

5.8. Other Noncompliance – Not supplemented

5.9. Other Information – Not supplemented

6. STANDARD PROVISIONS – ENFORCEMENT – NOT SUPPLEMENTED

7. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS – NOT SUPPLEMENTED

8. DEFINITIONS – ADDITION TO ATTACHMENT D

More definitions can be found in Attachment A of this NPDES Permit.

8.1. Arithmetic Calculations

- 8.1.1. **Geometric Mean.** The antilog of the log mean or the back-transformed mean of the logarithmically transformed variables, which is equivalent to the multiplication of the antilogarithms. The geometric mean can be calculated with either of the following equations:

$$\text{Geometric Mean} = \text{Anti log} (1/N \sum \text{Log } C_i)$$

or

$$\text{Geometric Mean} = (C_1 \times C_2 \times \dots \times C_N)^{1/N}$$

Where “N” is the number of data points for the period analyzed and “C” is the concentration for each of the “N” data points.

- 8.1.2. **Mass Emission Rate.** The rate of discharge expressed in mass. The mass emission rate is obtained from the following calculation for any calendar day:

$$\text{Mass emission rate (lb/day)} = \frac{8.345}{N} \sum_{i=1}^N Q_i C_i$$

$$\text{Mass emission rate (kg/day)} = \frac{3.785}{N} \sum_{i=1}^N Q_i C_i$$

In which “N” is the number of samples analyzed in any calendar day and “Q_i” and “C_i” are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the “N” grab samples that may be taken in any calendar day. If a composite sample is taken, “C_i” is the concentration measured in the composite sample and “Q_i” is the average flow rate occurring during the period over which the samples are composited. The daily concentration of a constituent measured over any calendar day shall be determined from the flow weighted average of the same constituent in the combined waste streams as follows:

$$C_d = \text{Average daily concentration} = \frac{1}{Q_t} \sum_{i=1}^N Q_i C_i$$

In which “N” is the number of component waste streams and “Q” and “C” are the flow rate (MGD) and the constituent concentration (mg/L) associated with each of the “N” waste streams. “Q_t” is the total flow rate of the combined waste streams.

- 8.1.3. **Removal Efficiency.** The ratio of pollutants removed by the treatment facilities to pollutants entering the treatment facilities (expressed as a percentage). The Discharger shall determine removal efficiencies using monthly averages (by calendar month unless otherwise specified) of pollutant concentration of influent and effluent samples collected at about the same time and using the following equation (or its equivalent):

$$\text{Removal Efficiency (\%)} = 100 \times [1 - (\text{Effluent Concentration} / \text{Influent Concentration})]$$

- 8.2. **Blending** – the practice of bypassing biological treatment units and recombining the bypass wastewater with biologically-treated wastewater.
- 8.3. **Composite Sample** – a sample composed of individual grab samples collected manually or by an automatic sampling device on the basis of time or flow as specified in the MRP. For flow-based composites, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent (+/-5%) of the representative flow of the waste stream being measured at the time of grab sample collection. Alternatively, equal volume grab samples may be individually analyzed with the flow-weighted average calculated by averaging flow-weighted ratios of each grab sample analytical result. Grab samples comprising time-based composite samples shall be collected at intervals not greater than those specified in the MRP. The quantity of each grab sample comprising a time-based composite sample shall be a set of flow proportional volumes as specified in

the MRP. If a particular time-based or flow-based composite sampling protocol is not specified in the MRP, the Discharger shall determine and implement the most representative protocol.

- 8.4. Duplicate Sample** – a second sample taken from the same source and at the same time as an initial sample (such samples are typically analyzed identically to measure analytical variability).
- 8.5. Grab Sample** – an individual sample collected during a short period not exceeding 15 minutes. Grab samples represent only the condition that exists at the time the sample is collected.
- 8.6. Overflow** – the intentional or unintentional spilling or forcing out of untreated or partially-treated waste from a transport system (e.g., through manholes, at pump stations, or at collection points) upstream of the treatment plant headworks or from any part of a treatment plant.
- 8.7. Priority Pollutants** – those constituents referred to in 40 C.F.R. part 122 as promulgated in the Federal Register, Vol. 65, No. 97, Thursday, May 18, 2000, also known as the California Toxics Rule.
- 8.8. Untreated waste** – raw wastewater.

Table B
List of Monitoring Parameters, Analytical Methods, and Minimum Levels (µg/L)^[1]

CTR No.	Pollutant / Parameter	Analytical Method ^[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
1	Antimony	204.2	-	-	-	-	10	5	50	0.5	5	0.5	-	1000
2	Arsenic	206.3	-	-	-	20	-	2	10	2	2	1	-	1000
3	Beryllium	-	-	-	-	-	20	0.5	2	0.5	1	-	-	1000
4	Cadmium	200 or 213	-	-	-	-	10	0.5	10	0.25	0.5	-	-	1000
5a	Chromium (III)	SM 3500	-	-	-	-	-	-	-	-	-	-	-	-
5b	Chromium (VI)	SM 3500	-	-	-	10	5	-	-	-	-	-	-	1000
	Chromium (total) ^[3]	SM 3500	-	-	-	-	50	2	10	0.5	1	-	-	1000
6	Copper	200.9	-	-	-	-	25	5	10	0.5	2	-	-	1000
7	Lead	200.9	-	-	-	-	20	5	5	0.5	2	-	-	10,000
8	Mercury	1631 ^[4]	-	-	-	-	-	-	-	-	-	-	-	-
9	Nickel	249.2	-	-	-	-	50	5	20	1	5	-	-	1000
10	Selenium	200.8 or SM 3114B or C	-	-	-	-	-	5	10	2	5	1	-	1000
11	Silver	272.2	-	-	-	-	10	1	10	0.25	2	-	-	1000
12	Thallium	279.2	-	-	-	-	10	2	10	1	5	-	-	1000
13	Zinc	200 or 289	-	-	-	-	20	-	20	1	10	-	-	-
14	Cyanide	SM 4500 CN- C or I	-	-	-	5	-	-	-	-	-	-	-	-
15	Asbestos (only required for dischargers to MUN waters) ^[5]	0100.2 ^[6]	-	-	-	-	-	-	-	-	-	-	-	-
16	2,3,7,8-TCDD and 17 congeners (Dioxin)	1613	-	-	-	-	-	-	-	-	-	-	-	-
17	Acrolein	603	2.0	5	-	-	-	-	-	-	-	-	-	-
18	Acrylonitrile	603	2.0	2	-	-	-	-	-	-	-	-	-	-
19	Benzene	602	0.5	2	-	-	-	-	-	-	-	-	-	-
33	Ethylbenzene	602	0.5	2	-	-	-	-	-	-	-	-	-	-
39	Toluene	602	0.5	2	-	-	-	-	-	-	-	-	-	-
20	Bromoform	601	0.5	2	-	-	-	-	-	-	-	-	-	-
21	Carbon Tetrachloride	601	0.5	2	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method ^[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
22	Chlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
23	Chlorodibromomethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
24	Chloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
25	2-Chloroethylvinyl Ether	601	1	1	-	-	-	-	-	-	-	-	-	-
26	Chloroform	601	0.5	2	-	-	-	-	-	-	-	-	-	-
75	1,2-Dichlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
76	1,3-Dichlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
77	1,4-Dichlorobenzene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
27	Dichlorobromomethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
28	1,1-Dichloroethane	601	0.5	1	-	-	-	-	-	-	-	-	-	-
29	1,2-Dichloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
30	1,1-Dichloroethylene or 1,1-Dichloroethene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
31	1,2-Dichloropropane	601	0.5	1	-	-	-	-	-	-	-	-	-	-
32	1,3-Dichloropropylene or 1,3-Dichloropropene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
34	Methyl Bromide or Bromomethane	601	1.0	2	-	-	-	-	-	-	-	-	-	-
35	Methyl Chloride or Chloromethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
36	Methylene Chloride or Dichloromethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
37	1,1,2,2-Tetrachloroethane	601	0.5	1	-	-	-	-	-	-	-	-	-	-
38	Tetrachloroethylene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
40	1,2-Trans-Dichloroethylene	601	0.5	1	-	-	-	-	-	-	-	-	-	-
41	1,1,1-Trichloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
42	1,1,2-Trichloroethane	601	0.5	2	-	-	-	-	-	-	-	-	-	-
43	Trichloroethene	601	0.5	2	-	-	-	-	-	-	-	-	-	-
44	Vinyl Chloride	601	0.5	2	-	-	-	-	-	-	-	-	-	-
45	2-Chlorophenol	604	2	5	-	-	-	-	-	-	-	-	-	-
46	2,4-Dichlorophenol	604	1	5	-	-	-	-	-	-	-	-	-	-
47	2,4-Dimethylphenol	604	1	2	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method ^[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
48	2-Methyl-4,6-Dinitrophenol or Dinitro-2-methylphenol	604	10	5	-	-	-	-	-	-	-	-	-	-
49	2,4-Dinitrophenol	604	5	5	-	-	-	-	-	-	-	-	-	-
50	2-Nitrophenol	604	-	10	-	-	-	-	-	-	-	-	-	-
51	4-Nitrophenol	604	5	10	-	-	-	-	-	-	-	-	-	-
52	3-Methyl-4-Chlorophenol	604	5	1	-	-	-	-	-	-	-	-	-	-
53	Pentachlorophenol	604	1	5	-	-	-	-	-	-	-	-	-	-
54	Phenol	604	1	1	-	50	-	-	-	-	-	-	-	-
55	2,4,6-Trichlorophenol	604	10	10	-	-	-	-	-	-	-	-	-	-
56	Acenaphthene	610 HPLC	1	1	0.5	-	-	-	-	-	-	-	-	-
57	Acenaphthylene	610 HPLC	-	10	0.2	-	-	-	-	-	-	-	-	-
58	Anthracene	610 HPLC	-	10	2	-	-	-	-	-	-	-	-	-
60	Benzo(a)Anthracene or 1,2 Benzanthracene	610 HPLC	10	5	-	-	-	-	-	-	-	-	-	-
61	Benzo(a)Pyrene	610 HPLC	-	10	2	-	-	-	-	-	-	-	-	-
62	Benzo(b) Fluoranthene or 3,4 Benzofluoranthene	610 HPLC	-	10	10	-	-	-	-	-	-	-	-	-
63	Benzo(ghi)Perylene	610 HPLC	-	5	0.1	-	-	-	-	-	-	-	-	-
64	Benzo(k)Fluoranthene	610 HPLC	-	10	2	-	-	-	-	-	-	-	-	-
74	Dibenzo(a,h)Anthracene	610 HPLC	-	10	0.1	-	-	-	-	-	-	-	-	-
86	Fluoranthene	610 HPLC	10	1	0.05	-	-	-	-	-	-	-	-	-
87	Fluorene	610 HPLC	-	10	0.1	-	-	-	-	-	-	-	-	-
92	Indeno(1,2,3-cd)Pyrene	610 HPLC	-	10	0.05	-	-	-	-	-	-	-	-	-
100	Pyrene	610 HPLC	-	10	0.05	-	-	-	-	-	-	-	-	-
68	Bis(2-Ethylhexyl)Phthalate	606 or 625	10	5	-	-	-	-	-	-	-	-	-	-
70	Butylbenzyl Phthalate	606 or 625	10	10	-	-	-	-	-	-	-	-	-	-
79	Diethyl Phthalate	606 or 625	10	2	-	-	-	-	-	-	-	-	-	-
80	Dimethyl Phthalate	606 or 625	10	2	-	-	-	-	-	-	-	-	-	-
81	Di-n-Butyl Phthalate	606 or 625	-	10	-	-	-	-	-	-	-	-	-	-
84	Di-n-Octyl Phthalate	606 or 625	-	10	-	-	-	-	-	-	-	-	-	-
59	Benzidine	625	-	5	-	-	-	-	-	-	-	-	-	-
65	Bis(2-Chloroethoxy)Methane	625	-	5	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method ^[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
66	Bis(2-Chloroethyl)Ether	625	10	1	-	-	-	-	-	-	-	-	-	-
67	Bis(2-Chloroisopropyl) Ether	625	10	2	-	-	-	-	-	-	-	-	-	-
69	4-Bromophenyl Phenyl Ether	625	10	5	-	-	-	-	-	-	-	-	-	-
71	2-Chloronaphthalene	625	-	10	-	-	-	-	-	-	-	-	-	-
72	4-Chlorophenyl Phenyl Ether	625	-	5	-	-	-	-	-	-	-	-	-	-
73	Chrysene	625	-	10	5	-	-	-	-	-	-	-	-	-
78	3,3'-Dichlorobenzidine	625	-	5	-	-	-	-	-	-	-	-	-	-
82	2,4-Dinitrotoluene	625	10	5	-	-	-	-	-	-	-	-	-	-
83	2,6-Dinitrotoluene	625	-	5	-	-	-	-	-	-	-	-	-	-
85	1,2-Diphenylhydrazine ^[7]	625	-	1	-	-	-	-	-	-	-	-	-	-
88	Hexachlorobenzene	625	5	1	-	-	-	-	-	-	-	-	-	-
89	Hexachlorobutadiene	625	5	1	-	-	-	-	-	-	-	-	-	-
90	Hexachlorocyclopentadiene	625	5	5	-	-	-	-	-	-	-	-	-	-
91	Hexachloroethane	625	5	1	-	-	-	-	-	-	-	-	-	-
93	Isophorone	625	10	1	-	-	-	-	-	-	-	-	-	-
94	Naphthalene	625	10	1	0.2	-	-	-	-	-	-	-	-	-
95	Nitrobenzene	625	10	1	-	-	-	-	-	-	-	-	-	-
96	N-Nitrosodimethylamine	625	10	5	-	-	-	-	-	-	-	-	-	-
97	N-Nitrosodi-n-Propylamine	625	10	5	-	-	-	-	-	-	-	-	-	-
98	N-Nitrosodiphenylamine	625	10	1	-	-	-	-	-	-	-	-	-	-
99	Phenanthrene	625	-	5	0.05	-	-	-	-	-	-	-	-	-
101	1,2,4-Trichlorobenzene	625	1	5	-	-	-	-	-	-	-	-	-	-
102	Aldrin	608	0.005	-	-	-	-	-	-	-	-	-	-	-
103	α-BHC	608	0.01	-	-	-	-	-	-	-	-	-	-	-
104	β-BHC	608	0.005	-	-	-	-	-	-	-	-	-	-	-
105	γ-BHC (Lindane)	608	0.02	-	-	-	-	-	-	-	-	-	-	-
106	δ-BHC	608	0.005	-	-	-	-	-	-	-	-	-	-	-
107	Chlordane	608	0.1	-	-	-	-	-	-	-	-	-	-	-
108	4,4'-DDT	608	0.01	-	-	-	-	-	-	-	-	-	-	-
109	4,4'-DDE	608	0.05	-	-	-	-	-	-	-	-	-	-	-
110	4,4'-DDD	608	0.05	-	-	-	-	-	-	-	-	-	-	-

CTR No.	Pollutant / Parameter	Analytical Method ^[2]	GC	GC MS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
111	Dieldrin	608	0.01	-	-	-	-	-	-	-	-	-	-	-
112	Endosulfan (alpha)	608	0.02	-	-	-	-	-	-	-	-	-	-	-
113	Endosulfan (beta)	608	0.01	-	-	-	-	-	-	-	-	-	-	-
114	Endosulfan Sulfate	608	0.05	-	-	-	-	-	-	-	-	-	-	-
115	Endrin	608	0.01	-	-	-	-	-	-	-	-	-	-	-
116	Endrin Aldehyde	608	0.01	-	-	-	-	-	-	-	-	-	-	-
117	Heptachlor	608	0.01	-	-	-	-	-	-	-	-	-	-	-
118	Heptachlor Epoxide	608	0.01	-	-	-	-	-	-	-	-	-	-	-
119-125	PCBs: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260	608	0.5	-	-	-	-	-	-	-	-	-	-	-
126	Toxaphene	608	0.5	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

- ^[1] Minimum levels are from the *State Implementation Policy*. They are the concentration of the lowest calibration standard for that technique based on a survey of contract laboratories. Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., U.S. EPA 200.9); Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; DCP = Direct Current Plasma.
- ^[2] The suggested method is the U.S. EPA Method unless otherwise specified (SM = Standard Methods). The Discharger may use another U.S. EPA-approved or recognized method if that method has a level of quantification below the applicable water quality objective. Where no method is suggested, the Discharger has the discretion to use any standard method.
- ^[3] Analysis for total chromium may be substituted for analysis of chromium (III) and chromium (VI) if the concentration measured is below the lowest hexavalent chromium criterion (11 ug/l).
- ^[4] The Discharger shall use ultra-clean sampling (U.S. EPA Method 1669) and ultra-clean analytical methods (U.S. EPA Method 1631) for mercury monitoring. The minimum level for mercury is 2 ng/l (or 0.002 ug/l).
- ^[5] MUN = Municipal and Domestic Supply. This designation, if applicable, is in the Findings of the permit.
- ^[6] Determination of Asbestos Structures over 10 [micrometers] in Length in Drinking Water Using MCE Filters, U.S. EPA 600/R-94-134, June 1994.
- ^[7] Detected as azobenzene.

ATTACHMENT S– STORMWATER PROVISIONS, MONITORING, AND REPORTING REQUIREMENTS

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ATTACHMENT S – STORMWATER PROVISIONS, MONITORING, AND REPORTING REQUIREMENTS

APPLICABILITY

These stormwater provisions only apply to facilities that do not direct all stormwater flows from process areas to a wastewater treatment plant's headwork or do not enroll in NPDES Permit CAS000001 (General Permit for Stormwater Discharges Associated with Industrial Activities).

1. STORMWATER PROVISIONS – PERMIT COMPLIANCE

1.1. Stormwater Pollution Prevention Plan (SWPPP)

The Discharger shall prepare a SWPPP that includes the following elements:

- 1.1.1. Facility name and contact information;
- 1.1.2. Site map;
- 1.1.3. List of industrial materials;
- 1.1.4. Description of potential sources;
- 1.1.5. Assessment of potential pollutant sources;
- 1.1.6. Minimum Best Management Practices (BMPs);
- 1.1.7. Advanced BMPs, if applicable;
- 1.1.8. Monitoring implementation plan;
- 1.1.9. Annual comprehensive facility compliance evaluation; and
- 1.1.10. Date SWPPP initially prepared and dates of each SWPPP amendment.

The SWPPP shall be designed in accordance with good engineering practices to achieve the following objectives:

- Identify and evaluate all pollutant sources that may affect stormwater discharge quality;
- Identify, assign, and implement control measures and management practices to reduce or prevent pollutants in stormwater discharges; and
- Identify and describe conditions or circumstances that may require revisions to the SWPPP.

The SWPPP shall be retained onsite, revised whenever necessary, and made available upon request of any Regional Water Board representative. The SWPPP may be combined with the Spill Prevention Plan (Attachment G section 1.3.2).

1.2. Site Map

The Discharger shall prepare one or more site maps that include notes, legends, a north arrow, and other data as appropriate to ensure the map is clear, legible and understandable, including the following:

- 1.2.1 The facility boundary, stormwater drainage areas within the facility boundary, and portions of any drainage area impacted by discharges from surrounding areas (the maps shall include the flow direction of each drainage area, on-facility surface water bodies, areas of soil erosion, and locations of nearby water bodies [e.g., rivers, lakes, wetlands] or municipal storm drain inlets that may receive the facility's industrial stormwater discharges and authorized non-stormwater discharges);
- 1.2.2. Locations of stormwater collection and conveyance systems, associated discharge locations, and direction of flow (the maps shall include sample locations if different than the discharge locations);
- 1.2.3. Locations of stormwater collection and conveyance systems, associated discharge locations, and direction of flow (the maps shall include sample locations if different than the discharge locations);
- 1.2.4. Identification of all impervious areas, including paved areas, buildings, covered storage areas, or other roofed structures;
- 1.2.5. Locations where materials are directly exposed to precipitation and the locations where identified significant spills or leaks have occurred; and
- 1.2.6. Areas of industrial activity (the maps shall identify all industrial storage areas and storage tanks, shipping and receiving areas, fueling areas, vehicle and equipment storage and maintenance areas, material handling and processing areas, waste treatment and disposal areas, dust or particulate generating areas, cleaning and material reuse areas, and other areas of industrial activity that may have potential pollutant sources).

1.3. List of Industrial Materials

The SWPPP shall contain a list of industrial materials handled at the facility and the locations where each material is stored, received, shipped, and handled, as well as the typical quantities and handling frequency.

1.4. Potential Pollutant Sources

The Discharger shall describe and assess potential stormwater pollutant sources, including the following:

- 1.4.1. **Industrial Processes.** Industrial processes may include manufacturing, cleaning, maintenance, recycling, and disposal. The SWPPP shall describe the type, characteristics, and approximate quantity of industrial materials used and areas protected by containment structures and the corresponding containment capacity.
- 1.4.2. **Material Handling and Storage Areas.** The SWPPP shall describe the type, characteristics, and quantity of industrial materials handled or stored; shipping, receiving, and loading procedures; spill and leak prevention and response procedures; and areas protected by containment structures and the corresponding containment capacity.
- 1.4.3. **Dust and Particulate Generating Activities.** The SWPPP shall describe the discharge locations, source type, and characteristics of the dust or particulate pollutant.
- 1.4.4. **Significant Spills and Leaks.** The Discharger shall evaluate the facility for areas where spills and leaks can occur. The SWPPP shall list any industrial materials spilled or leaked in significant quantities and discharged from the facility's stormwater conveyance system within the previous five years, including but not limited to any chemicals identified in 40 C.F.R. section 302 as reported on U.S. EPA Form R and any oil and hazardous substances discharged in excess of reportable quantities (40 C.F.R. §§ 110, 117, and 302). The SWPPP shall also list any industrial materials spilled or leaked in significant quantities that had the potential to be discharged from the facility's stormwater conveyance system within the previous five years. For each listed industrial material spill and leak, the SWPPP shall include the location, characteristics, and approximate quantity of the material spilled or leaked; the approximate quantity of the material discharged; the cleanup or remedial actions taken or planned; the approximate quantity of remaining material that could be discharged; and the preventive measures taken to ensure that spills or leaks do not reoccur.
- 1.4.5. **Non-Stormwater Discharges.** The SWPPP shall describe all non-stormwater discharges, including the source, quantity, frequency, characteristics, and associated drainage area, and indicate whether these discharges are authorized or unauthorized.
- 1.4.6. **Erodible Surfaces.** The SWPPP shall describe any facility locations where soil erosion may be caused by industrial activity, contact with stormwater, authorized and unauthorized non-stormwater discharges, or run-on from areas surrounding the facility.

1.5. Assessment of Potential Pollutant Sources

The SWPPP shall include a narrative assessment of all areas of industrial activity with potential industrial pollutant sources, including, at a minimum, the following:

- 1.5.1. Facility areas with likely sources of pollutants;
- 1.5.2. Pollutants likely to be present in industrial stormwater discharges;

- 1.5.3. Approximate quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each industrial material handled, produced, stored, recycled, or disposed;
- 1.5.4. Degree to which the pollutants associated with such materials may be exposed to, and mobilized by, contact with stormwater;
- 1.5.5. Direct and indirect pathways by which pollutants may be exposed to stormwater;
- 1.5.6. Sampling, visual observation, and inspection records;
- 1.5.7. Effectiveness of existing BMPs to reduce or prevent pollutants in industrial stormwater discharges; and
- 1.5.8. Estimated effectiveness of implementing, to the extent feasible, minimum BMPs to reduce or prevent pollutants in industrial stormwater discharges.

Based upon the assessment, the SWPPP shall identify facility areas where the minimum BMPs described in Provision 1.6, below, will not adequately reduce or prevent pollutants in stormwater discharges and any necessary advanced BMPs, as described in Provision 1.7, below, for those areas.

1.6. Minimum Best Management Practices (BMPs)

The Discharger shall, to the extent feasible, implement and maintain the following BMPs:

- 1.6.1. **Good Housekeeping.** The Discharger shall do the following:
 - 1.6.1.1. Observe all outdoor areas associated with industrial activity, including stormwater discharge locations, drainage areas, conveyance systems, waste handling and disposal areas, and perimeter areas affected by off-facility materials or stormwater run-on to determine housekeeping needs. Any identified debris, waste, spills, tracked materials, or leaked materials shall be cleaned and disposed of properly;
 - 1.6.1.2. Minimize or prevent material tracking;
 - 1.6.1.3. Minimize dust generated from industrial materials or activities;
 - 1.6.1.4. Ensure that all facility areas impacted by rinse or wash waters are cleaned as soon as possible;
 - 1.6.1.5. Cover all stored industrial materials that can be readily mobilized by contact with stormwater;
 - 1.6.1.6. Contain all stored non-solid industrial materials or wastes (e.g., particulates, powders, shredded paper) that can be transported or dispersed by the wind or contact with stormwater;

- 1.6.1.7. Prevent disposal of any rinse or wash waters or industrial materials into the stormwater conveyance system;
- 1.6.1.8. Minimize stormwater discharges from non-industrial areas (e.g., stormwater flows from employee parking areas) that contact industrial areas of the facility; and,
- 1.6.1.9. Minimize authorized non-stormwater discharges from non-industrial areas (e.g., potable water, fire hydrant testing) that contact areas of the sanitary or industrial facility.
- 1.6.2. **Preventative Maintenance.** The Discharger shall (1) identify all equipment and systems used outdoors that may spill or leak pollutants, (2) observe the identified equipment and systems to detect leaks or identify conditions that may result in the development of leaks, (3) establish an appropriate schedule for maintenance of identified equipment and systems, and (4) establish procedures for prompt maintenance and repair of equipment and maintenance of systems when conditions exist that may result in the development of spills or leaks.
- 1.6.3. **Spill and Leak Prevention and Response.** The Discharger shall (1) establish procedures and controls to minimize spills and leaks; (2) develop and implement spill and leak response procedures to prevent industrial materials from discharging through the stormwater conveyance system (spilled or leaked industrial materials shall be cleaned promptly and disposed of properly); (3) identify and describe all necessary and appropriate spill and leak response equipment, locations of spill and leak response equipment, and spill or leak response equipment maintenance procedures; and (4) identify and train appropriate spill and leak response personnel.
- 1.6.4. **Material Handling and Waste Management.** The Discharger shall do the following:
 - 1.6.4.1. Prevent or minimize handling of industrial materials or wastes that can be readily mobilized by contact with stormwater during a storm;
 - 1.6.4.2. Contain all stored non-solid industrial materials or wastes (e.g., particulates, powers, shredded paper) that can be transported or dispersed by the wind or contact with stormwater;
 - 1.6.4.3. Cover industrial waste disposal containers and industrial material storage containers that contain industrial materials when not in use;
 - 1.6.4.4. Divert run-on and stormwater generated from within the facility away from all stockpiled materials;
 - 1.6.4.5. Clean all spills of industrial materials or wastes that occur during handling in accordance with spill response procedures; and,
 - 1.6.4.6. Observe and clean, as appropriate, any outdoor material or waste handling equipment or containers that can be contaminated by contact with industrial materials or wastes.

- 1.6.5. **Erosion and Sediment Control.** The Discharger shall (1) implement effective wind erosion controls; (2) provide effective stabilization for inactive areas, finished slopes, and other erodible areas prior to a forecasted storms; (3) maintain effective perimeter controls and stabilize site entrances and exits to sufficiently control discharges of erodible materials; and (4) divert run-on and stormwater generated from within the facility away from erodible materials.
- 1.6.6. **Employee Training.** The Discharger shall ensure that all personnel implementing the SWPPP are properly trained with respect to BMP implementation, BMP effectiveness evaluations, visual observations, and monitoring activities. The Discharger shall identify which personnel need to be trained, their responsibilities, and the type of training they are to receive and maintain documentation of completed training and the personnel that received the training with the SWPPP.
- 1.6.7. **Quality Assurance and Record Keeping.** The Discharger shall (1) develop and implement management procedures to ensure that appropriate personnel implement all SWPPP elements; (2) develop methods of tracking and recording BMP implementation; and (3) maintain BMP implementation records, training records, and records related to any spills and clean-up related response activities for a minimum of five years.

1.7. Action Levels and Advanced BMPs

If the Discharger samples total suspended solids (TSS), oil and grease, or pH in excess of an action level in Table S-1, the Discharger shall review the SWPPP to identify appropriate modifications to existing BMPs or additional BMPs as necessary to reduce pollutant discharge concentrations to levels below the action level. The Discharger shall revise the SWPPP accordingly before the next storm, if possible, or as soon as practical, and in no event later than three months following the exceedance.

Table S-1. Stormwater Action Levels

Parameter	Unit	Instantaneous Action Level	Annual Action Level
Total Suspended Solids	mg/L	400	100
Oil and Grease	mg/L	25	15
pH	s.u.	6.0-9.0 ⁽¹⁾	----

Footnotes:

⁽¹⁾ Values below or above this range require action.

If, upon subsequent monitoring, the pollutants measured in Table S-1 continue to exceed their respective action levels, the Discharger shall further evaluate its BMPs and update its SWPPP accordingly to include advanced BMPs in addition to the minimum BMPs described in Provision 1.6, above. The Discharger shall, to the extent feasible, implement and maintain any advanced BMPs identified pursuant to Provision 1.5.8, above, as necessary to reduce or prevent discharges of pollutants in stormwater discharges in a manner that reflects best industry practice considering technological availability and

economic practicability and achievability. Advanced BMPs may include one or more of the following:

- 1.7.1. **Exposure Minimization BMPs.** These include storm resistant shelters (either permanent or temporary) that prevent the contact of stormwater with identified industrial materials.
- 1.7.2. **Stormwater Containment and Discharge Reduction BMPs.** These include BMPs that divert, infiltrate, reuse, contain, retain, or reduce the volume of stormwater runoff.
- 1.7.3. **Treatment Control BMPs.** These include mechanical, chemical, biologic, or any other treatment technology that will meet the treatment design standard.

1.8. BMP Descriptions

The SWPPP shall identify each BMP being implemented at the facility, including the following:

- 1.8.1. The pollutants the BMP is designed to reduce or prevent;
- 1.8.2. The frequency, times of day, or conditions when the BMP is scheduled for implementation;
- 1.8.3. The locations within each area of industrial activity or industrial pollutant source where the BMP shall be implemented;
- 1.8.4. The individual responsible for implementing the BMP;
- 1.8.5. The procedures, including maintenance procedures, and instructions to implement the BMP effectively; and
- 1.8.6. The equipment and tools necessary to implement the BMP effectively.

1.9. Annual Comprehensive Facility Compliance Evaluation

The Discharger shall conduct one annual facility evaluation for each reporting year (July 1 to June 30). If the Discharger conducts an annual evaluation fewer than 8 months, or more than 16 months, after it conducts the previous annual evaluation, it shall document the justification for doing so. The Discharger shall revise the SWPPP, as appropriate, and implement the revisions within 90 days of the annual evaluation. At a minimum, the annual evaluations shall consist of the following:

- 1.9.1. A review of all sampling, visual observation, and inspection records conducted during the previous reporting year;
- 1.9.2. An inspection of all areas of industrial activity and associated potential pollutant sources for evidence of, or the potential for, pollutants entering the stormwater conveyance system;

- 1.9.3. An inspection of all drainage areas previously identified as having no exposure to industrial activities and materials;
- 1.9.4. An inspection of equipment needed to implement the BMPs; and
- 1.9.5. An assessment of any other factors needed to comply with the requirements of the Annual Stormwater Report (see Provision 3.1, below).

2. STORMWATER PROVISIONS – MONITORING

2.1. Monthly Visual Observations

- 2.1.1. At least once per month, the Discharger shall visually observe each drainage area for the following:
 - 2.1.1.1. The presence or indication of prior, current, or potential unauthorized non-stormwater discharges and their sources;
 - 2.1.1.2. Authorized non-stormwater discharges, sources, and associated BMPs; and
 - 2.1.1.3. Outdoor industrial equipment and storage areas, outdoor industrial activities areas, BMPs, and all other potential sources of industrial pollutants.
- 2.1.2. The monthly visual observations shall be conducted during daylight hours of scheduled facility operating hours and on days without precipitation.
- 2.1.3. The Discharger shall provide an explanation in the Annual Stormwater Report for uncompleted monthly visual observations (see Provision 3.1, below).

2.2. Sampling Event Visual Observations

Sampling event visual observations shall be conducted at the same time sampling occurs at a discharge location. At each discharge location where a sample is obtained, the Discharger shall observe the discharge of stormwater associated with industrial activity.

- 2.2.1. The Discharger shall ensure that visual observations of stormwater discharged from containment sources (e.g., secondary containment or storage ponds) are conducted at the time that the discharge is sampled.
- 2.2.2. If the Discharger employs volume-based or flow-based treatment BMPs, it shall sample any bypass that occurs while the visual observations and sampling of stormwater discharges are conducted.
- 2.2.3. The Discharger shall visually observe and record the presence or absence of floating and suspended materials, oil and grease, discolorations, turbidity, odors, trash/debris, and sources of any discharged pollutants.

- 2.2.4. If a discharge location is not visually observed during the sampling event, the Discharger shall record which discharge locations were not observed during sampling or that there was no discharge from the discharge location.
- 2.2.5. The Discharger shall provide an explanation in the Annual Stormwater Report for uncompleted sampling event visual observations (see Provision 4.1, below).

2.3. Visual Observation Records

The Discharger shall maintain records of all visual observations. Records shall include the date, approximate time, locations observed, presence and probable source of any observed pollutants, name of persons who conducted the observations, and any response actions and/or additional SWPPP revisions necessary in response to the visual observations.

2.4. SWPPP Revisions

The Discharger shall revise its BMPs as necessary when the visual observations indicate pollutant sources have not been adequately addressed.

2.5. Sampling and Analysis

- 2.5.1. The Discharger shall collect and analyze stormwater samples as specified in the MRP.
- 2.5.2. Samples shall be (1) representative of stormwater associated with industrial activities and any commingled authorized non-stormwater dischargers; or (2) associated with the discharge of contained stormwater.
- 2.5.3. On a facility-specific basis, the Discharger shall also analyze additional parameters that serve as indicators of the presence of all industrial pollutants identified in the pollutant source assessment. These additional parameters may be modified (added or removed) in accordance with any updated SWPPP pollutant source assessment.

3. STORMWATER PROVISIONS – REPORTING

3.1. Annual Stormwater Report

The results of the Discharger's Annual Comprehensive Facility Compliance Evaluation shall be reported in the Annual Stormwater Report to the Regional Water Board no later than July 30. The Discharger shall include in the Annual Stormwater Report the following:

- 3.1.1. A compliance checklist that indicates whether the Discharger has complied with or addressed all applicable requirements of the SWPPP;
- 3.1.2. An explanation for any non-compliance requirements within the reporting year, as indicated in the compliance checklist;

- 3.1.3. An identification, including page numbers and sections, of all revisions made to the SWPPP within the reporting year; and
- 3.1.4. The date(s) of the annual evaluation.

4. STORMWATER PROVISIONS – DEFINITIONS

4.1. Authorized Non-Stormwater Discharges – non-stormwater discharges are authorized if they meet the following conditions:

- 4.1.1. Fire-hydrant and fire prevention or response system flushing;
 - 4.1.2. Potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems;
 - 4.1.3. Drinking fountain water and atmospheric condensate, including refrigeration, air conditioning, and compressor condensate;
 - 4.1.4. Irrigation drainage and landscape watering, provided that all pesticides, herbicides, and fertilizers have been applied in accordance with manufacturer’s labels;
 - 4.1.5. Uncontaminated natural springs, groundwater, foundation drainage, footing drainage;
 - 4.1.6. Seawater infiltration where the seawater is discharged back into the source; or,
 - 4.1.7. Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from cooling towers (e.g., “piped” cooling tower blowdown or drains).
- 4.2. Stormwater** – stormwater runoff, snow melt runoff, and surface runoff and drainage, excluding infiltration and runoff from agricultural land.