**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**CENTRAL VALLEY REGION**

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**ORDER NO. R5-2012-XXXX**
**NPDES NO. CA0078441**

# CITY OF DUNSMUIR WASTEWATER TREATMENT PLANT SHASTA AND SISKIYOU COUNTIES

The following Discharger is subject to waste discharge requirements as set forth in this Order:

**Table 1. Discharger Information**

| | |
|---|---|
| **Discharger** | City of Dunsmuir |
| **Name of Facility** | City of Dunsmuir Wastewater Treatment Plant |
| **Facility Address** | 1100 South First Street |
| | Dunsmuir, CA 96025 |
| | Shasta and Siskiyou Counties |
| The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a **minor** discharge. | |

The discharge by City of Dunsmuir Wastewater Treatment Plant, City of Dunsmuir from the discharge point identified below are subject to waste discharge requirements as set forth in this Order:

**Table 2. Discharge Location**

| Discharge Point | Effluent Description | Discharge Point Latitude | Discharge Point Longitude | Receiving Water |
|---|---|---|---|---|
| D-001 | Treated Wastewater | 41° 11' 00" N | 122° 16' 52" W | Sacramento River |
| D-002 | Treated Wastewater | 41° 11' 00" N | 122° 16' 52" W | Percolation Ponds |

**Table 3. Administrative Information**

| | |
|---|---|
| This Order was adopted by the Regional Water Quality Control Board on: | **Adoption Date** |
| This Order shall become effective on: | **Adoption Date** |
| This Order shall expire on: | **Expiration Date** |
| The Discharger shall file a complete Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than: | **180 days prior to the Order expiration date** |

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **Adoption Date.**

PAMELA C. CREEDON, Executive Officer

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# I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

**Table 4. Facility Information.**

| | | |
|---|---|---|
| Discharger | City of Dunsmuir | |
| Name of Facility | City of Dunsmuir Wastewater Treatment Plant | |
| Facility Address | 1100 South First Street | |
| | Dunsmuir, CA 96025 | |
| | Shasta and Siskiyou Counties | |
| Facility Contact, Title, and Phone | Ronald LaRue, Utility Supervisor | (530) 235-2325 |
| | Brenda Bains, City Administrator | (530) 235-4822 |
| Mailing Address | 5915 Dunsmuir Ave. | |
| | Dunsmuir, CA 96025 | |
| Type of Facility | Publicly Owned Treatment Works | |
| Facility Design Flow | 0.30 million gallons per day | |

# II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Central Valley Water Board), finds:

**A. Background.** The City of Dunsmuir (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2006-0129 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0078441. The Discharger submitted a Report of Waste Discharge (RWD), dated 30 June 2011 and applied for a NPDES permit renewal to discharge up to 0.30 million gallons per day (mgd) of treated wastewater from the City of Dunsmuir Wastewater Treatment Plant, hereinafter Facility. The application was deemed complete on 26 July 2011.

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

**B. Facility Description.** The Discharger owns and operates the municipal wastewater treatment plant. The treatment systems consists of an aerated grit chamber, a dimminutor, oxidation ditch, secondary clarifier, traveling bridge filter, gas ($Cl_2$) chlorination, gas ($SO_2$) de-chlorination, a discharge line, and sludge drying beds.

Treated wastewater is discharged from one of the following (see table on cover page): Discharge Point D-001 to the Sacramento River, a water of the United States, or Discharge Point D-002 to a series of percolation ponds adjacent to the river. The Sacramento River is within the Dunsmuir Hydrologic Sub Area of the Upper Sacramento River Hydrologic Unit (525.21). Attachment B provides a topographic map of the Facility and vicinity. Attachment C provides a flow schematic of the Facility.

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

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

**E. California Environmental Quality Act (CEQA).** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

**F. Technology-Based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 122.44), require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

**G. Water Quality-Based Effluent Limitations (WQBELs).** Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as technology equivalence requirements, which are necessary to achieve water quality standards. The Central Valley Water Board has considered the factors listed in CWC section 13241 in establishing these requirements. The rationale for these requirements, which consists of tertiary treatment or equivalent requirements, is discussed in the Fact sheet.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

**H. Water Quality Control Plans.** The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (revised October 2011), for the Sacramento and San Joaquin River Basins* (hereinafter Basin Plan) on 1 September 1998 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to the Sacramento River (Box Canyon Dam to Shasta Lake) within the Upper Sacramento Hydrologic Unit and its tributaries downstream of the discharge are as follows:

**Table 5. Basin Plan Beneficial Uses**

| Discharge Points | Receiving Water Name | Beneficial Use(s) |
|---|---|---|
| D-001 | Sacramento River (Box Canyon Dam to Shasta Lake) | Existing:<br>Municipal and domestic water supply (MUN);<br>Agricultural supply, including stock watering (AGR);<br>Water Contact Recreation, including canoeing and rafting (REC-1);<br>Non-contact Water Recreation (REC-2);<br>Cold Freshwater Habitat (COLD);<br>Cold Spawning, Reproduction, and/or early Development (SPWN);<br>Wildlife habitat (WILD) |
| D-002 | Underlying Groundwater | Potential:<br>Municipal and domestic water supply (MUN).<br>Industrial process supply (PRO);<br>Industrial service supply (IND); and<br>Agricultural supply (AGR) |

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "*…those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards*

*will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The Sacramento River (Box Canyon Dam to Shasta Lake) is not listed as a WQLS in the 303(d) list of impaired water bodies.

Requirements of this Order implement the Basin Plan.

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain water quality criteria for priority pollutants.

J. **State Implementation Policy.** On 2 March 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 became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. **Compliance Schedules and Interim Requirements. –** In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or a new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. The Regional Water Board, however, is not required to include a compliance schedule, but may issue a Time Schedule Order pursuant to CWC section 13300 or a Cease and Desist Order pursuant to CWC section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Compliance Schedule Policy, should consider feasibility of achieving compliance, and must impose a schedule that is as short as possible to achieve compliance with the effluent limit based on the objective or criteria.

The Compliance Schedule Policy and the SIP do not allow compliance schedules for priority pollutants beyond 18 May 2010, except for new or more stringent priority pollutant criteria adopted by USEPA after 17 December 2008.

Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric limitations for that constituent or parameter, interim milestones and compliance reporting within 14 days after each interim milestone. The permit may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures. This Order includes compliance schedules and interim effluent limitations. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) is included in the Fact Sheet.

**L. Alaska Rule.** On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. (40 CFR 131.21 and 65 FR 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.

**M. Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow, percent removal requirements for 5-day biochemical oxygen demand ($BOD_5$), total suspended solids (TSS), and pH. The WQBELs consist of restrictions on acute and chronic toxicity, ammonia, copper, dichlorobromomethane, nitrate, settleable solids, total coliform organisms, total residual chlorine, and zinc. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order includes water-quality based effluent limitations for $BOD_5$, pH, and TSS to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in establishing these requirements.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for $BOD_5$, TSS, and pH that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet (Attachment F section IV). In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in the Fact Sheet (Attachment F section IV.C.3).

**N. Antidegradation Policy.** 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing

quality of waters be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

**O. Anti-Backsliding Requirements.** Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions. Some effluent limitations in this Order are less stringent that those in Order No. R5-2006-0129. As discussed in detail in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

**P. Endangered Species Act.** 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 sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 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. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

**Q. Monitoring and Reporting.** 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. CWC sections 13267 and 13383 authorizes the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.*"

The Discharger owns and operates the facility subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

**R. Standard and Special Provisions.** Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Central Valley Water Board has also included in this Order special provisions applicable to the Discharger. Some special provisions require submittal of technical reports. All technical reports are required in accordance with Water Code section 13267. The rationale for the special provisions and need for technical reports required in this Order is provided in the Fact Sheet.

**S. Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections IV.B, IV.C, V.B, and VI.C.4 of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

**T. Notification of Interested Parties.** The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

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

THEREFORE, IT IS HEREBY ORDERED, that Order No. R5-2006-0129 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the CWC (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

## III. DISCHARGE PROHIBITIONS

**A.** Discharge of wastewater at a location or in a manner different from that described in the Findings, is prohibited.

**B.** The by-pass or overflow of wastewater to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

**C.** Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the CWC.

**D.** The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

**E.** The discharge of hazardous waste, as defined at Title 23, division 3, Chapter 15, Article 2, Section 2521 of the CCR or designated waste, as defined at Section 13173 of the CWC, is prohibited.

**F.** The direct discharge of treated wastewater to surface waters or surface water drainage courses during the recreation season, 15 June through 15 September, is prohibited.

## IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

### A. Effluent Limitations – Discharge Point D-001

1. **Final Effluent Limitations – Discharge Point D-001.**

   a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point D-001 with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program

**Table 6. Final Effluent Limitations Discharge Point D-001.**

| Parameter | Units | Effluent Limitations | | | | |
|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum |
| ***Conventional Pollutants*** | | | | | | |
| Biochemical Oxygen Demand 5-day @ 20°C | mg/L | 10 | 15 | 20 | -- | -- |
| | lbs/day [1] | 25 | 38 | 50 | -- | -- |
| pH | standard units | -- | -- | -- | 6.5 | 8.0 |
| Total Suspended Solids | mg/L | 10 | 15 | 20 | -- | -- |
| | lbs/day [1] | 25 | 38 | 50 | -- | -- |
| ***Priority Pollutants*** | | | | | | |
| Copper, Total Recoverable | ug/L | 25.6 | -- | 25.6 | -- | -- |
| Dichlorobromomethane | ug/L | 4.1 | -- | 4.1 | -- | -- |
| Zinc, Total Recoverable | ug/L | 64 | -- | 87 | -- | -- |
| ***Non-Conventional Pollutants*** | | | | | | |
| Ammonia Nitrogen, Total (as N) | mg/L | 21.9 | -- | 21.9 | -- | -- |
| Nitrate Nitrogen (as N)[2] | mg/L | 44.1 | -- | -- | -- | -- |
| Settleable Solids | mL/L | 0.1 | -- | 0.2 | -- | -- |

1. Based on the design ADWF 0.30 mgd
2. Based on the total of Nitrate Nitrogen and Nitrite Nitrogen

b. **Percent Removal.** The average monthly percent removal of 5-day biochemical oxygen demand ($BOD_5$) and total suspended solids (TSS) shall not be less than 85 percent.

c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

   i. 70%, minimum for any one bioassay; and
   ii. 90%, median for any three or more consecutive bioassays

d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

   i. 0.011 mg/L, as a 4-day average; and
   ii. 0.019 mg/L, as a 1-hour average.

e. **Total Coliform Organisms.** From 16 November through 30 April effluent total coliform organisms shall not exceed:

   **i.** 23 most probable number (MPN) per 100 mL, as 7-day median; and
   **ii.** 240 MPN/100 mL, as a daily maximum.

f. **Total Coliform Organisms**. From 1 May through 14 June and 16 September through 15 November effluent total coliform organisms shall not exceed:

**i.** 2.2 MPN per 100 mL, as a 7-day median;
**ii.** 23 MPN per 100 mL, more than once in any 30-day period; and
**iii.** 240 MPN per 100 mL, at any time.

g. **Average Dry Weather Flow.** The average dry weather flow shall not exceed 0.30 mgd.

**2. Interim Effluent Limitations – Not Applicable**

**B. Land Discharge Specifications – Discharge Point D-002.**

1. Effective immediately, the Discharger shall maintain compliance with the following limitations at Discharge Point D-002, with compliance measured at Monitoring Location LND-00A as described in the attached Monitoring and Reporting Program (Attachment E).

**Table 8. Land Discharge Specifications - Discharge Point D-002.**

| Parameter | Units | Effluent Limitations | | | | |
|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum |
| ***Conventional Pollutants*** | | | | | | |
| Biochemical Oxygen Demand 5-day @ 20°C | mg/L | 30 | 45 | 60 | -- | -- |
| Total Suspended Solids | mg/L | 30 | 45 | 60 | | |
| pH | standard units | | | | 6.0 | 9.0 |
| ***Non-Conventional Pollutants*** | | | | | | |
| Settleable Solids | mL/L | 0.1 | -- | 0.2 | -- | -- |

a. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

**i.** 23 MPN/100 mL, as a weekly median; and
**ii.** 240 MPN/100mL, as a daily maximum.

b. **Average Dry Weather Flow.** The average dry weather discharge flow shall not exceed 0.30 mgd.

**C. Reclamation Specifications – Not Applicable**

# V. RECEIVING WATER LIMITATIONS

## A. Surface Water Limitations

Receiving water limitations are based on the Basin Plan water quality objectives contained in the Basin Plan and are required as part of this Order. The discharge shall not cause the following in the Sacramento River:

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.

2. **Biostimulatory Substances**. Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

3. **Chemical Constituents**. Chemical constituents to be present in concentrations that adversely affect beneficial uses.

4. **Color**. Discoloration that causes nuisance or adversely affects beneficial uses.

5. **Dissolved Oxygen**:

   **a.** The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;

   **b.** The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor

   **c.** The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.

6. **Floating Material**. Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.

7. **Oil and Grease**. Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

8. **pH**. The pH to be depressed below 6.5, nor raised above 8.5.

9. **Pesticides**:

   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

   b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer.

d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR §131.12.).

e. Pesticide concentrations to exceed the lowest levels technically and economically achievable.

f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15.

g. Thiobencarb to be present in excess of 1.0 µg/L.

10. **Radioactivity**:

a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

b. Radionuclides to be present in excess of the maximum contaminant levels specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

11. **Suspended Sediments**. The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

12. **Settleable Substances**. Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

13. **Suspended Material**. Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. **Taste and Odors**. Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

15. **Temperature**. The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at RSW-001 and RSW-002. Temperature changes due to controllable factors shall be limited as described below. To the extent of any conflict with the above temperature objective, the more stringent objective applies.

- From 1 December to 15 March, the maximum temperature shall be 55°F.
- From 16 March to 15 April, the maximum temperature shall be 60°F.
- From 16 April to 15 May, the maximum temperature shall be 65°F.
- From 16 May to 15 October, the maximum temperature shall be 70°F.
- From 16 October to 15 November, the maximum temperature shall be 65°F.
- From 16 November to 30 November, the maximum temperature shall be 60°F.

16. **Toxicity**. Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

17. **Turbidity**. Waters shall be free in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributed to controllable water quality factors shall not exceed the following limits:

    a. Shall not exceed 2 Nephelometric turbidity Unit (NTU) where natural turbidity is less than 1 NTU;
    b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;
    c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;
    d. Shall not increase by more than 10 NTU where natural turbidity is between 50 and 100 NTUs;
    e. Shall not increase by more than 10 percent where natural turbidity is greater than 100 NTUs.

## B. Groundwater Limitations

1. The discharge shall not cause the groundwater to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance.

2. Release of waste constituents from any portion of the Facility shall not cause or contribute to, in combination with other sources of waste constituents, groundwater within influence of the Facility to contain:

    a. Waste constituent concentrations in excess of the concentrations specified below or background water quality, whichever is greater.

**Table 9. Groundwater Limitations**

| Parameter | Units | Maximum Limitation |
|---|---|---|
| Total Coliform Organisms | MPN/100 mL | <2.2 |
| Nitrate Nitrogen, Total (as N) | mg/L | 10 |

    b. Impart taste, odor, chemical constituents, toxicity, or color that creates nuisance or impairs any beneficial use.

## VI. PROVISIONS

### A. Standard Provisions

1. The Discharger shall comply with all (federal NPDES standard conditions from 40 CFR Part 122) Standard Provisions included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

   a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, Division 3, Chapter 26.

   b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

      i. violation of any term or condition contained in this Order;

      ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

      iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

      iv. a material change in the character, location, or volume of discharge.

      The causes for modification include:

      - *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

      - *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

      - *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

      The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

   The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

   i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

   ii. Controls any pollutant limited in the Order.

   The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under Section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

i. Safeguard to electric power failure:

   i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

ii. Upon written request by the Central Valley Water Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within ninety days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

j. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under Regional Water Board Standard Provision contained in section VI.A.2.i. of this Order

The technical report shall:

i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and

treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (CWC section 1211).

o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (530) 224-4845 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].

p. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain

violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the CWC. Transfer shall be approved or disapproved in writing by the Executive Officer.

## B. Monitoring and Reporting Program (MRP) Requirements

1. The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

## C. Special Provisions

### 1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including:

i. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance, including justification for seasonal limitations. For example, modifications to the Chronic Whole Effluent Toxicity Accelerated Monitoring Trigger, or the effluent limitations for ammonia, may be appropriate.

b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional

requirements may be included in this Order as a result of the special condition monitoring data.

c. **Constituent Study**. This Order requires the Discharger to prepare constituent study for arsenic, carbon tetrachloride, heptachlor. If after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for the subject constituents.

d. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order may be reopened and an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to establish a mercury offset program for the Discharger.

e. **Pollution Prevention Plan.** This Order requires the Discharger to develop a pollution prevention plan following Water Code section 13263.3(d)(3) for ammonia. Based on a review of the pollution prevention plan, this Order may be reopened for addition and/or modification of effluent limitations and requirements for this constituent.

f. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents, and other applicable pollutants such as aluminum. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper and zinc. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

g. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE) this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

h. **Ammonia Reduction Study**. Upon completion of the Ammonia Reduction Study, this Order may be reopened to add or modify final ammonia effluent limitations and/or mixing zones, as appropriate.

i. **Salinity Evaluation and Minimization Plan.** This Order requires the Discharger to complete and submit a salinity evaluation and minimization plan to address sources of salinity from the Facility. Based on a review of the results of the report on the salinity/EC site-specific studies this Order may be reopened for

addition of effluent limitations and requirements for salinity parameters, including electrical conductivity.

j. **Title 27 Exemption Analysis.** Upon submittal of the Groundwater Water Quality Characterization and the Title 27 Exemption Analysis required by this Order,, this Order may be reopened to add or modify Findings, limits, or other conditions as appropriate.

k. **Performance-Based Effluent Limitations**. This Order allows dilution credits for ammonia, copper, dichlorobromomethane, and nitrate for development of water quality-based effluent limits. However, the amount of dilution allowed has been reduced, based on the Facility's performance to control these pollutants. Maximum daily performance-based effluent limits were calculated for ammonia, copper, and dichlorobromomethane based on effluent data from 2008 to 2011. The performance-based effluent limit for nitrate was based on effluent data from 2008 to 2012. If the Discharger submits new monitoring results that justify a different performance-based effluent limit for ammonia, copper, dichlorobromomethane, and/or nitrate, this Order may be reopened to modify the effluent limitations for these pollutants.

2. **Special Studies, Technical Reports and Additional Monitoring Requirements**

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits toxicity, as described in subsection ii below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Initial Investigative TRE Workplan.** Within 90 days of the effective date of this Order, the Discharger shall submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer. This should be a one to two page document including, at a minimum:

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

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

c) A discussion of who will conduct the Toxicity Identification Evaluation (TIE), if necessary (e.g., an in-house expert or outside contractor).

ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address the effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is > 1 TUc (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits toxicity.

iv. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14 days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests conducted once every 2 weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of toxicity, the Executive Officer may require that the Discharger initiate a TRE.

b) If the source(s) of the toxicity is easily identified (i.e. temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and initiate a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;
2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
3) A schedule for these actions.

d) Within sixty (60) days of notification by the laboratory of the test results, the Discharger shall submit to the Central Valley Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan must be developed in accordance with USEPA guidance[1].

b. **Constituent Study.** There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives, these constituents include arsenic, carbon tetrachloride, heptachlor. The Discharger shall conduct monitoring for these constituents quarterly for 3 years (12 consecutive samples) as outlined in Attachment E and submit a study report evaluating the results of the monitoring within 6 months following completion of the final monitoring event during the third year of the permit term.

c. **Groundwater Monitoring Network Analysis.** To determine compliance with Groundwater Limitations V.B. this provision requires the Discharger to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells and a sufficient number of designated monitoring wells downgradient of treatment, storage, and disposal units that does or may release waste constituents to groundwater. Within 3 months following the effective date of this Order, the Discharger shall submit a Groundwater Monitoring Network Work Plan for approval by the Executive officer. A complete Groundwater Monitoring Network Analysis Report must be submitted within 2 years following the date of work plan approval.

d. **Groundwater Water Quality Characterization.** Within 36 months of the effective date of this Order, the Discharger shall submit a groundwater water quality characterization study. The study shall include, but is not limited to; characterization of natural background quality of monitored constituents. For each groundwater monitoring parameter/constituent identified in the Monitoring and Reporting Program, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and a comparison of background groundwater quality to that in wells used to monitor the facility discharge. Determination of background quality shall be made using the methods described in Title 27 California Code of Regulations Section 20415(e)(10), and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events.

[1] See the Fact Sheet (Attachment F section VII.B.2.a.) for a list of USEPA guidance documents that must be considered in development of the TRE Workplan.

e. **Title 27 Exemption Analysis.** Within 36 months of the effective date of this Order, the Discharger shall submit a Title 27 Exemption Analysis (Title 27 Analysis). The Title 27 Analysis shall present the results of the land discharge and groundwater monitoring to date, and an evaluation of whether the discharge to the percolation ponds is in compliance with the Basin Plan, including the Basin Plan water quality objectives.

f. **Ammonia Reduction Study. 180 days prior to the expiration date of this Order**, the Discharger shall submit an ammonia reduction study. The study shall include a description of ammonia reduction measures implemented during the current permit cycle and/or scheduled for future implementation, site-specific constraints, if any, related to effluent ammonia reduction, and an evaluation of whether there are additional practicable ammonia reduction measures that may be implemented at the facility in order to reduce ammonia concentrations in the effluent and minimize the size of the ammonia mixing zone. If additional ammonia concentration reductions are practicable then the size of future mixing zones and dilution credits for ammonia may be reduced until such practicable concentration reductions have been achieved.

3. **Best Management Practices and Pollution Prevention**

a. **Salinity Evaluation and Minimization Plan.** The Discharger shall prepare a salinity evaluation and minimization plan to identify and address sources of salinity from the Facility. The plan shall be completed and submitted to the Central Valley Water Board within 9 months of the effective date of this Order for the approval by the Executive Officer.

4. **Construction, Operation and Maintenance Specifications**

a. **Treatment Pond Operating Requirements.**

i. The treatment facility shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

ii. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable means.

iii. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

a) An erosion control program to assure that small coves and irregularities are not created around the perimeter of the water surface.

b) Weeds to be minimized;

c) Vegetation, debris, and dead algae do not accumulate on the water surface; and

d) Other control programs in consultation with mosquito abatement.

iv. Freeboard in the network of ponds shall not be less than 2 feet (measured vertically to the lowest point of overflow).

v. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow).

vi. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with the Land Discharge Specification at section IV.C.4.a.v., above.

vii. The discharge of waste classified as “hazardous” as defined in section 2521(a) of Title 23, California Code of Regulations (CCR), or “designated”, as defined in section 13173 of the CWC, to the treatment ponds is prohibited.

viii. Objectionable odors originating at this Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property owned by the Discharger).

ix. As a means of discerning compliance with Land Discharge Specifications, the dissolved oxygen content in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/L.

x. Ponds shall not have a pH less than 6.0 or greater than 9.0.

5. **Special Provisions for Municipal Facilities (POTWs Only)**

a. **Pretreatment Requirements.** The average dry weather design flow for the Facility is 0.30 mgd and the Facility does not receive discharges from Significant Industrial Users. Under these conditions, the Discharger is not required to develop a pretreatment program pursuant to USEPA regulations set forth in 40 CFR Part 403.

b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 CFR Part 503.

**i.** Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, CCR, division 2, subdivision 1, section 20005, et seq. Removal for further treatment, storage, disposal, or reuse at sites (e.g., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy these specifications.

**ii.** Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant performance.

**iii.** The treatment of sludge generated at the Facility shall be confined to the Facility property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations in section V.B. of this Order. In addition, the storage of residual sludge, solid waste, and biosolids on Facility property shall be temporary and controlled, and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations included in section V.B. of this Order.

**iv.** The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. If the State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 CFR Part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR Part 503 whether or not they have been incorporated into this Order.

**v.** The Discharger shall comply with Section IX.A. Biosolids of the Monitoring and Reporting Program, Attachment E.

**vi.** Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least **90 days** in advance of the change.

**vii.** Within 180 days of the permit effective date, the Discharger shall review and update its existing biosolids use or disposal plan, and submit it to the Central Valley Water Board. The updated plan shall describe at a minimum:

a) Sources and amounts of biosolids generated annually.

b) Location(s) of onsite storage and description of the containment area.

c) Plans for ultimate disposal. For landfill disposal, include the Central Valley Water Board's waste discharge requirement numbers that regulate the particular landfill; the present classification of the landfill; and the name and location of the landfill.

c. **Biosolids Storage and Transportation Specifications** Biosolids shall be considered to be "stored" if they are placed on the ground or in non-mobile containers (i.e. not in a truck or trailer) at an intermediate storage location away from the generator/processing for more than 48 hours. Biosolids shall be considered to be "staged" if placed on the ground for brief periods of time solely to facilitate transfer of the biosolids between transportation and application vehicles.

**i.** Biosolids shall not be stored directly on the ground at any one location for more than seven (7) consecutive days.

**ii.** Facilities for the storage of Class B biosolids shall be located, designed and maintained to restrict public access to biosolids.

**iii.** Biosolids storage facilities shall be designed and maintained to prevent washout or inundation from a storm or flood with a return frequency of 100 years.

**iv.** Biosolids storage facilities, which contain biosolids, shall be designed and maintained to contain all storm water falling on the biosolids storage area during a rainfall year with a return frequency of 100 years.

**v.** Biosolids placed on site for more than 24 hours shall be covered.

**vi.** Biosolids storage facilities shall be designed, maintained and operated to minimize the generation of leachate and the effects of erosion.

**vii.** If biosolids are to be stored at the site, a plan describing the storage program and means of complying with the specifications contained in sections VI.C.5.b and c of this Order shall be submitted for the Central Valley Water Board's staff approval. The storage plan shall also include an adverse weather plan.

**viii.** The Discharger shall operate the biosolids storage facilities in accordance with the approved biosolids storage plan.

**ix.** The Discharger shall immediately remove and relocate any biosolids stored on site in violation of this General Order.

**x.** All biosolids shall be transported in covered vehicles capable of containing the designated load.

**xi.** All biosolids having a water content that is capable of leaching liquids shall be transported in leak proof vehicles.

**xii.** Each biosolids transport driver shall be trained as to the nature of its load and the proper response to accidents or spill events and shall carry a copy of an approved spill response plan.

**xiii.** The Discharger shall avoid the use of haul routes near residential land uses to the extent possible. If the use of haul routes near residential land uses cannot be avoided, the Discharger shall limit project-related truck traffic to daylight hours.

d. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Resources Control Board Order No. 2006-0003-DWQ, Statewide General Waste Discharge Requirements (WDRs) for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003-DWQ and any future revisions thereto. Order No. 2006-0003-DWQ requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system**.**

e. This Order, and the Monitoring and Reporting Program which is a part of this Order, requires that certain parameters be monitored on a continuous basis. The wastewater treatment plant is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger shall establish an electronic system for operator notification for continuous recording device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed within 6 months of adoption of this permit. For systems installed following permit adoption, the notification system shall be installed simultaneously.

6. **Other Special Provisions**

a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the Federal Standard Provisions (Attachment D, Section V.B.) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

### 7. Compliance Schedules

**a. Compliance Schedule for Facility Wet Weather Capacity Improvements.** This Order requires the Discharger to implement wet weather capacity improvements at the Facility. The improvements must be completed **within 5 years of the effective date of this Order**. The Discharger shall comply with the following time schedule to ensure compliance with the necessary Facility improvements:

| Task | Date Due |
|---|---|
| i. Submit Method of Compliance Workplan/Schedule | Within 6 months after effective date of this Order |
| ii. Report of compliance or noncompliance with interim milestones | 14 days following each interim date |
| iii. Progress Reports[1] | 1 June, annually, after approval of work plan until final compliance |
| iv. Full Compliance | Within five (5) years after effective date of this Order |

[1] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

## VII. COMPLIANCE DETERMINATION

Compliance with the receiving water limitations contained in section IV of this Order will be determined as specified below:

**A. $BOD_5$ and TSS Effluent Limitations (Section IV.A.1.a and Table 6).** Compliance with the final effluent limitations for $BOD_5$ and TSS required in Limitations and Discharge Requirements section IV.A.1.a shall be ascertained by 24-hour composite samples. Compliance with effluent limitations required in Limitations and Discharge Requirements section IV.A.1.a for percent removal shall be calculated using the arithmetic mean of $BOD_5$ and TSS in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

**B. Average Dry Weather Flow Effluent Limitations (IV.A.1.a and Table 6.).** The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

C. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.e and Section IV.A.1.f).** For a 7-day median: For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance.

D. **Total Residual Chlorine Effluent Limitations (Section IV.A.1.d).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

   Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

E. **Annual Average Effluent Limitations**. Annual average effluent constituent concentrations for determining compliance with the annual average effluent limitations shall be performed as the average value of each averaging period required in the Monitoring and Reporting Program. For example, if quarterly effluent monitoring is required, the annual average is the average of the four quarterly averages. Each quarterly average is the average of the verified results during that calendar quarter.

F. **Volatile Organic Compounds (VOCs).** VOCs include all constituents listed in USEPA Method 502.2 (Attachment I). When calculating the average monthly of each VOC, non-detect results shall be counted as one-half the detection level.

**G. Mass Effluent Limitations.** The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a are based on the permitted average dry weather flow and calculated as follows:

Mass (lbs/day) = Flow (MGD) x Concentration (mg/L) x 8.34 (conversion factor)

If the effluent flow exceeds the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations contained in Final Effluent Limitations IV.A.1.a shall not apply. If the effluent flow is below the permitted average dry weather flow during wet-weather seasons, the effluent mass limitations do apply.

**H. Priority Pollutant Effluent Limitations.** Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in Attachment A and Attachment E of this Order. For purposes of reporting and administrative enforcement by the Central Valley Water Board and the State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

## ATTACHMENT A – DEFINITIONS

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

Arithmetic mean = $\mu = \Sigma x / n$ where: $\Sigma x$ is the sum of the measured ambient water concentrations, and n is the number of samples.

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

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

**Averaging Period**
A minimum of four samples per day from each upstream and downstream station for a period of up to 4 days during discharge. Samples collected for averaging must be spaced at least 3 hours apart.

**Best Practicable Treatment or Control (BPTC)**
BPTC is a requirement of State Water Resources Control Board Resolution 68-16 – "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the "Antidegradation Policy"). BPTC is the treatment or control of a discharge necessary to assure that, *"(a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."* Pollution is defined in CWC Section 13050(I). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

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

**Carcinogenic**
Pollutants are substances that are known to cause cancer in living organisms.

**Coefficient of Variation (CV)**
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

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

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

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

**Detected, but Not Quantified (DNQ)**
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

**Dilution Credit**
Dilution Credit is the 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.

**Effluent Concentration Allowance (ECA)**
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load 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**
Enclosed Bays means 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**
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

**Estuaries**
Estuaries means 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 shall be 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 include~~d~~, but are not limited to, the Sacramento-San Joaquin Delta, as defined in CWC 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.

**Inland Surface Waters**
All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

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

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

**Maximum Daily Effluent Limitation (MDEL)**
The 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 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.

**Median**
The middle measurement in a set of data. The median of a set of data 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 the $n/2$ and $n/2+1$).

**Method Detection Limit (MDL)**
MDEL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 CFR Part 136, Attachment B, revised as of July 3, 1999.

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

**Mixing Zone**
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

**Not Detected (ND)**
Sample results less than the laboratory's MDL.

**Ocean Waters**
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

**Persistent Pollutants**
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

**Pollutant Minimization Program (PMP)**
PMP means 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 the PMP shall be to reduce all potential sources of a priority pollutant(s) 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. The Central valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to CWC section 13263.3(d), shall be considered to fulfill the PMP requirements.

**Pollution Prevention**
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is 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 or Regional Water Board.

**Reporting Level (RL)**
RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. 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 Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. 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.

**Satellite Collection System**
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

**Sewage Sludge** is the solid, semisolid, or liquid residue generated during the treatment of domestic sewage in a municipal wastewater treatment facility. Sewage sludge includes solids removed or used during primary, secondary, or advanced wastewater treatment processes. Sewage sludge does not include grit or screening material generated during preliminary treatment of domestic sewage at a municipal wastewater treatment facility.

**Source of Drinking Water**
Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

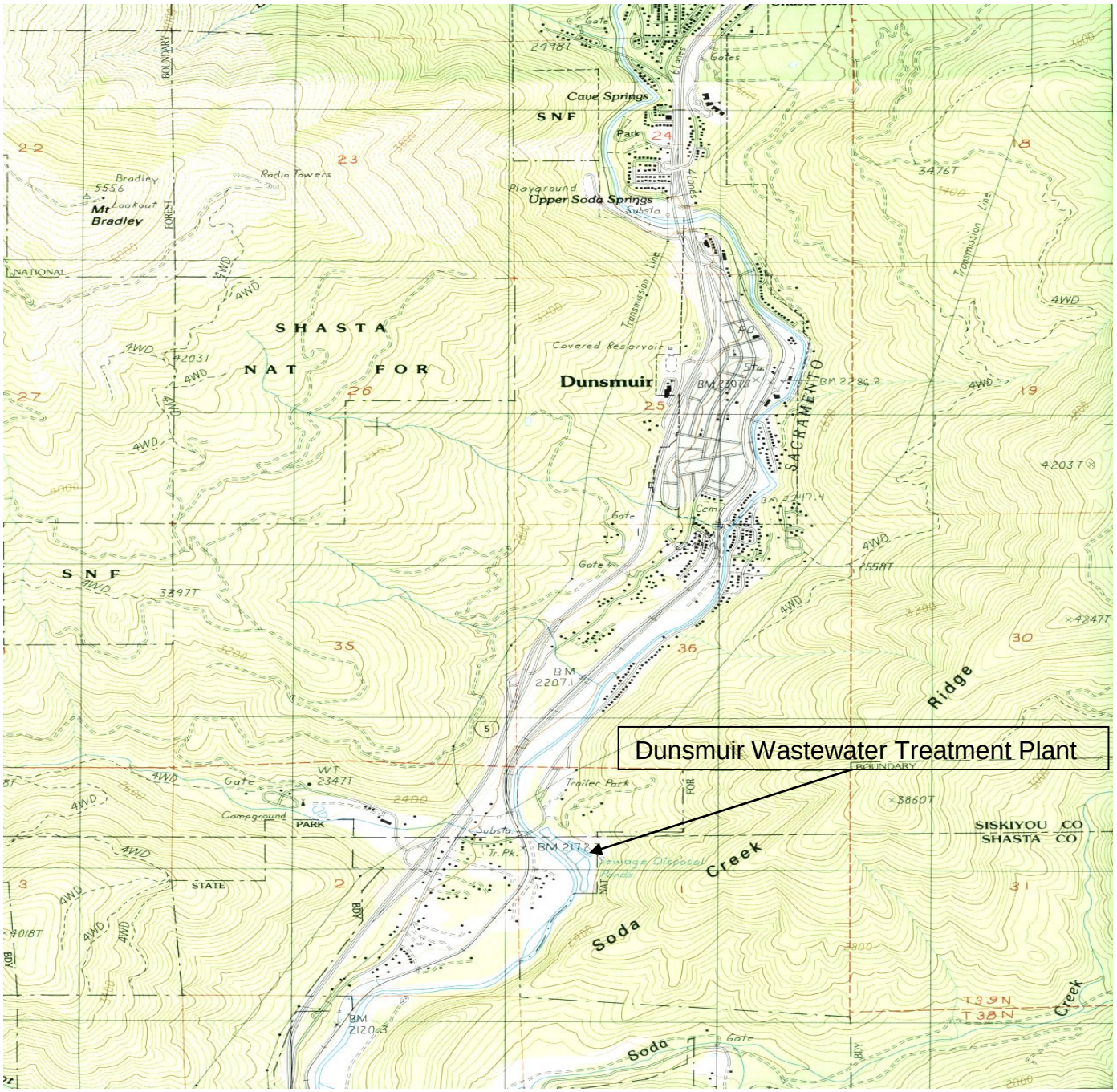
**Standard Deviation ($\sigma$)**
Standard Deviation is a measure of variability that is calculated as follows:

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

where:
$x$ is the observed value;
$\mu$ is the arithmetic mean of the observed values; and
$n$ is the number of samples.

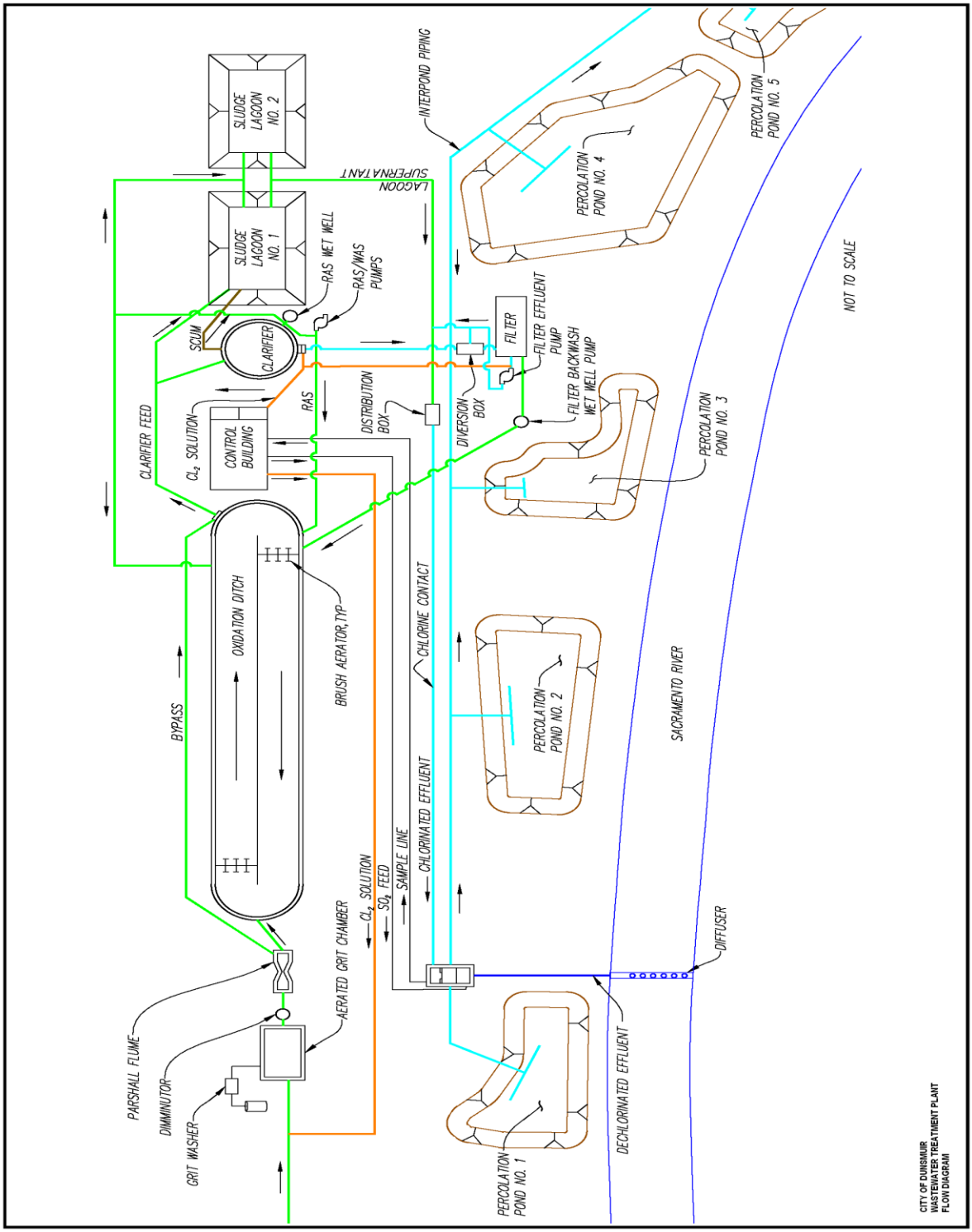
**Toxicity Reduction Evaluation (TRE)**
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first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

## ATTACHMENT B – TOPOGRAPHIC MAPS




| | | |
|---|---|---|
| DUNSMUIR QUADRANGLE<br>SECTION 1, T39N, R4W, MDB&M,<br>U.S.G.S TOPOGRAPHIC MAP<br>7.5 MINUTE QUADRANGLE<br>*Photorevised 1986*<br>*Not to scale* | CITY OF DUNSMUIR WATEWATER TREATMENT PLANT<br><br>SHASTA AND SISKIYOU COUNTIES | N<br>W E<br>S |

## ATTACHMENT C – FLOW SCHEMATICS




**City of Dunsmuir, Wastewater Treatment Plant, Flow Diagram.**

# ATTACHMENT D –STANDARD PROVISIONS

## I. STANDARD PROVISIONS – PERMIT COMPLIANCE

### A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (CWC) and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification, or denial of a permit renewal application. (40 CFR 122.41(a).)

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

### B. Need to Halt or Reduce Activity Not a Defense

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

### C. Duty to Mitigate

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

### D. Proper Operation and Maintenance

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

### E. Property Rights

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

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 CFR 122.5(c))

## F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR 122.41(i); CWC section 13383):

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 (40 CFR 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR 122.41(i)(4))

## G. Bypass

1. Definitions

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

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

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

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

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

    b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR 122.41(m)(4)(i)(B)); and

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

4. 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 I.G.3 above. (40 CFR 122.41(m)(4)(ii).)

5. Notice

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

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

## H. Upset

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

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was

caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR 122.41(n)(2))

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

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

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

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

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

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

## II. STANDARD PROVISIONS – PERMIT ACTION

### A. General

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

### B. Duty to Reapply

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

### C. 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 the CWC. (40 CFR 122.41(l)(3); 122.61.)

## III. STANDARD PROVISIONS – MONITORING

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

**B.** Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4); and 122.44(i)(1)(iv))

## IV. STANDARD PROVISIONS – RECORDS

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

**B. Records of monitoring information shall include:**

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

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

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

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

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

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

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

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

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

## V. STANDARD PROVISIONS – REPORTING

### A. Duty to Provide Information

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

### B. Signatory and Certification Requirements

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

2. 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: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR 122.22(a)(3)).

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

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

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

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

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the 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 CFR 122.22(c).)

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

   *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."* (40 CFR § 122.22(d))

## C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR 122.22(l)(4))

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 for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i))

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 122.41(l)(4)(ii))

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

## D. Compliance Schedules

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

## E. Twenty-Four Hour Reporting

1. The Discharger shall notify the Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i).)

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

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

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

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

## F. 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 CFR 122.41(l)(1)):

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

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

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during

the permit application process or not reported pursuant to an approved land application plan. (40 CFR 122.41(l)(1)(iii))

### G. Anticipated Noncompliance

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

### H. Other Noncompliance

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

### I. Other Information

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

## VI. STANDARD PROVISIONS – ENFORCEMENT

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

## VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

### A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 CFR 122.42(b)):

**1.** Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR 122.42(b)(1)); and

**2.** 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 the Order. (40 CFR 122.42(b)(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 CFR 122.42(b)(3))

**ATTACHMENT E – MONITORING AND REPORTING PROGRAM**

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# ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

Title 40 of the Code of Federal Regulations (CFR) section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (CFR) Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Central Valley Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement the federal and state regulations.

## I. GENERAL MONITORING PROVISIONS

**A.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of this Regional Water Board.

**B.** Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

**C.** Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analysis must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.

**D.** Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

**E.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

**F.** Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of CWC section 13176, and must include quality assurance/quality control data with their reports.

**G.** The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

**H.** The Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

**I.** The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flow.

## II. MONITORING LOCATIONS

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

**Table E-1. Monitoring Station Locations**

| Discharge Point Name | Monitoring Location Name | Monitoring Location Description |
|---|---|---|
| | INF-001 | A location where a representative sample of the influent into the Facility can be collected. |
| D-001 | EFF-001 | The outfall of the sulfur dioxide contact chamber between Pond 1 and Pond 2 to the Sacramento River. |
| D-002 | LND-00A | The end of the chlorine contact chamber at the V-Notch Weir. |
| PND-001 | LND-001 | A location where a representative sample of the wastewater in percolation Pond 1 can be collected. |
| PND-002 | LND-002 | A location where a representative sample of the wastewater in percolation Pond 2 can be collected. |
| PND-003 | LND-003 | A location where a representative sample of the wastewater in percolation Pond 3 can be collected. |
| PND-004 | LND-004 | A location where a representative sample of the wastewater in percolation Pond 4 can be collected. |
| PND-005 | LND-005 | A location where a representative sample of the wastewater in percolation Pond 5 can be collected. |
| | RSW-001 | Sacramento River, approximately 100’ below the confluence of Little Castle Creek (west bank) |
| | RSW-002 | Sacramento River, approximately 300’ below D-001, adjacent to Pond 4. |
| | RGW-001 through RGW-010 | Groundwater Monitoring Wells 1 through 10. |
| | BIO-001 | A location where a representative sample of the Dunsmuir Wastewater Treatment Plant biosolids can be collected. |
| | SPL-001 | Municipal water supply |
| | SD-001 | Subsurface Drain - Wet Well, adjacent to east side of Pond 1. |

## III. INFLUENT MONITORING REQUIREMENTS

### A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the facility at Monitoring Location INF-001 as follows:

**Table E-2. Influent Monitoring**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Flow | MGD | Meter | Continuous | -- |
| ***Conventional Pollutants*** | | | | |
| Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C) | mg/L | 24-hr Composite [1] | 1/Week | [2] |
| | lbs/day | Calculate | 1/Week | -- |
| pH | Standard Units | Grab | Daily | [2] |
| Total Suspended Solids | mg/L | 24-hr Composite [1] | 1/Week | [2] |
| | lbs/day | Calculate | 1/Week | -- |

[1] 24-hour flow proportional composite.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

## IV. EFFLUENT MONITORING REQUIREMENTS

### A. Monitoring Location EFF-001

1. The Discharger shall monitor the outfall from the sulfur dioxide contact chamber at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

**Table E-3. Effluent Monitoring**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Flow | MGD | Meter | Continuous | -- |
| ***Conventional Pollutants*** | | | | |
| Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C) | mg/L | 24-hr Composite [2] | 1/Week | [1] |
| | lbs/day | Calculate | 1/Week | -- |
| pH | Standard Units | Grab | 1/Day [4] | [1] |
| Total Suspended Solids | mg/L | 24-hr Composite [2] | 1/Week | [1] |
| | lbs/day | Calculate | 1/Week | -- |
| ***Priority Pollutants*** | | | | |
| Arsenic | ug/L | Grab | 1/Quarter for 3 Yrs, Annual thereafter | [1, 5] |
| Carbon Tetrachloride | ug/L | Grab | 1/Quarter for 3 Yrs, Annual thereafter | [1, 5] |
| Copper, Total Recoverable | ug/L | Grab | 1/Month | [1, 5] |
| Dichlorobromomethane | ug/L | Grab | 1/Month | [1, 5] |
| Heptachlor | ug/L | Grab | 1/Quarter for 3 Yrs, Annual thereafter | [1, 5] |
| Zinc, Total Recoverable | ug/L | Grab | 1/Month | [1, 5] |
| Priority Pollutants (Characterization Study) | ug/L | Grab [2, 6] | Twice in Year 3 and twice in Year 4 [7] | [1, 5] |
| ***Non-Conventional Pollutants*** | | | | |
| Alkalinity | mg/L | Grab | 1/Month | [1] |
| Ammonia Nitrogen, Total (as N) | mg/L | Grab | 1/Month [3, 9] | [1] |
| Chloride | mg/L | Grab | 1/Quarter for 3 Yrs, Annual thereafter | [1] |
| Chlorine, Total Residual | mg/L | Meter | Continuous | [1, 8] |
| Electrical Conductivity @ 25°C | umhos/cm | Grab | 1/Month | [1] |
| Hardness (as $CaCO_3$) | mg/L | Grab | 1/Month [10] | [1] |
| Nitrate Nitrogen, Total (as N) | mg/L | Grab | 1/Month [111] | [1] |
| Nitrite Nitrogen, Total (as N) | mg/L | Grab | 1/Month [11] | [1] |
| Settleable Solids | mL/L | Grab | 1/Day | [1] |
| Standard Minerals [12] | mg/L | Grab | 1/Year | [1] |
| Sulfate | mg/L | Grab | 1/Quarter for 3 Yrs, Annual thereafter | [1] |
| Temperature | $^{o}C$ | Grab | 2/Month [4] | [1] |
| Total Coliform Organisms | MPN/100 mL | Grab | 1/Week [13] | [1] |
| Total Dissolved Solids | mg/L | Grab | 1/Quarter for 3 Yrs, Annual thereafter | [1] |
| Turbidity | NTU | Grab | 2/Month | |
| Whole Effluent Toxicity | -- | -- | See Section V below | -- |

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[2] 24-hour flow proportional composite.

[3] pH and temperature shall be recorded at the time of ammonia sample collection.

[4] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

[5] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. Sampling and analysis of Bis (2-ethylhexyl) phthalate shall be conducted using ultra-clean techniques that eliminate the possibility of sample contamination.

[6] Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water

[7] Priority pollutants (as listed in Attachment I)shall be sampled twice during the third and fourth year following the date of permit adoption and shall be conducted concurrently with upstream receiving water monitoring for hardness (as $CaCO_3$) and pH.

[8] Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

[9] Concurrent with whole effluent toxicity monitoring.

[10] Hardness samples shall be collected concurrently with metals samples.

[11] Monitoring for nitrite and nitrate shall be conducted concurrently.

[12] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

[13] Samples for Total coliform organisms may be collected at any point following disinfection.

2. If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed in Table E-3 above, except for priority pollutants, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

## V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

### A. Acute Toxicity Testing.

The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – The Discharger shall perform semi-annual acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – For static non-renewal and static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location EFF-001.

3. *Test Species* – Test species shall be rainbow trout (*Oncorhychus mykiss*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.

5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

**B. Chronic Toxicity Testing.**

The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency* – The Discharger shall perform three-species chronic toxicity testing annually, between 16 September and 15 October.

2. *Sample Types* – Effluent samples shall be 24-hour composite samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at effluent monitoring location EFF-001. The receiving water control shall be a grab sample obtained from the RSW-001 sampling location, as identified in the Monitoring and Reporting .

3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.

4. *Test Species* – Chronic toxicity testing measures sublethal (e.g. reduced growth, reproduction) and/or lethal effects to test *organisms* exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);

   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and

   - The green alga, *Selenastrum capricornutum* (growth test).

5. *Methods* – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition,* EPA/821-R-02-013, October 2002.

6. *Reference Toxicant* – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – For *regular* and accelerated chronic toxicity testing, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and two controls. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. The receiving water control shall be used as the diluent (unless the receiving water is toxic).

**Table E-4. Chronic Toxicity Testing Dilution Series**

| Sample | Dilutions (%) | | | | | Controls | |
|---|---|---|---|---|---|---|---|
| | 100 | 75 | 50 | 25 | 12.5 | Receiving Water | Laboratory Water |
| % Effluent | 100 | 75 | 50 | 25 | 12.5 | 0 | 0 |
| % Receiving Water | 0 | 25 | 50 | 75 | 87.5 | 100 | 0 |
| % Laboratory Water | 0 | 0 | 0 | 0 | 0 | 0 | 100 |

8. *Test Failure* – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

   a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in Special Provisions at section VI.2.a.iii. of this Order)

**C. Wet Testing Notification Requirements.**

The Discharger shall notify the Regional Water Board within 24-hrs after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

**D. WET Testing Reporting Requirements**

All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, as appropriate.

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

   d. The dates of sample collection and initiation of each toxicity test; and

   e. The results compared to the numeric toxicity monitoring trigger.

   Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Work Plan.

4. **Quality Assurance (QA). The Discharger must provide the following information for QA purposes:**

   a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

   b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

   c. Any information on deviations or problems encountered and how they were dealt with.

# VI. LAND DISCHARGE MONITORING REQUIREMENTS

## A. Monitoring Location LND-00A

1. The Discharger shall monitor the discharge out of the chlorine contact chamber to the percolation ponds at LND-00A as follows:

**Table E-5. Land Discharge Monitoring – LND-00A**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Flow | mgd | Meter | Continuous | [1] |
| ***Conventional Pollutants*** | | | | |
| Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C) | mg/L, lbs/day | 24-hr Composite [2] | 1/Week | [1] |
| pH | Standard Units | Grab | Daily [3, 4] | [1] |
| Total Suspended Solids | mg/L, lbs/day | 24-hr Composite [2] | 1/Week | [1] |
| ***Non-Conventional Pollutants*** | | | | |
| Chloride | mg/L | Grab | 1/Quarter 3 Yrs, Annual thereafter | [1] |
| Electrical Conductivity @ 25°C | umhos/cm | Grab | 1/Month | [1] |
| Hardness (as $CaCO_3$) | mg/L | Grab | 1/Month | [1] |
| Iron | mg/L | Grab | 1/Year | [1] |
| Manganese | mg/L | Grab | 1/Year | [1] |
| Nitrate Nitrogen, Total (as N) | mg/L | Grab | 1/Month | [1] |
| Settleable Solids | mL/L | Grab | 1/Day | |
| Sulfate | mg/L | Grab | 1/Quarter 3 Yrs, Annual thereafter | [1] |
| Total Coliform Organisms | MPN/100 mL | Grab | 1/Week | [1] |
| Total Dissolved Solids | mg/L | Grab | 1/Quarter 3 Yrs, Annual thereafter | [1] |

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[2] 24-hour flow proportional composite.

[3] pH and temperature shall be recorded at the time of ammonia sample collection.

[4] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

### B. Monitoring Location LND-001, LND-002, LND-003, LND-004, and LND-005

1. The Discharger shall monitor the percolation ponds at LND-001, LND-002, LND-003, LND-004, and LND-005 as follows:

**Table E-6. Land Discharge Monitoring – LND-001 through LND-005.**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Freeboard | feet | Measure | 1/Day | -- |
| Dissolved Oxygen | mg/L | Grab | 1/Week | -- |
| Levee Condition | -- | Observation | 1/Week | -- |
| Color | -- | Observation | 1/Week | -- |
| Odors | -- | Observation | 1/Week | -- |

## VII. RECLAMATION MONITORING REQUIREMENTS - NOT APPLICABLE

## VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

### A. Surface Water Monitoring Location RSW-001 and RSW-002

1. The Discharger shall monitor the Sacramento River at monitoring locations RSW-001 and RSW-002, when discharge occurs from Discharge Point D-001, as follows:

**Table E-7. Receiving Water Monitoring Requirements - RSW-001**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Flow | MGD | Gage | 1/Day | [1] |
| ***Conventional Pollutants*** | | | | |
| pH | Standard Units | Grab | 1/Week [3] | [1] |
| ***Priority Pollutants*** | | | | |
| Arsenic | ug/L | Grab | 1/Year | [1, 4] |
| Carbon Tetrachloride | ug/L | Grab | 1/Year | [1, 4] |
| Copper, Total Recoverable | ug/L | Grab | 2/Year | [1, 4] |
| Dichlorobromomethane | ug/L | Grab | 2/Year | [1, 4] |
| Heptachlor | ug/L | Grab | 1/Year | [1, 4] |
| Zinc, Total Recoverable | ug/L | Grab | 2/Year | [1, 4] |
| Priority Pollutants (Characterization Study) | ug/L | Grab [5] | Twice in Year 3 and twice in Year 4 [6] | [1, 4] |
| ***Non-Conventional Pollutants*** | | | | |
| Ammonia Nitrogen, Total (as N) | mg/L | Grab | 1/Year [2, 7] | [1] |
| Dissolved Oxygen | mg/L | Grab | 1/Week | [1] |
| Electrical Conductivity @ 25°C | µmhos/cm | Grab | 1/Week[12] | [1] |
| Hardness (as $CaCO_3$) | mg/L | Grab | 1/Month [8] | [1] |
| Nitrate Nitrogen, Total (as N) | mg/L | Grab | 1/Year [9] | [1] |
| Nitrite Nitrogen, Total (as N) | mg/L | Grab | 1/Year [9] | [1] |
| Standard Minerals [10] | mg/L | Grab | 1/Year | [1] |
| Sulfate | mg/L | Grab | 1/Year | |
| Temperature | °C | Grab | 1/Week [3] | [1] |
| Total Coliform Organisms | MPN/100 mL | Grab | 2/Month [11] | [1] |
| Total Dissolved Solids | mg/L | Grab | 1/Year | [1] |
| Turbidity | NTU | Grab | 2/Month | [1] |

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[2] pH and temperature shall be recorded at the time of ammonia sample collection.

[3] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

[4] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP. Sampling and analysis of Bis (2-ethylhexyl) phthalate shall be conducted using ultra-clean techniques that eliminate the possibility of sample contamination.

[5] Volatile constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water

[6] Priority pollutants (as listed in Attachment I)shall be sampled twice during the third and fourth year following the date of permit adoption and shall be conducted concurrently with upstream receiving water monitoring for hardness (as $CaCO_3$) and pH.

[7] Concurrent with whole effluent toxicity monitoring.

[8] Hardness samples shall be collected concurrently with metals samples.

[9] Monitoring for nitrite and nitrate shall be conducted concurrently.

[10] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

[11] Samples for Total coliform organisms may be collected at any point following disinfection.

[12] Electrical conductivity monitoring shall be conducted year-round.

## Table E-8. Receiving Water Monitoring Requirements - RSW-002

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| ***Conventional Pollutants*** | | | | |
| pH | Standard Units | Grab | 1/Week [2] | [1] |
| ***Non-Conventional Pollutants*** | | | | |
| Dissolved Oxygen | mg/L | Grab | 1/Week | [1] |
| Electrical Conductivity @ 25°C | umhos/cm | Grab | 1/Week[3] | [1] |
| Hardness (as $CaCO_3$) | mg/L | Grab | 1/Month | [1] |
| Temperature | °C | Grab | 1/Week [2] | [1] |
| Total Coliform Organisms | MPN/100 mL | Grab | 2/Month | [1] |
| Turbidity | NTU | Grab | 2/Month | [1] |

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[2] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

[3] Electrical Conductivity shall be monitored year-round.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions through the reach bounded by RSW-001 and RSW-002. Attention shall be given to the presence or absence of:

   a. Floating or suspended matter;
   b. Discoloration;
   c. Bottom deposits;
   d. Aquatic life;
   e. Visible films, sheens or coatings;
   f. Fungi, slimes, or objectionable growths; and
   g. Potential nuisance conditions.

   Notes on receiving water conditions shall be summarized in the monthly monitoring report.

**B. Groundwater Monitoring Wells**

1. Prior to construction and/or beginning a sampling program of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Well Nos. MW-001 through MW-010) and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

2. Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at RGW-001, RGW-002, RGW-003, RGW-004, RGW-005, RGW-006, RGW-007, RGW-008, RGW-009, RGW-010 and any new groundwater monitoring wells shall include, at a minimum, the monitoring in Table E-9 below. Based on the results of the Groundwater Monitoring Network Analysis, representative upgradient and downgradient monitoring wells will be identified and the number of groundwater monitoring wells subject to the monitoring in Table E-9 may be modified to reflect the findings of the monitoring well network analysis.

**Table E-9. Groundwater Monitoring Requirements**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Depth to Groundwater | ±0.01 feet | Measurement | 1/Quarter | -- |
| Groundwater Elevation [1] | ±0.01 feet | Calculated | 1/Quarter | -- |
| Gradient | feet/feet | Calculated | 1/Quarter | -- |
| Gradient Direction | degrees | Calculated | 1/Quarter | -- |
| Electrical Conductivity @ 25°C | umhos/cm | Grab | 1/Quarter | [2] |
| Total Dissolved Solids | mg/L | Grab | 1/Quarter | [2] |
| pH | standard units | Grab | 1/Quarter | [2] |
| Total Coliform Organisms | MPN/100 mL | Grab | 1/Quarter | [2] |
| Total Nitrogen | mg/L | Grab | 1/Quarter | [2] |
| Nitrate Nitrogen, Total (as N) | mg/L | Grab | 1/Quarter | [2] |
| Ammonia (as $NH_4$) | mg/L | Grab | 1/Quarter | [2] |
| Standard Minerals [3] | ug/L | Grab | 1/Quarter | [2] |
| Metals[4] | ug/L | Grab | 1/Year | [2] |

[1] Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well. The groundwater elevation shall be used to calculate the direction and gradient of groundwater flow, which must be reported.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

[3] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

[4] At a minimum, the following metals shall be included: arsenic, copper, lead, iron, manganese, nickel, and zinc. Analytical methods shall be selected to provide reporting limits below Water Quality Limit for each constituent.

## IX. OTHER MONITORING REQUIREMENTS

### A. Biosolids

#### 1. Monitoring Location BIO-001

a. A composite sample of sludge shall be collected annually, at Monitoring Location BIO-001 in accordance with USEPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for the metals listed in Title 22. In addition to the quantitative results of the chemical analysis, sludge percent solids must be included with the results.

b. Sampling records shall be retained for a minimum of **5 years**. A log shall be maintained of biosolids quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log must be complete enough to serve as a basis for part of the annual report.

## B. Municipal Water Supply

### 1. Monitoring Location SPL-001

The Discharger shall monitor the municipal water supply at SPL-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

**Table E-10. Municipal Water Supply Monitoring Requirements**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method |
|---|---|---|---|---|
| Total Dissolved Solids[1] | mg/L | Grab | 1/year | [3] |
| Electrical Conductivity @ 25°C[1] | umhos/cm | Grab | 1/year | [3] |
| Standard Minerals[2] | mg/L | Grab | 1/year | [3] |
| Copper, Total Recoverable | ug/L | Grab | 1/year | [3] |
| Zinc, Total Recoverable | ug/L | Grab | 1/year | [3] |

[1] If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.

[2] Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

[3] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

## C. Monitoring Locations FD-001 and SD-001

1. Sampling locations shall be established where representative samples can be obtained from the French Drain and Subsurface Drain. The Discharger shall monitor the French Drain at FD-001 and the Subsurface Drain SD-001 as follows:

**Table E-11. French Drain and Subsurface Drain Monitoring Requirements**

| Parameter | Units | Sample Type | Minimum Sampling Frequency | Required Analytical Test Method and (Minimum Level, units), respectively |
|---|---|---|---|---|
| Total Coliform Organisms | MPN/ 100 mL | Grab | 1/Month | [1] |
| Fecal Coliform Organisms | MPN/ 100 mL | Grab | 1/Month | [1] |

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

# X. REPORTING REQUIREMENTS

## A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Upon written request of the Regional Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Regional Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to know Act" of 1986

## B. Self-Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State Water Board or the Central Valley Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal. Upon notification directing the Discharger to submit electronic SMRs (eSMRs) and discontinue submitting hard copy SMRs, the Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs for the effective duration of this Order. This includes provision of training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs.

2. The Discharger shall report in the SMR the results for all monitoring specified in this Monitoring and Reporting Program under sections III through IX. The Discharger shall submit monthly SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required

by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

**Table E-12. Monitoring Periods and Reporting Schedule**

| Sampling Frequency | Monitoring Period Begins On… | Monitoring Period | SMR Due Date |
|---|---|---|---|
| Continuous | First day of the calendar month following the permit effective date or on permit effective date if that date is first day of the month | All | Submit with monthly SMR |
| 1/Hour | First day of the calendar month following the permit effective date or on permit effective date if that date is first day of the month | Hourly | Submit with monthly SMR |
| 1/Day | First day of the calendar month following the permit effective date or on permit effective date if that date is first day of the month | (Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling. | Submit with monthly SMR |
| 1/Week | First Sunday of the calendar month following the permit effective date or on permit effective date if on a Sunday | Sunday through Saturday | Submit with monthly SMR |
| 1/Month | First day of calendar month following permit effective date or on permit effective date if that date is first day of the month | First day of calendar month through last day of calendar month | First day of the second month following month of sampling |
| 1/Quarter | Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date | 1 January through 31March<br>1 April through 30June<br>1 July through 30September<br>1 October through 31 December | 1 May<br>1 August<br>1 November<br>1 February |
| 2/Year | Closest of January 1 or July 1 following (or on) permit effective date | 1January through 30 June<br>1 July 1 through 31 December | 1 August<br>1 February |
| 1/Year | January 1 following (or on) permit effective date | 1 January through 31 December | 1 February |
| 1/ 2-Years | January 1 following (or on) permit effective date | 1st two years of permit, and 2nd two years of permit | 1 February |

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable reported Minimum (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

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

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

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

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

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

5. **Compliance Determination.** Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above and in Attachment A of this Order. For purposes of reporting and administrative enforcement by the Central Valley Water Board and the State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

6. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

7. **Reporting Requirements.** In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible.

   a. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations or with other waste discharge requirements (e.g., discharge specifications, receiving water limitations, special provisions, etc.).

   b. Reports must clearly show when discharging to EFF-001 or other permitted discharge locations. Reports must show the date and time that the discharge started and stopped at each location.

   c. The highest daily maximum for the month and monthly and weekly averages shall be determined and recorded as needed to demonstrate compliance.

8. **Calculation Requirements**. The following shall be calculated and reported in the SMRs:

   a. **Annual Average Limitations**. For constituents with effluent limitations specified as "annual average" (aluminum, electrical conductivity, iron, and manganese) the Discharger shall report the annual average in the June SMR. The annual average shall be calculated as the average of the samples gathered for the calendar year.

   b. **Mass Loading Limitations**. For $BOD_5$, TSS, and ammonia, the Discharger shall calculate and report the mass loading (lbs/day) in the SMRs. The mass loading shall be calculated as follows:

      Mass Loading (lbs/day) = Flow (MGD) x Concentration (mg/L) x 8.34

      When calculating daily mass loading, the daily average flow and constituent concentration shall be used. For weekly average mass loading, the weekly average flow and constituent concentration shall be used. For monthly average mass loading, the monthly average flow and constituent concentration shall be used.

   c. **Removal Efficiency ($BOD_5$ and TSS)**. The Discharger shall calculate and report the percent removal of $BOD_5$ and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.

   d. **Total Coliform Organisms Effluent Limitations.** The Discharger shall calculate and report the 7-day median of total coliform organisms for the effluent. The 7-day median of total coliform organisms shall be calculated as specified in Section VII.C. of the Limitations and Discharge Requirements.

e. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95$^{th}$ percentile dissolved oxygen concentration.

f. **Turbidity Receiving Water Limitations.** The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.17.a-e. of the Limitations and Discharge Requirements.

g. **Temperature Receiving Water Limitations.** The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at RSW-001 and RSW-002.

9. The discharger shall submit SMRs in accordance with the following requirements:

a. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS

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

c. SMRs must be submitted to the Central Valley Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Regional Water Quality Control Board
Central Valley Region
364 Knollcrest Drive, Suite 205
Redding, CA 96002

## C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

| | |
|---|---|
| State Water Resources Control Board<br>Division of Water Quality<br>c/o DMR Processing Center<br>Post Office Box 100<br>Sacramento, CA 95812-1000 | State Water Resources Control Board<br>Division of Water Quality<br>c/o DMR Processing Center<br>1001 I Street, 15th Floor<br>Sacramento, CA 95814 |

3. All discharge monitoring results must be reported on official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated or modified cannot be accepted unless they follow the exact same format of EPA Form 3320-1.

## D. Other Reports

1. **Special Study Reports and Progress Reports.** As specified in the compliance time schedules required in the Special Provisions contained in section VI of the Order, special study and progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

**Table E-13. Reporting Requirements for Special Provisions Reports**

| Special Provision | Reporting Requirements |
|---|---|
| Initial Investigative Toxicity Reduction Evaluation (TRE) Work Plan | Within 90 days of effective days of this Order. |
| Constituent Study | Within 3 years and 6 months of the effective date of this Order. |
| Groundwater Monitoring Network Analysis Work Plan | Within 3 months of the effective date of this Order. |
| Groundwater Monitoring Network Analysis | Within 2 years following approval of workplan. |
| Ground Water Quality Characterization | Within 36 Months of the effective date of this Order. |
| Title 27 Exemption Analysis Update | Within 36 Months of the effective date of this Order. |
| Salinity Evaluation and Minimization Plan | Within 9 months of the effective date of this Order. |
| Ammonia Reduction Study | 180 days prior to expiration date of this Order |
| Pollution Prevention Plan for Ammonia (Permit section VI.C.7.a.) | Within 6 months of the effective date of this Order. |
| Compliance Schedule for Final Effluent Limitations for Ammonia – Progress Reports | **1 June**, annually, after approval of workplan until final compliance |
| Compliance Schedule for Wet Weather Capacity Improvements – Work Plan | Within 6 months of the effective date of this Order. |
| Compliance Schedule for Wet Weather Capacity Improvements – Progress Reports | Annual in June, after approval of work plan until final compliance. |

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, groundwater monitoring workplan, PPP, Salinity Evaluation and Minimization Plan, Title 27 Exemption Analysis Update, Ammonia Reduction Study, Constituent Study, Groundwater Water Quality Characterization, BPTC Evaluation Workplan, and Effluent and Receiving Water Characterization Study by the Special Provisions VI.C.2 and VI.C.3 of this Order. The Discharge shall report the progress in satisfaction of compliance schedule dates specified in the Special Provisions at section VI.C.7 of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date and/or in compliance with SMR reporting requirements described in subsection X.B.5 above.

3. Within 60 days of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a

minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the SIP.

4. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs the raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Sanitary sewer overflows are prohibited by this Order. All violations must be reported as required in Standard Provisions. Facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage facilities.

5. **Effluent and Receiving Water Characterization Study.** An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third and fourth year of this permit term, the Discharger shall conduct semi-annual monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.

6. **Annual Operations Report**. By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

   b. The names and telephone numbers of persons to contact regarding the facility for emergency and routine situations.

   c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

   e. The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

# ATTACHMENT F – FACT SHEET

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# ATTACHMENT F – FACT SHEET

As described in the Findings in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

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

## I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

**Table F-1. Facility Information**

| | |
|---|---|
| **WDID** | 5A470101001 |
| **Discharger** | City of Dunsmuir |
| **Name of Facility** | City of Dunsmuir Wastewater Treatment Plant |
| **Facility Address** | 1100 South First Street<br>Dunsmuir, CA 96025<br>Shasta and Siskiyou Counties |
| **Facility Contact, Title and Phone** | Ronald LaRue, Utility Supervisor (530) 235-2325<br>Brenda Bains, City Administrator (530) 235-4822 |
| **Authorized Person to Sign and Submit Reports** | Ron LaRue, Utility Supervisor (530) 235-2325 |
| **Mailing Address** | 5915 Dunsmuir Ave., Dunsmuir, CA 96025 |
| **Billing Address** | 5915 Dunsmuir Ave., Dunsmuir, CA 96025 |
| **Type of Facility** | Publicly Owned Treatment Works (POTW) |
| **Major or Minor Facility** | Minor |
| **Threat to Water Quality** | 1 |
| **Complexity** | B |
| **Pretreatment Program** | Not Applicable |
| **Reclamation Requirements** | Not Applicable |
| **Facility Permitted Flow** | 0.30 million gallons per day (mgd) |
| **Facility Design Flow** | 0.30 mgd (ADWF) |
| **Watershed** | Upper Sacramento Hydrologic Unit (525.00)<br>Mount Shasta Hydrologic Area (525.20)<br>Dunsmuir Hydrologic Subarea (525.21) |
| **Receiving Water** | Sacramento River/Land Discharge to Percolation Ponds |
| **Receiving Water Type** | Inland Surface Water/Groundwater |

**A.** The City of Dunsmuir (hereinafter Discharger) is the owner and operator of the City of Dunsmuir Wastewater Treatment Plant (hereinafter Facility), a wastewater collection, treatment, and disposal system.

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

**B.** The Facility discharges treated wastewater to the Sacramento River, a water of the United States, and is currently regulated by Waste Discharge Requirements (WDRs) Order No. R5-2006-0129 and National Pollutant Discharge Elimination System (NPDES) permit No. CA0078441, which was adopted on 8 December 2006 and expired on 1 December 2011. The terms and conditions of the current Order have been automatically continued and remain in effect until new WDRs and NPDES permit are adopted pursuant to this Order.

**C.** The Discharger filed a Report of Waste Discharge (ROWD) and submitted an application for renewal of its WDRs and NPDES permit on 30 June 2011. Central Valley Water Board staff determined the ROWD was complete on 26 July 2011. During preparation of the tentative permit, staff requested additional information from the Discharger. The Discharger provided the additional information.

## II. FACILITY DESCRIPTION

The Discharger provides sewerage service to a population of approximately 1,984 (1,578 equivalent dwelling units) for the City of Dunsmuir and adjacent areas. The design average dry weather flow capacity of the Facility is 0.30 million gallons per day (mgd). The average dry weather flow is currently 0.22 mgd. The highest peak wet weather flow (PWWF) was recorded at 2.2 mgd during the last permit cycle.

The wastewater treatment plant is located on the south end of the City of Dunsmuir, approximately 0.5 miles east of Interstate 5 and adjacent to the east bank of the Sacramento River.

The Discharger is the owner and operated of the collection system, which is regulated under the State Water Board General Order, Water Quality Order No. 2006-0003, effective November 2006.

Order R5-2006-0129 contained seasonal effluent limitations on the discharge which required secondary treatment during the winter period and advanced-secondary treatment during the fall and spring discharge period. Prior to 2011, the Discharger did not utilize the sand filter during the winter period discharge. However, the Discharger included filtration in the wastewater treatment process for surface water discharge during the winter 2011/2012 season. Surface water discharge during the summer period is prohibited.

During the summer period, all treated wastewater is discharged to the Facility percolation ponds, located adjacent to the river. Effluent discharge to the percolation ponds is subject to secondary-treatment standards. The percolation ponds may be utilized at any time of the year; however, use of the ponds outside of the summer period affects the available effluent storage volume on-site for summertime use.

## B. Description of Wastewater and Biosolids Treatment or Controls

The original Facility design average dry weather flow (ADWF) capacity was 0.41 million gallon per day (mgd). The design ADWF has been updated to be 0.30 mgd, based on a recent design analysis performed by the Discharger. The treatment system is designed to provide advanced-secondary treatment utilizing an aerated grit chamber, a dimminutor, oxidation ditch, secondary clarifier, traveling bridge filter, gas ($Cl_2$) chlorination, gas ($SO_2$) de-chlorination, and sludge drying beds. Effluent is discharged to the river through a multiport diffuser. Discharge to surface water occurs 16 September through 14 June.

Land disposal is to five percolation ponds located at the Facility, adjacent to the river. The Discharger has estimated that the ponds can handle an ADWF of 0.30 mgd. Although the ponds may be utilized at any time during the year, they were never intended to handle year-round flows due to the impact of winter rains, wintertime groundwater intrusion, and wet weather wastewater flows.

Currently, the Facility does not have capacity to adequately treat wet weather flows above 0.5 mgd due to the size limitation of the secondary clarifier. During these high-flow periods, effluent flows that have not received adequate treatment for surface water discharge are diverted to the percolation ponds. The Discharger is in the process of wet weather capacity upgrades that will provide a design peak wet weather flow capacity of 2.2 mgd.

Dried biosolids are hauled to a landfill.

## C. Discharge Points and Receiving Waters

1. The Facility is located in Section 1, T39N, R4W, MDB&M, as shown in Attachment B, a part of this Order.

2. Treated municipal wastewater is discharged from Discharge Point D-001 through a diffuser to the Sacramento River, a water of the United States at a point latitude 41°11’00” N and longitude 122°16’52”W.

3. Treated wastewater may also be discharged from Discharge Point D-002 to five unlined percolation ponds located within the facility.

4. Separate effluent limitations apply to discharges at each of the discharge points describe above.

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

Effluent Limitations and Discharge Specifications contained in the existing WDRs for discharges from Discharge Point D-001 (Monitoring Location EFF-001) and Discharge Point D-002 (Monitoring Location EFF-002) along with representative monitoring data for winter discharges (Table F-2), shoulder periods (Table F-3), and the summer period (Table F-4) from the term of Order No. R5-2006-0129 are as follows:

**Table F-2. Existing Effluent Limitations and Monitoring Data - Winter Period, D-001.**

| Parameter | Units | Effluent Limitations (16 November through 30 April) | | | Monitoring Data (January 2008 through July 2011) | | |
|---|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Biochemical Oxygen Demand [1] | mg/L | 30 | 45 | 60 | 10.4 | 20.0 | 20.0 |
| | lbs/day | 103 | 154 | 205 | 31.8 | 80.0 | 80.0 |
| Total Suspended Solids [1] | mg/L | 30 | 45 | 60 | 11 | 17 | 17 |
| | lbs/day | 103 | 154 | 205 | 24.8 | 79.0 | 79.0 |
| Settleable Solids | ml/L-hr | 0.1 | | 0.2 | <0.1 | <0.1 | <0.1 |
| Copper, total recoverable | ug/L | 3.69 | | 7.40 | 24.7 | 24.7 | 24.7 |
| Dichlorobromomethane | ug/L | 0.56 | | 1.13 | 3.9 | 3.9 | 3.9 |
| Zinc, total recoverable | ug/L | 9.96 | | 20.0 | 57.7 | 57.7 | 57.7 |
| Total Coliform Organisms | MPN/100 mL | | 23 [2] | 240 | 5 | 5 | 5 |
| Total Residual Chlorine | mg/L | | 0.01 [3] | 0.02 [4] | 0.01 | 0.01 | 0.02 |
| pH [5] | pH units | pH shall remain within the range of 6.5 and 8.5 at all times | | | Min = 6.5 | | Max = 7.1 |

1. The average monthly percent removal shall not be less than 85 percent.
2. As a weekly median.
3. As a 4-day average.
4. As a one-hour average.
5. Instantaneous Maximum and Instantaneous Minimum.

**Table F-3. Existing Effluent Limitations and Monitoring Data - Shoulder Period, D-001.**

| Parameter | Units | Effluent Limitations (1 May through 14 June and 16 September through 15 November) | | | Monitoring Data (January 2008 through July 2011) | | |
|---|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Biochemical Oxygen Demand [1] | mg/L | 10 | 15 | 20 | 4.5 | 9.0 | 9.0 |
| | lbs/day | 34 | 51 | 68 | 6.4 | 14.0 | 14.0 |
| Total Suspended Solids [1] | mg/L | 10 | 15 | 20 | 3.6 | 6.3 | 7.0 |
| | lbs/day | 34 | 51 | 68 | 5.4 | 10.0 | 10.0 |
| Settleable Solids | ml/L-hr | 0.1 | | 0.2 | <0.1 | <0.1 | <0.1 |
| Copper, total recoverable | ug/L | 3.69 | | 7.40 | 14.0 | 14.0 | 14.0 |
| Dichlorobromomethane | ug/L | 0.56 | | 1.13 | 3.9 DNQ | 3.9 DNQ | 3.9 DNQ |
| Zinc, total recoverable | ug/L | 9.96 | | 20.0 | 48.8 | 48.8 | 48.8 |
| Total Coliform Organisms | MPN/100 mL | | 2.2 [2] | 23 | 2 | 2 | 2 |
| Total Residual Chlorine | mg/L | | 0.01 [3] | 0.02 [4] | 0.01 | 0.02 | 0.02 |
| pH [5] | pH units | pH shall remain within the range of 6.5 and 8.5 at all times | | | Min = 6.5 | | Max = 7.2 |

1. The average monthly percent removal shall not be less than 85 percent.
2. As a weekly median.
3. As a 4-day average.
4. As a one-hour average.
5. Instantaneous Maximum and Instantaneous Minimum.

**Table F-4. Existing Effluent Limitations and Monitoring Data - Summer Period, D-002.**

| Parameter | Units | Effluent Limitations (15 June through 15 September) | | | Monitoring Data (January 2008 through July 2011) | | |
|---|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Highest Average Monthly Discharge | Highest Average Weekly Discharge | Highest Daily Discharge |
| Biochemical Oxygen Demand [1] | mg/L | 30 | 45 | 60 | 3 | 3 | 8 |
| | lbs/day | -- | -- | -- | | | |
| Total Suspended Solids [1] | mg/L | 30 | 45 | 60 | 2.4 | 2.5 | 11 |
| | lbs/day | -- | -- | -- | | | |
| Settleable Solids | ml/L-hr | 0.1 | | 0.2 | <0.1 | <0.1 | <0.1 |
| Total Coliform Organisms | MPN/100 mL | | 23[2] | 240 | | 10 | 13 |

1. The average monthly percent removal shall not be less than 85 percent.
2. As a weekly median.

## D. Compliance Summary

Order R5-2006-0129 contained final new effluent limitations for copper, dichlorobromomethane, and zinc which the Discharger could not meet. Interim limitations for these parameters and associated compliance schedules for compliance with final effluent limitations were established upon adoption of Order R5-2006-0129 and Cease and Desist Order R5-2006-0136 on 8 December 2006.

The interim limitations for copper, dichlorobromomethane, and zinc expired in May 2010. However, the Discharger was unable to meet the final effluent limitations at that time. Subsequently, Cease and Desist Order R5-2010-0062 was adopted in May 2010 which provided new interim limitations for copper, dichlorobromomethane, and zinc and new compliance schedules for each parameter. Cease and Desist Order R5-2010-0062 expired on 1 December 2011. The Discharger conducted a mixing zone study in September 2009 and is requesting mixing zones and dilution credits for the subject parameters.

In September 2010, a Notice of Violation was issued to the Discharger for failing to provide full primary and secondary treatment when influent flows exceeded 0.5 mgd and allowing excessive inflow and infiltration (I&I) into the sanitary sewer collection system and thence affecting the ability of the Facility to adequately treat the wastewater (all effluent discharges during these events were contained in the percolation ponds). The Discharge submitted a Preliminary Engineering Report (PER) in May 2010 to address I&I reduction and wet weather capacity upgrades for the Facility. Included in the PER was a preliminary project schedule to complete collection system and facility upgrades. The proposed project schedule was updated and included in the June 2011 ROWD and is discussed in more detail below in Fact Sheet section II.E. A compliance schedule for wet weather capacity improvements, to address the violations identified above, has been established in Section VI.7.a of this Order.

In August 2011, an ACLC was issued to the Discharger for three chlorine violations that occurred between April 2011 and June 2011. The City has recently installed an automatic selector system to direct the discharge flow to the percolation ponds if residual chlorine is detected in the effluent.

## E. Planned Changes

The Discharger submitted a Preliminary Engineering Report (PER) in May 2010. The PER proposed upgrades to the Facility, which include the collection system. Proposed facility improvements include installation of a new 65-foot secondary clarifier, a second sand filter, a biological selector, a standby generator, and removing flow restrictions into the wastewater treatment plant. In addition, the Discharger has installed a new automatic chlorination/dechlorination system to replace the manually-dosed system and has replaced the facility comminutor with a new open channel dimminutor. These upgrades occurred in 2010 and 2011, respectively.

On 27 April 2012, the Discharger entered into a Project Financial Agreement with the State Water Resources Control Board (SWRCB) Clean Water State Revolving Fund (CWSRF) for a grant for wastewater collection and treatment plant improvements. On 17 May 2012, the Discharger authorized their engineer to begin design on the proposed improvements. The proposed upgrades are as follows:

1. **Implementation of Priority I&I Reduction Projects**
   The Discharger plans to implement I&I reduction projects that will reduce I&I by an estimated 0.38 million gallons per day during the wet season.

2. **Construct 60-foot Secondary Clarifier**
   A new 60-foot diameter secondary clarifier will provide adequate wet weather treatment capacity, improve solids capture, and aid in removal of copper, zinc, and organic contaminants. In addition, the current 35-foot diameter secondary clarifier may be converted to a powder activated carbon (PAC) contact/coagulant flocculation basin to provide better removal of copper, zinc, and disinfection byproduct precursors from wastewater effluent. The new 60-foot secondary clarifier will result in the Facility having adequate capacity to treat wet weather flows above 0.5 mgd.

3. **Sand Filter**
   As part of the Facility upgrades, the Discharger has proposed the addition of a second 1-mgd traveling bridge sand filter. This second sand filter will allow for system redundancy during dry weather flows and full filtration of wet weather flows.

4. **Biological Selector**
   The biological selector will allow for improved settling and opportunity for nitrification/denitrification of the wastewater, thereby reducing effluent ammonia concentrations.

5. **Standby Generator and Aerated Grit tank Scum Baffle**
   The Discharger has plans to install a standby generator as part of the Facility upgrades. Additionally, the aerated grit tank baffle will be removed and replaced at a further distance from the side wall to allow more wastewater to enter the Facility and eliminate backup into the collection system.

In August 2012, the Discharger notified the Central Valley Water Board that the following modifications to the planned upgrades were under consideration for the purposes of increasing ammonia reduction at the facility:

1. An anoxic selector for denitrification and filamentous control.
2. Mixed liquor recycle to the anoxic selector for nitrate removal.
3. Conversion of a 35-ft. diameter secondary clarifier into an aerobic digester to treat side-stream discharge of supernatant high in ammonia from the anaerobic sludge storage basins and filtrate from the sludge drying beds.
4. Construction of a 60 ft. diameter secondary clarifier to improve solids capture rate throughout the year.
5. Addition of a pH-controlled alkalinity dosing station to improve the nitrification process.
6. Addition of powdered activated carbon to remove compounds that are inhibitory to the nitrification process.
7. Nitrifier bioaugmentation of the mixed liquor through supernatant recycle from the aerobic digester, especially during the winter.

## III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section II of this Order. The applicable plans, policies, and regulations relevant to the discharge include the following:

**A. Legal Authority**

This Order is issued pursuant to regulations in the Clean Water Act (CWA) and the California Water Code (Water Code) as specified in the Finding contained at section II.C of this Order.

**B. California Environmental Quality Act (CEQA)**

This Order meets the requirements of CEQA as specified in the Finding contained at section II.E of this Order.

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

1. **Water Quality Control Plans**. This Order implements the following water quality control plans as specified in the Findings contained at section II.H of this Order.

   a. *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins* (Basin Plan).

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** This Order implements the NTR and CTR as specified in the Finding contained at section II.I of this Order.

3. **State Implementation Policy (SIP).** This Order implements the SIP as specified in the Finding contained at section II.J of this Order.

4. **Alaska Rule.** This Order is consistent with the Alaska Rule as specified in the Finding contained at section II.L of this Order.

5. **Anti-Backsliding Requirements.** This Order is consistent with anti-backsliding policies as specified in the Finding contained at section II.O of this Order. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).

6. **Antidegradation Policy.** As specified in the Finding contained at section II.N of this Order and as discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Resources Control Board (State Water Board) Resolution 68-16.

7. **Emergency Planning and Community Right to Know Act.**
   Section 13263.6(a) of the Water Code, requires that "*the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause,*

*have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective*".

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

8. **Storm Water Requirements.**
USEPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations.

9. **Endangered Species Act.**
This Order is consistent with the Endangered Species Act as specified in the Findings contained at section II.P of this Order.

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

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The Sacramento River from Box Canyon Dam to Shasta Lake is not listed as a WQLS and is not listed in the 303(d) list of impaired water bodies.

2. **Total Maximum Daily Loads.** USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. There are no 303(d) listed pollutants for the Sacramento

River from Box Canyon Dam to Shasta Lake. Therefore, no TMDLs are scheduled for development on this water body.

### E. Other Plans, Polices and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq* (hereafter Title 27).

2. The treatment and storage facilities are exempt, pursuant to Title 27 CCR section 20090(a), based on the following:

    a. The waste consists of domestic sewage and treated effluent;

    b. The waste discharge requirements are consistent with water quality objectives; and

    c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

3. The Facility has five percolation ponds for disposal of treated wastewater to land. The percolation ponds are not lined, and have the potential to impact underlying groundwater quality. Order R5-2006-0129 did not prescribe groundwater monitoring requirements and therefore groundwater quality data in the vicinity of the Facility is limited. Groundwater sampling was conducted on an upgradient and downgradient well one time, in May 2011, and additional monitoring data is necessary to adequately evaluate impacts to groundwater, if any, from the Facility percolation ponds. This Order requires the Discharger to develop a monitoring well network to adequately assess potential groundwater impacts from the Facility percolation ponds and perform a study to characterize the groundwater quality. The Discharger is required to submit a Title 27 Exemption Analysis in order to evaluate if Basin Plan objectives are being met and if the discharge to the percolation ponds meets the Title 27 exemption (pursuant to section 20090(b) requirement.

## IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., § 1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts

of particular pollutants. Pursuant to Federal Regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Federal regulations, 40 CFR122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.*"

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the 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 in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00 contains an implementation policy, "Policy for Application of Water Quality Objectives", that specifies that the Regional Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including (1) EPA's published water quality criteria, (2) a proposed state criterion (*i.e*., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e*., the Regional Water Board's "Policy for Application of Water Quality Objectives") (40 CFR 122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and taste and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (Basin Plan at III-8.00.) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents' objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, *"…water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)"* in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses."*

## A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance

4. **Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility's systems).** This prohibition is based on CFR Part 122.41 et seq. that requires the proper design and operation of treatment facilities.

5. **Prohibition III.F (The Discharge of wastewater to the Sacramento River between 15 June and 15 September is prohibited)** Order No. R5-2006-0129 included the discharge prohibition of no discharge during the recreation season (15 June through 15 September).

## B. Technology-based Effluent Limitations

1. **Scope and Authority**
   Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR Part 133.

   Regulations promulgated in 40 CFR 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in 40 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand ($BOD_5$), total suspended solids (TSS), and pH.

2. **Applicable Technology-based Effluent Limitations**

   a. **$BOD_5$ and TSS.** Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for $BOD_5$ and TSS. Advanced-secondary treatment (hereafter referred to as "tertiary") is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for $BOD_5$ and TSS are based on the technical capability of the tertiary process. $BOD_5$ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for $BOD_5$ and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily $BOD_5$ and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average $BOD_5$ and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for $BOD_5$ and TSS than the secondary standards currently prescribed (the previous Order prescribed secondary standards only on the winter discharge period) the 30-day average $BOD_5$ and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of an tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for $BOD_5$ and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of $BOD_5$ and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of $BOD_5$ and TSS over each calendar month.

   b. **Mass-based Effluent Limitations.** Mass-based effluent limitations were calculated by multiplying the concentration limitation by dry weather flow rate limitation of the Facility and the appropriate unit conversion factors. The Facility has a flow rate limitation of 0.30 mgd. Unless otherwise noted, all mass limitations or mass emissions rates (MERs) in this Order were calculated by

multiplying the concentration by the design flow rate and the appropriate unit conversion factor as follows

MER = Concentration Limitation x 0.30 mgd x 8.34 (lb-L/mg-gal)

c. **Flow.** The Facility was designed to provide an advanced secondary level of treatment for up to a design flow of 0.30 mgd. Therefore, this Order contains an average dry weather discharge flow effluent limit of 0.30 mgd.

d. **pH.** The secondary treatment regulations at 40 CFR Part 133 also require that pH be maintained between 6.0 and 9.0 standard units

**Summary of Technology-based Effluent Limitations**
**Discharge Point D-001**

**Table F-5. Summary of Technology-based Effluent Limitations.**

| Parameter | Units | Effluent Limitations | | | | |
|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum |
| BOD 5-day @ 20° C | mg/L | 10 | 15 | 20 | | |
| | lbs/day [1] | 25 | 38 | 50 | | |
| Total Suspended Solids | mg/L | 10 | 15 | 20 | | |
| | lbs/day [1] | 25 | 38 | 50 | | |
| pH | Standard Units | | | | 6.0 | 9.0 |
| Removal | | 85 percent removal for 5-day BOD and TSS | | | | |

1. Based on upon a design treatment capacity of 0.30 mgd.

## C. Water Quality-Based Effluent Limitations (WQBELs)

### 1. Scope and Authority

Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The rationale for these requirements, which consist of advanced secondary or tertiary treatment, is discussed in section IV.C.3 of this Fact Sheet.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric

water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

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

2. **Applicable Beneficial Uses and Water Quality Criteria and Objectives**

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on Page II-1.00 states*: "Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…"* and with respect to disposal of wastewaters states that *"…disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."*

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. **Receiving Water and Beneficial Uses.** Beneficial uses applicable to the Sacramento River (Box Canyon Dam to Shasta Dam) within the Upper Sacramento Hydrologic Unit and its tributaries downstream of the discharge are as follows:

**Table F-6. Basin Plan Beneficial Uses**

| Discharge Point | Receiving Water Name | Beneficial Use(s) |
|---|---|---|
| D-001 | Sacramento River (Box Canyon Dam to Shasta Lake) | Existing:<br>Municipal and domestic water supply (MUN);<br>Agricultural supply, including stock watering (AGR);<br>Water Contact Recreation, including canoeing and rafting (REC-1);<br>Non-contact Water Recreation (REC-2);<br>Cold Freshwater Habitat (COLD);<br>Cold Spawning, Reproduction, and/or early development (SPWN);<br>Wildlife habitat (WILD) |
| D-002 | Underlying Groundwater | Potential:<br>Municipal and domestic water supply (MUN).<br>Industrial process supply (PRO);<br>Industrial service supply (IND); and<br>Agricultural supply (AGR) |

b. **Effluent and Ambient Background Data**. The reasonable potential analysis (RPA), as described in Section IV.C.3 of this Fact Sheet, was based on data from multiple sampling events from January 2008 through July 2011, which includes effluent and ambient background data submitted in Self-monitoring reports and the Report of Waste Discharge (ROWD).

c. **Assimilative Capacity/Mixing Zone**
The Discharger has requested mixing zones and dilution credits for compliance with acute and chronic life water quality criteria, and human carcinogen water quality criteria. The Central Valley Water Board has discretion to accept or deny mixing zones and dilution credits. The CWA directs states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR section 122.44 and section 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is provided by the SIP and the Basin Plan. If no procedure applies in the SIP or the Basin Plan, then the Central Valley Water Board may use the USEPA Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) (TSD).

The TSD defines a mixing zone as follows, "…*a mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.*"[1] The SIP provides guidance on mixing zones and dilution credits in establishing water quality-based effluent limitations. Water quality criteria and objectives must be met throughout a water body except within

[1] TDS Glossary

a mixing zone. All mixing zones shall be as small as practicable and must meet specific conditions.

The allowance of mixing zones by the Central Valley Water Board is discretionary and can be granted parameter-by-parameter and/or type of criteria (e.g., acute or chronic aquatic life criteria). The allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, Policy for Application of Water Quality Objectives, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge*."[2]

Section 1.4.2 of the SIP states, in part, "…*with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers ... The applicable priority pollutant criteria and objectives are to be met throughout a water body except within any mixing zone granted by the Regional Board. The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis. The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board.*"[3]

Both federal and state guidance include similar mixing zone conditions, the SIP conditions are as follows:

*"**A mixing zone shall be as small as practicable**. The following conditions must be met in allowing a mixing zone: **(emphasis added)***

*A mixing zone shall not:*

1. *Compromise the integrity of the entire water body.*
2. *Cause acutely toxic conditions to aquatic life passing through the mixing zone.*

[2] Basin Plan, page IV-16.00
[3] SIP, page 15

3. *Restrict passage of aquatic life.*
4. *Adversely impact biologically sensitive or critical habitats, including but not limited to, habitat of species listed under Federal or State endangered species laws;*
5. *Produce undesirable or nuisance aquatic life;*
6. *Result in floating debris, oil, or scum;*
7. *Produce objectionable color, odor, taste, or turbidity;*
8. *Cause objectionable bottom deposits;*
9. *Cause nuisance;*
10. *Dominate the receiving water body or overlap a mixing zone from a different outfall;*
11. *Be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."*[4]

The mixing zone is thus an administrative construct defined as an area around the outfall that may exceed water quality objectives, but is otherwise protective of the beneficial uses. Dilution is defined as the amount of mixing that has occurred at the edge of this mixing zone under critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required***. Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge." (emphasis added)***

i. **Sacramento River Hydrology.** The upper Sacramento River in the vicinity of the discharge has sufficient flows for dilution (greater than 20:1). The discharge location is 10 miles downstream of Box Canyon Dam and approximately 30 miles upstream of Shasta Lake. Shasta Dam and Box Canyon Dam and the reservoirs created by them are the most prominent water supply/flood control features present in the watershed. The Sacramento River watershed upstream from Shasta Lake has an area of about 6,420 square miles. Approximately 50 percent of the watershed is located above 3,000 feet and, as a result, snowfall and snowpack are major influences on the hydrologic cycle of the area. Lake Siskiyou (created by Box Canyon Dam in 1968 for purposes of hydroelectric power production) is a 430-acre reservoir with source water derived primarily from snowmelt. Recreation is a primary use of Lake Siskiyou and lake levels are maintained at or near full year-round. However, Siskiyou County Flood Control and Water Conservation District (owner and operator of Box Canyon Dam) is mandated to maintain a minimum outflow discharge rate of 40 cfs from Box Canyon Dam. There are stream tributaries adding flow between Box Canyon Dam and the Facility outfall and no in-stream continuous recording flow measurement devices exist between the Dam and the outfall so receiving water flow values at the Facility outfall have been estimated based on flow information provided by Box Canyon Dam flow releases (upstream) and flow

[4] SIP, page 17

information from a U.S. Geological Survey station (Delta Station) located a few miles upstream of Shasta Lake. The estimated 1Q10, 7Q10, and harmonic mean of the receiving water at the Facility outfall are provided in Table F-7, below.

The Facility does not discharge to the Sacramento River during the summer, which Order R5-2006-0129 refers to as the "recreation season" and defines as 15 June through 15 September. Effluent is therefore discharged to the receiving water between 16 September and 14 June, however, Order R5-2006-0129 applied advanced secondary treatment standards to the fall and spring discharge period and secondary treatment standards to the winter period discharge.

**Table F-7. Critical Receiving Water Flow**

| Critical Low Flows (cfs) | Box Canyon Dam (10 miles upstream) | Dunsmuir (cfs) (Facility outfall) | Delta Flows (cfs) (30 miles downstream) |
|---|---|---|---|
| 1Q10[1] | 41 | 80 | 154 |
| 7Q10[2] | 41 | 81 | 157 |
| Harmonic Mean | 256 | 221 | 426 |

1. Lowest daily average flow with a return frequency of 10 years.
2. Lowest 7-day average flow with a return frequency of 10 years.

ii. **Dilution Ratios**. Before establishing a mixing zone and a dilution credit for a discharge, it must first be determined if and how much (if any), receiving water is available to dilute the discharge. In determining the appropriate available receiving water flow, the Regional Board may take into account actual and seasonal variations of the receiving water and the effluent. For example, the Regional Board may prohibit mixing zones during seasonal low flows and allow them during seasonal high flows. However, for year-round mixing zones, the mixing zone and dilution credit shall be determined using the parameters specified in Table F-8, below

**Table F-8. Effluent and Receiving Water Flows for Calculating Dilution Ratios**

| In calculating a dilution ratio for: | Use the critical receiving water flow of: | Use the discharged effluent flow of: |
|---|---|---|
| Acute aquatic life criteria/objective | 1Q10 | Maximum daily flow during period of discharge |
| Chronic aquatic life criteria/objective | 7Q10 | Four-day average of daily maximum flows during period of discharge |
| Human health criteria/objective | Harmonic mean | Long-term average during period of discharge |

For completely-mixed discharges, the amount of receiving water available to dilute the effluent may be determined by calculating the dilution ratio using the flows in Table F-8, above. The Regional Board cannot grant a dilution credit that is greater than the calculated dilution ratio. Site-specific conditions concerning the discharge and the receiving water may also justify a smaller dilution credit for completely-mixed discharges, as well. For incompletely-mixed discharges, dilution credits and mixing zones may be considered by

the Regional Board only after the Discharger has completed an independent mixing zone study and demonstrated to the satisfaction of the Regional Board that a dilution credit is appropriate. Dilution credits for incompletely-mixed discharges, inherently, cannot be greater than the calculated dilution ratios from the flows values in Table F 8, as well.

Table F-9 below provides the calculated dilution ratios for the applicable acute, chronic, and human health objective/criteria.

**Table F-9. Calculated Dilution Ratio**

| Criteria | Receiving Water (cfs) | Effluent (mgd) | Dilution Ratio |
|---|---|---|---|
| Acute | 80 | 1.14 | 45:1 |
| Chronic | 81 | 0.96 | 55:1 |
| Human Health | 221 | 0.275 | 516:1 |

The Regional Board cannot grant a dilution credit that is greater than the calculated dilution ratio. Therefore, based on the data summarized in Table F-9, dilution credits for acute aquatic-life, chronic aquatic-life, and human health criteria cannot be larger than 45:1, 55:1, and 516:1, respectively. These dilution ratios represent allocating the entire assimilative capacity of the localized river segment.

iii. **Mixing Zone Study Results**. The Discharger conducted a Mixing Zone Study (Study) in September 2009. The Study included a tracer-dye study with instream monitoring to characterize the extent of the actual dilution. The Study was conducted during a receiving water flow of approximately 98 cfs and an effluent flow of approximately 0.2 mgd. Field-obtained dilution credits were adjusted linearly and reduced to account for the critical flow regimes as outline in Table F-8, above.

The Study found that the discharge is not a completely-mixed discharge. The furthest downstream transect where measurements were taken was 400 feet. At 400 feet downstream of the discharge, the Study found that the discharge was not completely-mixed. Calculated dilution credits, as presented in the 2009 Mixing Zone Study Addendum No.1 at the 20-, 50-, and 100-foot downstream transects, are provided below in Table F-10. Each transect provides the corresponding dilution credits for each specific criterion (acute-aquatic life, chronic aquatic life, and human health). A comparison to the “ultimate” dilution (as provided in Table F-9) in the river segment is also provided for comparison.

**Table F-10. Mixing Zone Study Results**

| | Mixing Zone Study Results | | Maximum "Available" Dilution Ratio |
|---|---|---|---|
| **Acute** | | | |
| Length (ft.) | Width (ft.) | Dilution Credit | |
| 20' | 8 | 9 | 45:1 |
| 50' | 17 | 13 | |
| 100' | 19 | 17 | |
| **Chronic** | | | |
| Length (ft.) | Width (ft.) | Dilution Credit | |
| 20' | 8 | 11 | 55:1 |
| 50' | 17 | 16 | |
| 100' | 19 | 21 | |
| **Human Health** | | | |
| Length (ft.) | Width (ft.) | Dilution Credit | |
| 20' | 8 | 105 | 516:1 |
| 50' | 17 | 148 | |
| 100' | 19 | 197 | |

The Discharger also performed a biological assessment of the mixing zone and submitted the findings (Biological Assessment of the City of Dunsmuir Wastewater Treatment Plant Mixing Zone, November 2009) to California Department of Fish and Game (DFG) for review and comment. DFG found the biological assessment to be adequate for trustee purposes

iv. **Evaluation of Available Dilution for Acute Aquatic Life Criteria.** USEPA Region VIII, in its "EPA Region VIII Mixing Zones and Dilution Policy", recommends no dilution for acute aquatic life criteria, stating the following, "*In incomplete mix situations, discharge limitations to implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone.*"[5] The Discharger has requested an acute mixing zone for compliance with acute water quality criteria for ammonia, copper, and zinc.

An acute aquatic life criteria mixing zone of 50 feet downstream of the diffuser meets the requirements of the SIP as follows:

(1) *<u>Shall not</u> compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*"[6] The Sacramento River width at the outfall is approximately 45 feet wide at the surface. The mixing zone is 17

[5] USEPA Region VIII Mixing Zones and Dilution Policy, December 1994 (Updated September 1995), (page 18)
[6] TSD, pg. 33

feet wide by 50 feet in length. The acute mixing zone would not compromise the integrity of the entire water body.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. USEPA recommends that float times through a mixing zone less than 15 minutes ensures that there will not be lethality to passing organisms. The mixing zone extends 50 feet downstream from the outfall. Based on a minimum river velocity of 1.0 feet/sec, the minimum float time is 0.8 minutes[7]. Furthermore, this Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic mixing zone do not occur.

(3) *Shall not restrict the passage of aquatic life* – The Discharger conducted a dye test during the mixing zone study which demonstrated there is a zone of passage for aquatic life. The size of the zone of passage varies on either side of the river depending on the river geometry. The width of the river ranges from approximately 45 to 60 feet. Based on the maximum dye concentration contours, the zone of passage at the surface of the river is approximately 15 feet on the west side of the river and 5 feet on the east side of the river.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The acute mixing zone will not cause acutely toxic conditions, allows adequate zones of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge to meet tertiary treatment requirements, which will ensure continued compliance with these mixing zone requirements. With these requirements the acute mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

[7] Mixing Zone & Dilution Study, PACE Engineering dated October 2009.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The acute mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge (the Mt. Shasta WWTP outfall is located approximately 9 miles upstream).

(7) *Shall not be allowed at or near any drinking water intake* – The acute mixing zone is not near a drinking water intake. There are no known downstream drinking water intakes between the discharge and Shasta Lake, 30 miles downstream.

The acute aquatic-life mixing zone of 50 feet (17 feet wide) complies with the SIP and the Basin Plan. However; Section 1.4.2 of the SIP states, in part, "…The allowance of mixing zones is discretionary and shall be determined on a discharge-by discharge basis." The Discharger is requesting an acute aquatic-life dilution credit for ammonia, copper, and zinc. Based on Facility performance, applying the acute-mixing zone and associated dilution credits in the development of WQBELs for copper, zinc, and ammonia would result in larger than needed effluents limits. This issue is discussed in further detail in subsection vii below.

v. **Evaluation of Available Dilution for Chronic Aquatic Life Criteria.** The chronic aquatic life mixing zone is sized to protect the water body as a whole and is generally larger than the acute mixing zone.

A chronic aquatic life criteria mixing zone of 50 feet downstream of the diffuser meets the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*"[8] The Sacramento River width at the outfall is approximately 45 feet wide at the surface and the chronic mixing zone is approximately 17 feet wide by 50 feet in length. Therefore, the chronic mixing zone would not compromise the integrity of the entire water body.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The chronic mixing zone does not allow acute aquatic life criteria to be exceeded and this Order requires acute bioassays to be conducted using 100% effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the chronic mixing zone do not occur.

[8] TSD, pg. 33

(3) *Shall not restrict the passage of aquatic life* – The Discharger conducted a dye test during the mixing zone study which demonstrated there is a zone of passage for aquatic life. The size of the zone of passage varies on either side of the river depending on the river geometry. The surface of the river ranges from approximately 45 to 60 feet across. Based on the maximum dye concentration contours, the zone of passage at the surface of the river is approximately 15 feet on the west side of the river and 5 feet on the east side of the river.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The chronic mixing zone will not cause acutely toxic conditions, allows adequate zones of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires the discharge to meet tertiary treatment standards, which will ensure continued compliance with these mixing zone requirements. With these requirements the chronic mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The chronic mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap with other mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge (the Mt. Shasta WWTP outfall is located approximately 9 miles upstream).

(7) *Shall not be allowed at or near any drinking water intake* – The chronic mixing zone is not near a drinking water intake. There are no known downstream drinking water intakes between discharge and Shasta Lake, 30 miles downstream.

The chronic aquatic-life mixing zone of 50 feet (17 feet wide) complies with the SIP and the Basin Plan. However; Section 1.4.2 of the SIP states, in part, "…The allowance of mixing zones is discretionary and shall be determined on a discharge-by discharge basis." The Discharger is requesting a chronic aquatic-life dilution credit for ammonia and copper. Based on Facility performance, applying the chronic-mixing zone and associated dilution credits in the development of WQBELs for copper and ammonia would result in

larger than needed effluents limits. This issue is discussed in further detail in subsection vii below.

vi. **Evaluation of Available Dilution for Human Health Criteria.** Human health-based criteria are generally based on long-term exposures, such as safe levels for lifetime exposure (e.g., for carcinogens, consumption of 1 liter/day for 70 years) and the mixing zones typically extend beyond the near-field mixing zone.

A human health criteria mixing zone of 20 feet downstream of the diffuser meets the requirements of the SIP as follows:

(1) *Shall not compromise the integrity of the entire waterbody* - The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*"[9] The Sacramento River is a large waterbody and the human health mixing zone is not applicable to aquatic life criteria. The human health mixing zone does not compromise the integrity of the entire waterbody.

(2) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* –The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.

(3) *Shall not restrict the passage of aquatic life* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, the mixing zone will not restrict the passage of aquatic life.

(4) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The human health mixing zone is not applicable to aquatic life criteria. The mixing zone will not impact biologically sensitive or critical habitats.

(5) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* –The allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(6) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water

[9] TSD, pg. 33

body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge (the Mt. Shasta WWTP outfall is located approximately 9 miles upstream).

(7) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone. There are no known downstream drinking water intakes between discharge and Shasta Lake, 30 miles downstream.

The human health criteria mixing zone of 20 feet (8 feet wide) complies with the SIP and the Basin Plan. However; Section 1.4.2 of the SIP states, in part, "…The allowance of mixing zones is discretionary and shall be determined on a discharge-by discharge basis." The Discharger is requesting a human health criteria dilution credit for nitrate and dichlorobromomethane. Based on Facility performance, applying the human health mixing zone and associated dilution credits in the development of WQBELs for nitrate and dichlorobromomethane would result in larger than needed effluents limits. This issue is discussed in further detail in subsection vii below.

vii. **Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutant Evaluation).** When determining to allow dilution credits for a specific pollutant several factors must be considered, such as, available assimilative capacity, facility performance, and best practicable treatment or control. In this subsection a pollutant-by-pollutant evaluation of dilution is discussed. The Discharger requested acute and chronic aquatic life dilution credits for ammonia, copper, and zinc. Human health dilution credits were requested for dichlorobromomethane and nitrate. A pollutant-by-pollutant evaluation is discussed below.

**Ammonia** – The waste water treatment plant does provide limited, seasonal conversion of ammonia to nitrate via the extended aeration oxidation ditch. Ammonia concentrations in the summer, during the no-surface water discharge period, are typically less than <1 mg/L. Ammonia concentrations in the winter period are higher and correlate with the winter low temperatures. The Discharger is currently modifying the planned upgrades for the facility in order to add practicable improvements to the facility in order to reduce the ammonia concentrations in the effluent.

Based on existing effluent data from January 2008 through June 2011 it appears that the Facility cannot meet end-of-pipe effluent limitations for ammonia of 2.1 mg/L and 5.6 mg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for ammonia in the receiving water, and, as discussed above, the acute mixing zone meets the requirements of the SIP and Basin Plan. Table F-11, below, shows the WQBELs calculated with the allowance of acute and chronic aquatic life dilution, end-of-pipe effluent limitations using a reasonable worst-case steady-state approach, and the Facility's performance, therefore, dilution credits have been allowed for ammonia.

**Table F-11. WQBELs for Ammonia**

| | Average Monthly Effluent Limitation (mg/L) | Maximum Daily Effluent Limitation (mg/L) |
|---|---|---|
| 50' Mixing Zone (acute 13:1, chronic 16:1) | 28.8 | 76.8 |
| End-of-pipe (no dilution) | 2.11 | 5.6 |
| Facility Performance [1] | 21.9 | |

1. Based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (ammonia effluent data from January 2008 through June 2011)

**Copper** – Based on existing effluent data from January 2008 through June 2011, it appears that the Facility cannot meet end-of-pipe effluent limitations for copper of 4.6 µg/L and 8.2 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for copper in the receiving water, and, as discussed above, the acute mixing zone meets the requirements of the SIP and Basin Plan. Table F-12, below, shows the WQBELs calculated with the allowance of acute and chronic aquatic life dilution, end-of-pipe effluent limitations using a reasonable worst-case steady-state approach, and the Facility's performance, therefore, dilution credits have been allowed for copper.

**Table F-12. WQBELs for Copper**

| | Average Monthly Effluent Limitation (ug/L) | Maximum Daily Effluent Limitation (ug/L) |
|---|---|---|
| 50' Mixing Zone (acute 13:1, chronic 16:1) | 56 | 100 |
| End-of-pipe (no dilution) | 4.6 | 8.2 |
| Facility Performance [1] | 25.6 | |

1. Based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (copper effluent data from January 2008 through June 2011)

**Dichlorobromomethane** – Based on existing effluent data from January 2008 through June 2011, it appears that the Facility cannot meet end-of-pipe effluent limitations for dichlorobromomethane of 0.56 µg/L and 1.58 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for dichlorobromomethane in the receiving water, and, as discussed above, the human health mixing zone meets the requirements of the SIP and Basin Plan. Table F-13, below, shows the WQBELs calculated with the allowance of human health dilution, end-of-pipe effluent limitations using a reasonable worst-case steady-state approach, and the Facility's performance, therefore, dilution credits have been allowed for dichlorobromomethane.

**Table F-13. WQBELs for Dichlorobromomethane**

| | Average Monthly Effluent Limitation (ug/L) | Maximum Daily Effluent Limitation (ug/L) |
|---|---|---|
| 20' Mixing Zone (human health 105:1) | 49 | 138 |
| End-of-pipe (no dilution) | 0.56 | 1.58 |
| Facility Performance [1] | 4.1 ug/L | |

1. Based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (dichlorobromomethane effluent data from January 2008 through June 2011)

**Nitrate** – Based on existing effluent data from February 2008 through August 2012, concentrations of nitrate range from 0.02 to 35.0 mg/L, it appears that the Facility cannot meet the end of pipe effluent limitation for nitrate of 10.0 mg/L as a 30-day average. Assimilative capacity is available for nitrate in the receiving water, and, as discussed above, the human health mixing zone meets the requirements of the SIP and Basin Plan. Table F-14, below, shows the WQBELs calculated with the allowance of human health dilution, end-of-pipe effluent limitations using a reasonable worst-case steady-state approach, and the Facility's performance, therefore, dilution credits have been allowed for nitrate.

**Table F-14. WQBEL for Nitrate**

| | Average Monthly Effluent Limitation (mg/L) |
|---|---|
| 20' Mixing Zone (human health 105:1) | 574 |
| End-of-pipe (no dilution) | 10 |
| Facility Performance[1] | 44.1 |

1. Projected 99th percentile of effluent nitrate data from February 2008 through August 2012.

**Zinc** – Based on existing effluent data from January 2008 through June 2011, it appears that the Facility cannot meet end-of-pipe effluent limitations for zinc of 16.4 µg/L and 22.2 µg/L, as an AMEL and MDEL, respectively. Assimilative capacity is available for zinc in the receiving water, and, as discussed above, the acute mixing zone meets the requirements of the SIP and Basin Plan.
Table F-15, below, shows the WQBELs calculated with the allowance for acute aquatic life dilution, end-of-pipe effluent limitations using a reasonable worst-case steady-state approach, and the Facility's performance, therefore, dilution credits have been allowed for zinc.

**Table F-15. WQBELs for Zinc**

| | Average Monthly Effluent Limitation (ug/L) | Maximum Daily Effluent Limitation (ug/L) |
|---|---|---|
| 50' Mixing Zone (acute 13:1) | 64 | 87 |
| End-of-pipe (no dilution) | 16.4 | 22.2 |
| Facility Performance [1] | 63.1 | |

1. Based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (zinc effluent data from January 2008 through June 2011)

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[10], the CTR[11], and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4). The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. In some cases, the hardness of effluent discharges changes the hardness of the ambient receiving water. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10.). Guidance on the selection of the appropriate ambient hardness was provided by the State Water Board in Order No. WQO 2008-0008 (City of Davis).

The State Water Board allows, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water

[10] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

[11] The CTR requires that, for waters of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface waer must be used. It further requires that the hardness values used must be consistant with the design flows and mixing zones.

hardness, after mixing with the effluent. (Order WQO 2008-0008, p. 11.) Regional water boards have considerable discretion in determining ambient hardness as long as the hardness values are protective under all flow conditions. (*Id.*, pp. 10-11.)

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[12]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

i. **Conducting the Reasonable Potential Analysis (RPA).** The SIP in Section 1.3 states, "The RWQCB shall…determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the Maximum Effluent Concentration (MEC) and Maximum Ambient Background Concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

a) The SIP requires a WQBEL if the MEC exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas in the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream hardness is outlined in subsection ii, below.

[12] All effluent discharges will change the ambient downstream metals concentration and hardness. It is not possible to change the metals concentration without also changing the hardness.

b) The SIP requires a WQBEL if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the Maximum Ambient Background Concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[13]. For comparing the Maximum Ambient Background Concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

ii. **Calculation of Water Quality-Based Effluent Limitations**. The remaining discussion in this section relates to the development of water quality-based effluent limits when it has been determined that the discharge has reasonable potential to cause or contribute to an exceedance of the CTR hardness-dependent metals criteria in the receiving water.

A 2006 Study[14] developed procedures for calculating the effluent concentration allowance (ECA)[15] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR[16], is as follows:

$$\text{CTR Criterion} = \text{WER} \times (e^{m[\ln(H)]+b}) \qquad \text{(Equation 1)}$$

Where:

H = hardness (as $CaCO_3$)[17]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

[13] The pollutant must also be detected in the effluent.
[14] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[15] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate water quality-based effluent limitations in accordance with Section 1.4 of the SIP
[16] 40 CFR § 131.38(b)(2).
[17] For this discussion, all hardness values are in mg/L as $CaCO_3$.

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The equation for the ECA is defined in Section 1.4, Step 2, of the SIP and is as follows:

$$ECA = C \quad (\text{when } C \leq B)^{18} \qquad \text{(Equation 2)}$$

Where:

C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)

B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for calculating the ECA may be used for these metals. The same procedure can be used for chronic cadmium, chromium III, copper, nickel, and zinc. These metals are hereinafter referred to as "Concave Down Metals". "Concave Down" refers to the shape of the curve represented by the relationship between hardness and the CTR criteria in Equation 1. Another similar procedure can be used for determining the ECA for acute cadmium, lead, and acute silver, which are referred to hereafter as "Concave Up Metals".

**ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc** – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria[19]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)[20]. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

[18] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e. C ≤ B)

[19] 2006 Study, p. 5700

[20] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

The effluent hardness ranged from 58 mg/L to 60 mg/L, based on 3 samples from January 2008 to July 2011. The upstream receiving water hardness in the Sacramento River varied from 44 mg/L to 65 mg/L, based on 18 samples from January 2008 to July 2011, and the downstream receiving water hardness varied from 48 mg/L to 52 mg/L, based on 3 samples from January 2008 to July 2011. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 58 mg/L. As demonstrated in the examples shown in Table F-16, below, using this hardness to calculate the ECA for all concave Down Metals will result in water quality-based effluent limitations that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 44 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

Using these reasonable worst-case receiving water conditions, a simple mass balance (as shown in Equation 3, below) accounts for all possible mixtures of effluent and receiving water under all flow conditions.

$$C_{MIX} = C_{RW} \times (1\text{-}EF) + C_{Eff} \times (EF) \qquad \text{(Equation 3)}$$

Where:

$C_{MIX}$ = Mixed concentration (e.g. metals or hardness)
$C_{RW}$ = Upstream receiving water concentration
$C_{Eff}$ = Effluent concentration
EF = Effluent Fraction

In this example, for copper, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient copper concentration is in compliance with the CTR criteria.[21]

[21] This method considers the actual lowest upstream hardness and actual lowest effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-4 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

**Table F-16. Copper ECA Evaluation**

| | |
|---|---|
| **Lowest Observed Effluent Hardness** | **58 mg/L (as $CaCO_3$)** |
| **Lowest Observed Upstream Receiving Water Hardness** | **44 mg/L (as $CaCO_3$)** |
| **Highest Assumed Upstream Receiving Water Copper Concentration** | **4.63 µg/L [1]** |
| **Copper $ECA_{chronic}$ [2]** | **5.86 µg/L** |

| Effluent Fraction[6] | | Fully Mixed Downstream Ambient Concentration | | | |
|---|---|---|---|---|---|
| | | **Hardness [3] (mg/L)** | **CTR Criteria [4] (µg/L)** | **Copper [5] (µg/L)** | **Complies with CTR Criteria** |
| High Flow | 1% | 44.1 | 4.64 | 4.64 | **Yes** |
| | 5% | 44.7 | 4.69 | 4.69 | **Yes** |
| | 15% | 46.1 | 4.81 | 4.81 | **Yes** |
| | 25% | 47.5 | 4.94 | 4.93 | **Yes** |
| | 50% | 51.0 | 5.25 | 5.24 | **Yes** |
| | 75% | 54.5 | 5.55 | 5.55 | **Yes** |
| Low Flow | 100% | 58.0 | 5.86 | 5.86 | **Yes** |

1, Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of **44 mg/L**.

2, ECA calculated using Equation 1 for chronic criterion at a hardness of **58 mg/L**.

3, Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.

4, Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.

5, Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.

6, The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

**ECA for Acute Cadmium, Lead, and Acute Silver** – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the relationship between hardness and the metals criteria is different than for Concave Down Metals. The 2006 Study demonstrates that for Concave Up Metals, the effluent and upstream receiving water can be in compliance with the CTR criteria, but the resulting mixture may contain metals concentrations that exceed the CTR criteria and could cause toxicity. For these metals, the 2006 Study provides a mathematical approach to calculate the ECA that is protective of aquatic life, in all areas of the receiving water affected by the discharge, under all discharge and receiving water flow (see Equation 4, below).

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the

receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-17).

$$ECA = \left( \frac{m(H_e - H_{rw})\left(e^{m\{\ln(H_{rw})\}+b}\right)}{H_{rw}} \right) + e^{m\{\ln(H_{rw})\}+b} \qquad \text{(Equation 4)}$$

Where:

m, b = criterion specific constants (from CTR)

$H_e$ = lowest observed effluent hardness

$H_{rw}$ = reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal in Tables F-17, below. As previously mentioned, the lowest effluent hardness is 58 mg/L, while the upstream receiving water hardness ranged from 44 mg/L to 65 mg/L, and the downstream receiving water hardness ranged from 48 mg/L to 52 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 44 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in water quality-based effluent limitations that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-17, for lead.

**Table F-17. Lead ECA Evaluation**

| | | | | | |
|---|---|---|---|---|---|
| **Lowest Observed Effluent Hardness** | | | | | **58 mg/L** |
| **Reasonable Worst-case Upstream Receiving Water Hardness** | | | | | **44 mg/L** |
| **Reasonable Worst-case Upstream Receiving Water Lead Concentration** | | | | | **0.40 µg/L [1]** |
| **Lead $ECA_{chronic}$ [2]** | | | | | **1.12 µg/L** |
| **Effluent Fraction [6]** | | **Fully Mixed Downstream Ambient Concentration** | | | |
| | | **Hardness [3] (mg/L) (as $CaCO_3$)** | **CTR Criteria [4] (µg/L)** | **Lead [5] (µg/L)** | **Complies with CTR Criteria** |
| High Flow | 1% | 44.1 | 1.1 | 1.1 | **Yes** |
| | 5% | 44.7 | 1.1 | 1.1 | **Yes** |
| | 15% | 46.1 | 1.2 | 1.2 | **Yes** |
| | 25% | 47.5 | 1.2 | 1.2 | **Yes** |
| | 50% | 51.0 | 1.4 | 1.3 | **Yes** |
| | 75% | 54.5 | 1.5 | 1.5 | **Yes** |
| Low Flow | 100% | 58.0 | 1.6 | 1.6 | **Yes** |

1. Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of **44 mg/L**.
2. ECA calculated using Equation 4 for chronic criteria.
3. Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent

hardness at the applicable effluent fraction.

4. Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5. Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.
6. The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-18 lists all the CTR hardness-dependent metals associated ECA used in this Order.

**Table F-18. Summary of ECA Evaluations for CTR Hardness-dependent Metals**

| CTR Metals | ECA (µg/L, total recoverable) | | |
|---|---|---|---|
| | acute | chronic | Basin Plan (Instantaneous Maximum) |
| Copper | 8.38 | 5.86 | 8.19 |
| Chromium III | -- | 132.49 | -- |
| Cadmium | 1.79 | 1.61 | 0.25 |
| Lead | 28.71 | 1.12 | -- |
| Nickel | -- | 32.90 | -- |
| Silver | 0.99 | -- | -- |
| Zinc | 75.52 | 75.52 | 22.27 |

3. **Determining the Need for WQBELs**

a. The Central Valley Water Board conducted the reasonable potential analysis (RPA) in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control[22]. The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*" Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

b. **Constituents with No Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e. constituents were not detected in the effluent or receiving water); however, monitoring for those pollutants is established in this Order as required by the SIP.

[22] See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. However, the following constituents were found to have no reasonable potential after assessment of the data.

i. **Aluminum**

(a) **WQO.** USEPA developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life for aluminum. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0. The Secondary Maximum Contaminant Level (MCL) - Consumer Acceptance Limit for aluminum is 200 µg/L.

(b) **RPA Results.** The maximum effluent concentration (MEC) for aluminum was 13.2 µg/L while the maximum observed upstream receiving water concentration was 34.1 µg/L. Therefore, aluminum in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the 1-hour average (acute) criteria for the protection of aquatic life or the Secondary MCL.

ii. **Iron**

(a) **WQO.** USEPA developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life for iron. The Recommended 4-day average (chronic) is1,000 ug/L.

The Department of Public Health establishes a secondary MCL of 300 ug/L, implemented as an annual average.

(b) **RPA Results.** The maximum effluent concentration (MEC) for iron was 39 ug/L while the maximum observed upstream receiving water concentration was 55 ug/L. Therefore, iron in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the DPH secondary maximum contaminant level of 300 ug/L, implemented as an annual average.

iii. **Manganese**

(a) **WQO.** USEPA has not developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of human health and welfare protection for manganese.

The Department of Public Health established a secondary Maximum Contaminant Level of 50 ug/L, implemented as an annual average.

(b) **RPA Results.** The maximum effluent concentration (MEC) for manganese was 11.5 ug/L µg/L while the maximum observed upstream receiving water concentration was 7.7 µg/L. Therefore, manganese in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the DPH secondary maximum contamination level of 50 ug/L, implemented as an annual average.

c. **Constituents with Limited Data.** Reasonable potential cannot be determined for the following constituents because effluent data are limited or ambient background concentrations are not available. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further analysis will be conducted to determine whether to add numeric effluent limitations or to continue monitoring.

i. **Arsenic**

(a) **WQO.** DPH has adopted a Primary MCL for arsenic of 10 µg/L, which is protective of the Basin Plan's chemical constituent objective. The CTR includes acute and chronic freshwater aquatic life criteria of 150 µg/L and 340 µg/L, respectively.

(b) **RPA Results.** The MEC for arsenic was 0.6 µg/L (as total recoverable) while the maximum observed upstream receiving water concentration was 10.3 µg/L (total recoverable). A total of 5 effluent samples were analyzed for arsenic. In addition to the MEC value of 0.6 µg/L, the other effluent arsenic data was either non-detect or detected but not quantifiable (DNQ) by the laboratory performing the analysis. The DNQ values ranged from 0.2 µg/L to 0.3 µg/L; all well below the Primary MCL. Five receiving water samples were also analyzed for arsenic. One sample was collected in 2008 and the sample result was 9.8 µg/L. The other 4 samples were collected within a one-month period in 2010, these sample results ranged from 2 µg/L to 10.3 µg/L. The average arsenic concentration for the one-month time period in 2010 was calculated to be 5.65 µg/L. All of the effluent arsenic results are below the applicable criteria, however, one receiving water (background) result exceeds the Primary MCL. The single arsenic data point above the Primary MCL is not adequate to assess RPA over the longer term averaging period for the arsenic standard. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Instead of limitations, additional monitoring has been established for arsenic in both the effluent and the receiving water. Additionally, this Order requires the Discharger to conduct a study to evaluate the source of arsenic and monitoring sufficient to provide data to determine reasonable potential to exceed the applicable criterion. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality

standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

ii. **Carbon Tetrachloride**

(a) **WQO.** The CTR includes criterion of 0.25 ug/L for carbon tetrachloride for protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** Carbon tetrachloride was detected in the effluent once out of two monitoring events between December 2008 and November 2010 at a concentration of 0.4 ug/L. Carbon tetrachloride was not detected in the upstream receiving water during the same time period. Since the two samples were collected in 2008 and 2010, the Discharger has changed their plant operation in the winter period and began using the Facility sand filters in the winter of 2011. Due to the change in operation of the Facility, the samples collected in 2008 and 2010 may not be representative of the current discharge. Furthermore, the source of carbon tetrachloride in the effluent is unknown, as there are no known industrial sources and carbon tetrachloride would not be expected to be present at a treatment plant where the waste source is municipal. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not requiring effluent limitations for carbon tetrachloride at this time. Instead of limitations, additional monitoring has been established for carbon tetrachloride and the Discharger is required to perform a constituent study.

iii. **Heptachlor**

(a) **WQO.** The CTR includes criterion of 0.00021 ug/L for heptachlor for protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** Two effluent and receiving water samples were collected in December 2008 and October 2010 and analyzed for heptachlor. The maximum effluent concentration (MEC) for heptachlor was 0.007 µg/L; however, this result was not quantifiable by the laboratory that performed the analysis and is considered an estimated concentration. The other effluent sample and both receiving water (background) samples results were non-detect for heptachlor. Although heptachlor was detected in the effluent in one sample, the reported value of 0.007 µg/L represents a laboratory estimate and not a true concentration. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not requiring effluent limitations for heptachlor at this time. Instead of

limitations, additional monitoring has been established for heptachlor and the Discharger is required to perform a constituent study.

iv. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains narrative objectives, and contains numeric water quality objectives for electrical conductivity, total dissolved solids, sulfate, and chloride. The USEPA Ambient Water Quality Criteria for chloride recommends acute and chronic criteria for the protection of aquatic life. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there is no USEPA numeric water quality criteria for the protection of agriculture, industrial and livestock are typical. Numeric values for the protection of these uses are typically done based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective.

**Table F-19. Salinity Water Quality Criteria/Objectives**

| Parameter | Agricultural WQ Goal [1] | Secondary MCL [3] | USEPA NAWQC | Effluent | |
|---|---|---|---|---|---|
| | | | | Average | Maximum |
| EC (µmhos/cm) | Varies [2] | 900, 1600, 2200 | N/A | **356** | **512** |
| TDS (mg/L) | Varies | 500, 1000, 1500 | N/A | -- | -- |
| Sulfate (mg/L) | Varies | 250, 500, 600 | N/A | -- | -- |
| Chloride (mg/L) | Varies | 250, 500, 600 | N/A | -- | -- |

1. Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan., However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.
2. The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors.
3. The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

(1) **Chloride.** The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. Site specific levels of chloride for the receiving waters are necessary to interpret the narrative chemical constituents objective for protection of agricultural supply.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(2) **Electrical Conductivity.** The secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. Site specific levels of EC for the receiving waters to interpret the narrative chemical constituents objective in the Basin Plan for protection of agricultural supply are necessary. Overall, however, the salinity of the agricultural irrigation water must be maintained at levels in which growers do not need to take extra measures to minimize or eliminate any harmful impacts.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(3) **Sulfate.** The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(4) **Total Dissolved Solids.** The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that is not a site-specific goal, but rather a general measure of TDS that was determined to protect salt-sensitive crops. Site specific levels of TDS for the receiving waters to interpret the narrative chemical constituents objective are necessary.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

(b) **RPA Results.**

(1) **Chloride.** The previous Order did not require the Discharger to monitor for chloride. Reasonable potential cannot be determined due to the lack of effluent and receiving water data. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not requiring effluent limitations for chloride at this time. Instead of limitations, additional monitoring has been established for chloride within the Salinity Evaluation and Minimization Plan.

(2) **Electrical Conductivity.** A review of the Discharger's monitoring reports shows an average effluent EC of 356 µmhos/cm, with a range from 311 µmhos/cm to 512 µmhos/cm. Based on the effluent data the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of the applicable water quality objective for EC. The Discharger is required to monitor for these constituents in the effluent and receiving water.

(3) **Sulfate.** The previous Order did not require the Discharger to monitor for sulfate. Reasonable potential cannot be determined due to the lack of effluent and receiving water data. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not requiring effluent limitations for sulfate at this time. Instead of limitations, additional monitoring has been established for sulfate within the Salinity Evaluation and Minimization Plan.

(4) **Total Dissolved Solids.** The previous Order did not require the Discharger to monitor for total dissolved solids. Reasonable potential cannot be determined due to the lack of effluent and receiving water data. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not requiring effluent limitations for total dissolved solids at this time. Instead of limitations, additional

monitoring has been established for total dissolved solids within the Salinity Evaluation and Minimization Plan.

d. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, chlorine residual, nitrate/nitrite, pathogens, pH, settleable solids, toxicity, copper, dichlorobromomethane (DCBM), and zinc. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

(a) **WQO.** The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the Sacramento River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Sacramento River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

The maximum permitted effluent pH is 8.0, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.0 was used to derive the acute criterion. The resulting acute criterion is 5.62 mg/L.

The 30-day average chronic criterion (or CCC) was evaluated for the receiving water based on monitoring data obtained during the discharge season from the period of January 2008 through July 2011. The chronic criterion values were calculated using the CCC equation and the rolling 30-day average pH and temperature of the downstream receiving water. 17 paired data sets of receiving water pH and temperature were available for analyses. The 1/10$^{th}$ percentile (i.e. lowest 99.9$^{th}$ percentile) of each data set was selected as the most stringent criteria, which is consistent with the 1-in-3 year average frequency for criteria excursions recommended by the USEPA. As a result, the receiving water CCC was 3.18 mg/L ammonia as N. Analyses of annual fluctuations in receiving water CCC showed no significant pattern of occurrence with respect to the seasons of fall, winter, and spring; as annual peak receiving water CCCs

occurred in all 3 of these seasons within the three-year data set. In addition, the Discharger does not discharge during the summer season. Therefore, the resulting receiving water 30-day CCC is 3.18 mg/L ammonia as N. The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 3.18 mg/L (as N), the 4-day average concentration that should not be exceeded is 7.95 mg/L (as N).

(b) **RPA Results.** The maximum effluent concentration (MEC) for ammonia was 17.6 mg/L based on 26 samples collected from February 2008 through June 2011, while the maximum observed upstream receiving water concentration was 0.14 mg/L. Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) **Dilution Considerations.** As discussed in Section IV.C.2.c (vii) of the Fact Sheet, an allowance for acute and chronic life criteria dilution may be granted.

(d) **WQBELs.** Based on the results of the mixing zone study, an acute and chronic mixing zone of 50 feet in length (17 feet wide) results in an acute and chronic dilution credit of 13:1 and 16:1, respectively, which results in an AMEL of 28.8 mg/L and a MDEL of 76.8 mg/L. The Central Valley Water Boards finds that granting of these dilution credits could allocate an unnecessarily large portion of the receiving water's assimilative capacity of copper and could violate the Antidegradation Policy. For this reason, a performance-based limitation is calculated (See Table F-23. Performance-based Effluent Limitations Statistics). This Order contains an average monthly effluent limitations (AMEL) and a maximum daily effluent limitation (MDEL) for ammonia of 21.9 mg/L.

(e) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 17.6 mg/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

ii. **Chlorine Residual**

(a) **WQO.** USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 µg/L and 0.019 µg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) **RPA Results.** The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to the Sacramento River. Due to the existing chlorine use and the potential for

chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) **WQBELs.** The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 µg/L and 0.019 µg/L, respectively, based on USEPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 0.02 mg/L is greater than the applicable WQBELs. However, the discharger installed an automatic chlorination/dechlorination system in 2010 and has not had an exceedance since. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. **Nitrate and Nitrite**

(a) **WQO.** DPH has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

(b) **RPA Results.** Based on 40 samples collected from February 2008 through August 2012 the MEC for nitrite is 0.15 mg/L, therefore, there is no reasonable potential for the discharge to cause or contribute to an in-stream excursion above the primary MCL for nitrite. Based on 43 samples collected from February 2008 through August 2012, the MEC for nitrate is 35 mg/L, therefore, there is reasonable potential for the discharge to cause or contribute to an in-stream excursion above the primary MCL for nitrate.

(c) **Dilution Considerations.** As discussed in Section IV.C.2. of the Fact Sheet, an allowance for human health dilution may be granted.

(d) **WQBELs.** Based on the results of the mixing zone study, a human health mixing zone of 20 feet in length (8 feet wide) results in a human health dilution credit of 105:1, which results in an AMEL of 574 mg/L. The Central Valley Water Boards finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity of nitrate and could violate the Antidegradation Policy. For this reason, a performance-based limitation is calculated (See Table F-23. Performance-based Effluent Limitations Statistics). This Order contains an average monthly effluent limitations (AMEL) for nitrate of 44.1 mg/L.

(e) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 35.0 mg/L is less than the AMEL. Therefore the Central Valley Water Board concludes that immediate compliance with this effluent limitation is feasible.

iv. **Pathogens**

(a) **WQO.** In a letter to the Central Valley Water Board dated 8 April 1999, DPH indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.

(b) **RPA Results.** Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the Sacramento River. Based on a review of data submitted by the Discharger and the period of record for the United States Geological Survey monitoring stations on the Sacramento River, the last time less than 20:1 (river flow to design effluent flow) dilution was available was more than 10 years ago. Therefore, the DPH requirements are applicable to the discharge.

(c) **WQBELs.** Pursuant to guidance from DPH, this Order includes effluent limitations for total coliform organisms of 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL, not to be exceeded more than once in a 30-day period. In addition, during 1 May through 14 June and 16 September through 15 November, this Order requires effluent limitations for total coliform organisms of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum. These coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the 7-day median for total coliform organisms during the discharge period are less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. **pH**

(a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"…pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*"

(b) **RPA Results.** The discharge of treated domestic wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's numeric objectives for pH.

(c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.0 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

(d) **Plant Performance and Attainability.** The minimum and maximum effluent pH values were 6.4 and 7.4 respectively, based on 546 data points collected between January 2008 and July 2011. The average and median pH values were both 6.7. Analysis of the effluent data shows that the 6.4 pH value was a single data point reported in February 2008. The remaining data demonstrates that the Facility can immediately comply with the effluent limitations for pH.

vi. **Settleable Solids**

(a) **WQO.** For inland surface waters, the Basin Plan states that "[w]*ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.*"

(b) **RPA Results.** The discharge of treated domestic wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable solids.

(c) **WQBELs.** This Order contains average monthly and average daily effluent limitations for settleable solids. Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC is less than 0.2 mL/L-hour is less than the WQBELs. The Central Valley Water Board concludes, therefore, that the Facility can immediately comply with the effluent limitations for settleable solids.

vii. **Toxicity.** See section IV.C.5 of the Fact Sheet regarding whole effluent toxicity.

viii. **Copper**

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for copper. The Basin Plan also includes a hardness dependent water quality objective for copper. Using the default conversion factors and reasonable worst-case measured hardness, as described in section IV.C.2.c of this Fact Sheet, the applicable acute (1-hour average) criterion is 8.38 µg/L and the applicable chronic (4-day average) criterion is 5.86 µg/L as total recoverable. The Basin Plan instantaneous maximum objective for copper is 8.19 ug/L.

(b) **RPA Results.** Copper was sampled 31 times between January 2008 and July 2011. The maximum effluent concentration (MEC) for copper was 24.7 ug/L (as total recoverable) while the maximum observed upstream receiving water concentration was 1.1 ug/L (as total recoverable). Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above both the CTR chronic criterion for the protection of freshwater aquatic life and the Basin Plan instantaneous maximum water quality objective.

(c) **Dilution Considerations.** As discussed in Section IV.C.2. of the Fact Sheet, an allowance for acute and chronic aquatic life dilution may be granted.

(d) **WQBELs.** Based on the results of the mixing zone study, an acute and chronic mixing zone of 50 feet in length (17 feet wide) results in an acute and chronic dilution credit of 13:1 and 16:1, respectively, which results in an AMEL of 56 µg/L and a MDEL of 100 µg/L. The Central Valley Water Boards finds that granting of these dilution credits could allocate an unnecessarily large portion of the receiving water's assimilative capacity of copper and could violate the Antidegradation Policy. For this reason, a performance-based limitation is calculated (See Table F-23. Performance-based Effluent Limitations Statistics). This Order contains an average monthly effluent limitations (AMEL) and a maximum daily effluent limitation (MDEL) for copper of 25.6 µg/L.

(e) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 24.7 ug/L is less than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

ix. **Dichlorobromomethane.**

(a) **WQO.** The CTR includes a criterion of 0.56 ug/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The maximum effluent concentration (MEC) for dichlorobromomethane was 3.9 µg/L, based on 30 samples collected between January 2008 and July 2011, while the maximum observed upstream receiving water concentration was <0.1 µg/L based on 2 samples collected between January 2008 and July 2011. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) **Dilution Considerations.** As discussed in Section IV.C.2. of the Fact Sheet, an allowance for human health dilution may be granted.

(d) **WQBELs.** Based on the results of the mixing zone study, a human health mixing zone of 20 feet in length (8 feet wide) results in a human health dilution credit of 105:1, which results in an AMEL of 49 µg/L and a MDEL of 138 µg/L. The Central Valley Water Boards finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity of dichlorobromomethane and could violate the Antidegradation Policy. For this reason, a performance-based limitation is calculated (See Table F-23. Performance-based Effluent Limitations Statistics). This Order contains an average monthly effluent limitation (AMEL) and a maximum daily effluent limitations (MDEL) for dichlorobromomethane of 4.1 µg/L.

(e) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 3.9 µg/L is less than the than the applicable WQBELs. Therefore, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

x. **Zinc.**

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for zinc. The Basin Plan is includes a hardness dependent water quality objective for zinc. Using the default conversion factors and reasonable worst-case measured hardness, as described in section IV.C.2. of this Fact Sheet, the applicable acute (1-hour average) criterion is 75.52 ug/L and the applicable chronic (4-day average) criterion is 75.52 ug/L, as total recoverable. The applicable Basin Plan maximum water quality objective for zinc is 22.27 ug/L.

(b) **RPA Results.** The maximum effluent concentration (MEC) for zinc was 57.7 µg/L, based on 31 samples collected between January 2008 and July 2011, while the maximum observed upstream receiving water concentration was 17.30 µg/L based on 5 samples collected between January 2008 and July 2011. Therefore, zinc in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective.

(c) **Dilution Considerations.** As discussed in Section IV.C.2. of the Fact Sheet, an allowance for acute aquatic life dilution may be granted. The receiving water contains assimilative capacity for zinc, therefore, a dilution credit of 13:1 was allowed in development of the WQBELs for zinc.

(d) **WQBELs.** Based on the results of the mixing zone study, an acute mixing zone of 50 feet in length (17 feet wide) results in an acute dilution credit of 13:1, which results in an AMEL of 64 µg/L and a MDEL of 87 µg/L. As presented in Section IV.C.2.vii of the Fact Sheet, Facility performance has been calculated at 63.1 µg/L. The calculated AMEL is essentially equivalent to the Facility performance. The Central Valley Water Board finds that granting this dilution credit (13:1) would not allocate an unnecessarily large portion of the receiving water's assimilative capacity and would not violate the Antidegradation Policy. This Order contains an average monthly effluent limitations (AMEL) and a maximum daily effluent limitation (MDEL) for zinc of 64 µg/L and 87 µg/L, respectively, based on the Basin Plan maximum water quality objective.

(e) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 57.7 µg/L is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

4. **WQBEL Calculations**

a. This Order includes WQBELs for ammonia, chlorine residual, copper, dichlorobromomethane, nitrate, pH, settleable solids, and zinc. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \qquad \text{where } C>B, \text{ and}$$
$$ECA = C \qquad \text{where } C \leq B$$

<u>where:</u>

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCLs.** For WQBELs based on certain site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e., LTAacute and LTAchronic) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}}\right)\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where: $mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
$M_A$ = statistical multiplier converting acute ECA to $LTA_{acute}$
$M_C$ = statistical multiplier converting chronic ECA to $LTA_{chronic}$

## Summary of Water Quality-Based Effluent Limitations
## Discharge Point D-001

**Table F-20. Summary of Water Quality-Based Effluent Limitations.**

| Parameter | Units | Effluent Limitations | | | | | Basis [1] |
|---|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum | |
| ***Conventional Pollutants*** | | | | | | | |
| Biochemical Oxygen Demand 5-day @ 20°C | mg/L | 10 | 15 | 20 | | | TTC |
| | lbs/day [2] | 25 | 38 | 50 | | | |
| pH | standard units | | | | 6.5 | 8.0 | BP |
| Total Suspended Solids | mg/L | 10 | 15 | 20 | | | TTC |
| | lbs/day [2] | 25 | 38 | 50 | | | |
| ***Priority Pollutants*** | | | | | | | |
| Copper, Total Recoverable | ug/L | 25.6 | | 25.6 | | | CTR |
| Dichlorobromomethane | ug/L | 4.1 | | 4.1 | | | CTR |
| Zinc, Total Recoverable | ug/L | 64 | | 87 | | | BP |
| ***Non-Conventional Pollutants*** | | | | | | | |
| Ammonia Nitrogen, Total (as N) | mg/L | 21.9 | | 21.9 | | | NAWQC |
| Nitrate Nitrogen (as N) | mg/L | 44.1 | | -- | | | MCL |
| Settleable Solids | mL/L | 0.1 | | 0.2 | | | BP |

1. DC – Based on the design capacity of the Facility.
   TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
   CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
   BP – Based on water quality objectives contained in the Basin Plan.
   CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
   NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
   SEC MCL – Based on the Secondary Maximum Contaminant Level.
   TMDL – Based on the TMDL for salinity and boron in the lower San Joaquin River.
   MCL – Based on the Primary Maximum Contaminant Level.
   Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).
2. Based on a design capacity of 0.30 mgd

### 5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00). The Basin Plan also states that, "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate*…". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc."* Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

**Acute Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay ---------- 70%
Median for any three or more consecutive bioassays during the same discharge season.---------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00). Based on chronic WET testing performed by the Discharger from October 2008 to October 2011, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

**Table F-21. Whole Effluent Chronic Toxicity Testing Results**

| | **Fathead Minnow** *Pimephales promelas* | | **Water Flea** *Ceriodaphnia dubia* | | **Green Algae** *Selenastrum capricornutum* |
|---|---|---|---|---|---|
| Date | Survival (TUc) | Growth (TUc) | Survival (TUc) | Reproduction (TUc) | Growth (TUc) |
| 10/7/2008 | 1 | 1 | 1 | 1 | 1 |
| 10/6/2009 | 1 | 1 | 1 | 1 | 1 |
| 2010 [1] | | | | | |
| 10/11/2011 | 1 | 1 | 1 | 1 | 1 |

1. All effluent in 2010 was directed to the percolation ponds, chronic toxicity testing was not required.

The Monitoring and Reporting Program of this Order requires annual chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order requires the Discharger to submit to the Central Valley

Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[23] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012*, "In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, Special Provisions VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE work plan. The numeric toxicity monitoring trigger is not an effluent limitation, it is the toxicity threshold at which the Discharger is required to perform

[23] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if toxicity has been demonstrated.

## D. Final Effluent Limitations

### 1. Mass-based Effluent Limitations.

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in section IV.A.1.a of this Order.

### 2. Averaging Periods for Effluent Limitations.

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order uses maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, copper, dichlorobromomethane, nitrate, and zinc as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for $BOD_5$ and TSS, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average

basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

3. **Satisfaction of Anti-Backsliding Requirements.**

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in the existing Order, with the exception of effluent limitations for copper, dichlorobromomethane, and zinc. The effluent limitations for these pollutants are less stringent than those in Order No. R5-2006-0129. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations, as explained below.

The following is a comparison of subject effluent limitations in the previous Order to the new final effluent limitations:

| **Constituent** | **Order No. R5-2006-0129 Existing Limits** (AMEL/MDEL) (ug/L) | **Proposed Limits** (AMEL/MDEL) (ug/L) |
|---|---|---|
| Copper, Total Recoverable | 3.69 / 7.40 | 25.6/25.6 |
| Dichlorobromomethane | 0.56 / 1.13 | 4.1/4.1 |
| Zinc, Total Recoverable | 9.96 / 20.0 | 64/87 |

Order R5-2006-0129 established end-of-pipe effluent limitations for copper, zinc, and dichlorobromomethane without dilution credits. As discussed in section IV.C.2.c of this Fact Sheet, a mixing zone and dilution credits for aquatic-life criteria and human health criteria are appropriate, and assimilative capacity is available, based on updated information that was not available at the time Order R5-2006-0129 was adopted, which supports the calculation of less stringent effluent limitations for copper, zinc, and dichlorobromomethane. Because effluent limitations may only be as high as is justified under State and federal Antidegradation policies, this Order does not allocate all of the available assimilative capacity and establishes performance-based effluent limitations for copper and dichlorobromomethane, and provides a dilution credit of 13:1 for zinc.

Relaxation and removal of the WQBELs in the previous permit is in accordance with CWA sections 303(d)(4) and 402(o), which allow for the removal of WQBELs for attainment waters where antidegradation requirements are satisfied. Removal of the WQBELs is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

4. **Satisfaction of Antidegradation Policy**

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The ADWF limitation has been reduced to 0.30 mgd from 0.41 mgd in the previous Order. The effluent flow limitation reduction reflects the results of an updated design analysis of the Facility, which found the current design ADWF of the Facility to be 0.30 mgd. The Discharger may discharge up to 0.41 mgd in the future without the need to perform a new antidegradation analysis, as the historically permitted flow rate and associated loading rates of a 0.41 mgd facility have already been analyzed in the original antidegradation analysis for the Facility, which met the requirements of State Water Board Resolution No. 68-16. In addition the maximum pH effluent limitation has been reduced to 8.0 s.u. from 8.5 s.u. in the previous Order. The reduction was at the request of the Discharger, in order to allow for an increase in the acute aquatic-life criterion for ammonia applicable to the facility and therefore a less stringent final effluent limitation for ammonia. The effluent limitation for pH may, in the future, be adjusted back to 8.5 s.u., if justified and appropriate.

The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

a. **Surface Water.** The permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

b. **Groundwater**. The Discharger utilizes a network of five percolation ponds. Domestic wastewater contains constituents such as total dissolved solids (TDS), specific conductivity, pathogens, nitrate, organics, metals, and oxygen demanding substances (BOD). Percolation from the ponds may result in an increase in the concentration of these constituents in groundwater. The increase in the concentration of these constituents in groundwater must be consistent with Resolution No. 68-16. Any increase in pollutant concentrations in groundwater must be shown to be necessary to allow wastewater utility service necessary to accommodate housing and economic expansion in the area and must be consistent with maximum benefit to the people of the State of California. Some degradation of groundwater by the Discharger is consistent with Resolution No. 68-16 provided that:

   i. the degradation is limited in extent;

ii. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;

iii. the Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures; and

iv. the degradation does not result in water quality less than that prescribed in the Basin Plan.

A groundwater limitation for total coliform organisms and nitrate nitrogen (Total as N) has been included in this order (at or below) the water quality objective for protection of the MUN beneficial use of groundwater.

5. **Stringency of Requirements for Individual Pollutants**

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal for $BOD_5$ and TSS. The WQBELs consist of restrictions on ammonia, chlorine residual, copper, dichlorobromomethane, nitrate/nitrite, pathogens, and zinc. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order includes new effluent limitations for $BOD_5$, TSS, ammonia, and nitrate/nitrite to meet numeric objectives or protect beneficial uses. The rational for including these limitations is explained in the Fact Sheet. In addition, the Regional Water Board has considered the factors in CWC section 13241 in establishing these requirements.

## Summary of Final Effluent Limitations
## Discharge Point D-001

**Table F-22. Summary of Final Effluent Limitations**

| Parameter | Units | Effluent Limitations | | | | | Basis [1] |
|---|---|---|---|---|---|---|---|
| | | Average Monthly | Average Weekly | Maximum Daily | Instantaneous Minimum | Instantaneous Maximum | |
| ***Conventional Pollutants*** | | | | | | | |
| Biochemical Oxygen Demand 5-day @ 20°C | mg/L | 10 | 15 | 20 | | | TTC |
| | lbs/day [2] | 25 | 38 | 50 | | | |
| pH | standard units | | | | 6.5 | 8.0 | BP |
| Total Suspended Solids | mg/L | 10 | 15 | 20 | | | TTC |
| | lbs/day [2] | 25 | 38 | 50 | | | |
| ***Priority Pollutants*** | | | | | | | |
| Copper, Total Recoverable | ug/L | 25.6 | | 25.6 | | | CTR |
| Dichlorobromomethane | ug/L | 4.1 | | 4.1 | | | CTR |
| Zinc, Total Recoverable | ug/L | 64 | | 87 | | | BP |
| ***Non-Conventional Pollutants*** | | | | | | | |
| Ammonia Nitrogen, Total (as N) | mg/L | 21.9 | | 21.9 | | | NAWQC |
| Nitrate Nitrogen (as N) | mg/L | 44.1 | | -- | | | MCL |
| Settleable Solids | mL/L | 0.1 | | 0.2 | | | BP |

1. DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
SEC MCL – Based on the Secondary Maximum Contaminant Level.
TMDL – Based on the TMDL for salinity and boron in the lower San Joaquin River.
MCL – Based on the Primary Maximum Contaminant Level.
Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).
2. Based on the design ADWF 0.30 mgd.

### 6. Performance-based Effluent Limitations.

Performance-based effluent limitations have been used in this Order to establish final effluent limitations where the calculated WQBEL (w/dilution credits) results in effluent limitations that exceed facility performance. Table F-23, below, displays the information used in developing the performance-based effluent limitations and the procedures for calculating performance-based effluent limitations are discussed below.

In developing the performance-based effluent limitation, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row). Therefore, the performance based limits in this Order are established as the mean plus 3.3 standard deviations of the available data. However, if the maximum effluent concentration (MEC) exceeds the mean plus 3.3 standard deviation, then the MEC is the used for the final limitation. When there are less than 10 sampling data points available, the EPA *Technical Support Document for Water Quality-based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of 10 data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than 10 sampling points for a constituent, final effluent limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).

Where a dataset includes data reported below the laboratory detection limits (nondetects) the statistics, described above, becomes uncertain. In these situations, the regression on order statistics (ROS) technique was used to develop summary statistics and probability distribution functions. The ROS method was chosen because numerous studies have found that substituting one-half the reporting limit "results in substantial bias unless the proportion of missing data is small, 10 percent or less"[24]. This technique is often used with water quality data and is a useful tool for evaluating data sets with at least 40% detected data[25]. Furthermore, the ROS method was chosen because imputation methods, such as ROS, depend less on assumptions of distributional shape than the maximum likelihood estimation (MLE) method[26]. The ROS technique develops probability plotting positions for each detected and non-detect data point based on the ordering of all data. A least squares line is fit by regressing the log transformed concentrations to the detected probability plotting positions. Fill-in concentrations are assigned to the non-detect data points for calculation of summary statistics based on the detected data probability plotting positions and the ordered statistics regression line equation. The summary statistics are calculated from the detected data points and the fill-in values for non-detect data. An estimated mean and standard deviation are used to calculate the 99.9$^{th}$ percentile performance-based effluent limitation, as described above.

[24] Dennis R. Helsel, "More Than Obvious: Better Methods for Interpreting Nondetect Data," *Environmental Science and Technology* (15 October 2005): 419A

[25] Robert H. Shumway, Rahman S. Azari, and Masoud Kayhanian, "Statistical Approaches to Estimating Mean Water Quality Concentrations with Detection Limits," *Environmental Science and Technology* 36, no. 15 (2002): 3345-3353.

[26] Dennis R. Helsel, "More Than Obvious: Better Methods for Interpreting Nondetect Data," *Environmental Science and Technology* (15 October 2005): 420A

**Table F-23. Performance-based Effluent Limitations Statistics**

| Parameter | Units | MEC | # of Samples | % Detected | Mean | Std. Dev. | Performance-based Effluent Limitation |
|---|---|---|---|---|---|---|---|
| Copper | ug/L | 24.7 | 31 | 100 | 10.05 | 4.72 | 25.6 |
| DCBM | ug/L | 3.9 | 30 | 63.3 | 0.73 | 1.02 | 4.1 |
| Nitrate | mg/L | 35 | 43[1] | 100 | 8.4 | 11.9 | 44.1 |
| Ammonia | mg/L | 17.6 | 27 | 96 | 4.54 | 5.27 | 21.9 |

Data set ranges from January 2008 to June 2011.
[1] Nitrate data set from January 2008 through August 2012.

### E. Interim Effluent Limitations – NOT APPLICABLE

### F. Land Discharge Specifications. Discharge Point D-002

1. The Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater.

2. Anaerobic (lacking in oxygen) processes tend to produce aesthetically undesirable odors. To minimize production of undesirable odors, the Discharger is required to maintain some (at least 1.0 mg/L) dissolved oxygen in the upper one foot of the pond.

3. **Daily Average Discharge Specification**. The discharge specification is based on the percolation pond average dry weather flow capacity of 0.30 mgd.

### G. Reclamation Specifications - NOT APPLICABLE

## V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

## A. Surface Water

1. CWA section 303(a-c) requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "*[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses*." The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Surface Water Limitations based on the Basin Plan numerical and narrative water quality objectives ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity.

## B. Groundwater.

1. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 ml. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

## VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for this Facility.

### A. Influent Monitoring.

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., $BOD_5$ and TSS reduction requirements). The monitoring frequencies for $BOD_5$ and TSS have been increased from twice per mont to once per week. pH (daily) has been retained from Order No. R5-2006-0129.

### B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Monitoring data collected over the existing permit term for bis (2-ethylhexyl) phthalate did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for this parameter have not been retained from Order No. R5-2006-0129.

3. Effluent monitoring frequencies and sample types for acute toxicity, $BOD_5$, TSS, total residual chlorine, and settleable solids have been retained from Order No. R5-2006-0129 to determine compliance with effluent limitations for these parameters.

4. Effluent monitoring frequencies and sample types for copper and zinc (1/month) have been retained from Order No. R5-2006-0129.

5. Effluent monitoring frequency and sample type for ammonia (grab) has been retained from Order No. R5-2006-0129.

6. Effluent monitoring frequency sample type for total coliform organisms has been retained from Order No. R5-2006-0129.

7. Effluent monitoring for arsenic (1/quarter), carbon tetrachloride (1/quarter), heptachlor (1/quarter), alkalinity (1/month), chloride (1/quarter), electrical conductivity (1/month), hardness (1/month), standard minerals (1/year), sulfate (1/quarter), temperature (2/month), total dissolved solids (1/quarter), and turbidity

(2/month) are new requirements for this are new requirements for this Order. Monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

8. Effluent monitoring frequency for priority pollutants has changed from once per year to semiannually during the third and fourth year of the Order. In accordance with Section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

9. California Water Code section 13176, subdivision (a), states: "The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code." The Department of Public Health certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

   Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II). Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times.

## C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Semi-annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Annual chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

## D. Receiving Water Monitoring

1. **Surface Water**
   a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

   b. This Order retains sample types and monitoring frequencies from Order No. R5-2006-0129 for the receiving water at Monitoring Locations RSW-001 and RSW-002 for total coliform organisms, hardness, and turbidity.

c. Effluent monitoring frequencies at Monitoring Locations RSW-001 and RSW-002 for temperature, pH, and dissolved oxygen have been increased from twice per month to once per week.

d. Surface water monitoring requirements (semi-annual) for copper, zinc, dibromochloromethane, nitrate (1/year), and ammonia (1/year) are new requirements for this Order. Monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

e. Consistent with the effluent monitoring requirements, monitoring for priority pollutants and other constituents of concern upstream of Discharge Point D-001 at Monitoring Location RSW-001 is required twice during the third year and twice during the fourth year of the permit term (i.e. 4 sampling events) to collect the necessary data to determine reasonable potential as required in section 1.2 of the SIP. The hardness (as $CaCO_3$) of the upstream receiving water shall also be monitored concurrently with the priority pollutants as well as pH to ensure the water quality criteria/objectives are correctly adjusted for the receiving water when determining reasonable potential as specified in section 1.3 of the SIP. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

2. **Groundwater.**

a. CWC section 13267 states, in part, "(a) A Regional Water Board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports." The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program is issued pursuant to CWC section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations in groundwater, when compared to background. The monitoring must, at a minimum, allow for complete assessment of groundwater impacts including the vertical and lateral extent of degradation if present, an assessment of all wastewater-related

constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution No. 68-16 and the Basin Plan.

c. This Order requires the Discharger to conduct groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Water Board plans and policies, including Resolution No. 68-16.

## E. Other Monitoring Requirements

1. **Biosolids monitoring**
   Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.6.a. of this Order. Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. **Pond Monitoring**
   Percolation pond monitoring is required to ensure proper operation of the storage ponds. Weekly monitoring for freeboard, $BOD_5$, TSS, pH, settleable solids, total coliform organisms, dissolved oxygen and odors has been retained from Order R5-2006-0129.

3. **Effluent and Receiving Water Characterization Study**
   An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third and fourth year of this permit term, the Discharger is required to conduct semi-annual monitoring of the effluent at EFF-001 and of the receiving water at RSW-001 for all priority pollutants and other constituents of concern as described in Attachment I.

# VII. RATIONALE FOR PROVISIONS

## A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

## B. Special Provisions

### 1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including:

   i. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
   ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance, including justification for seasonal limitations. For example, modifications to the Chronic Whole Effluent Toxicity Accelerated Monitoring Trigger, or the effluent limitations for ammonia, may be appropriate.

b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

c. **Constituent Study**. There are indications that the discharge may contain constituents (e.g., arsenic, carbon tetrachloride, heptachlor) that have reasonable

potential to cause or contribute to an exceedance of water quality objectives. This Order requires the Discharger to conduct monitoring for these constituents as outlined in the Monitoring and Reporting Program (Attachment E). This reopener provision allows the Regional Water Board to reopen this Order for additional effluent limitations and requirements for these constituents if after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective.

d. **Pollution Prevention Plan.** This Order requires the Discharger to develop a pollution prevention plan following Water Code section 13263.3(d)(3) for ammonia. This reopener provision allows the Central Valley Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the pollution prevention plans.

e. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

f. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits

g. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents, and for other applicable pollutants such as aluminum. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for cadmium, cooper, lead, and zinc. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

h. **Ammonia Reduction Study.** Upon completion of the Ammonia Reduction Study, this Order may be reopened to add or modify final ammonia effluent limitations and/or mixing zones, as appropriate.

i. **Salinity Evaluation and Minimization Plan.** This Order requires the Discharger to complete and submit a salinity evaluation and minimization plan to address sources of salinity from the Facility. The plan shall be completed and submitted to the Central Valley Water Board as specified in section VI.C.3.c of this Order.

Based on a review of the results of the report on the salinity/EC site-specific studies this Order may be reopened for addition of an effluent limitation and requirements for salinity and/or EC.

j. **Title 27 Exemption Analysis.** Once the results of groundwater monitoring and the Title 27 Exemption Analysis required by this Order are submitted, this Order may be reopened to add or modify Findings, limits, or other conditions as appropriate.

k. **Performance-Based Effluent Limitations**. This Order allows dilution credits for ammonia, copper, dichlorobromomethane, and nitrate for development of water quality-based effluent limits. However, the amount of dilution allowed has been reduced, based on the Facility's performance to control these pollutants. Maximum daily performance-based effluent limits were calculated for ammonia, copper, and dichlorobromomethane based on effluent data from 2008 to 2011. The performance-based effluent limit for nitrate was based on effluent data from 2008 to 2012. If the Discharger submits new monitoring results that justify a different performance-based effluent limit for ammonia, copper, dichlorobromomethane, and/or nitrate, this Order may be reopened to modify the effluent limitations for these pollutants.

2. **Special Studies and Additional Monitoring Requirements**

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00.) Based on whole effluent chronic toxicity testing performed by the Discharger from October 2008 through October 2011 the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision requires the Discharger to submit to the Central Valley Water Board an Initial Investigative TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

**Monitoring Trigger.** A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

**Accelerated Monitoring.** The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

**TRE Guidance.** The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.

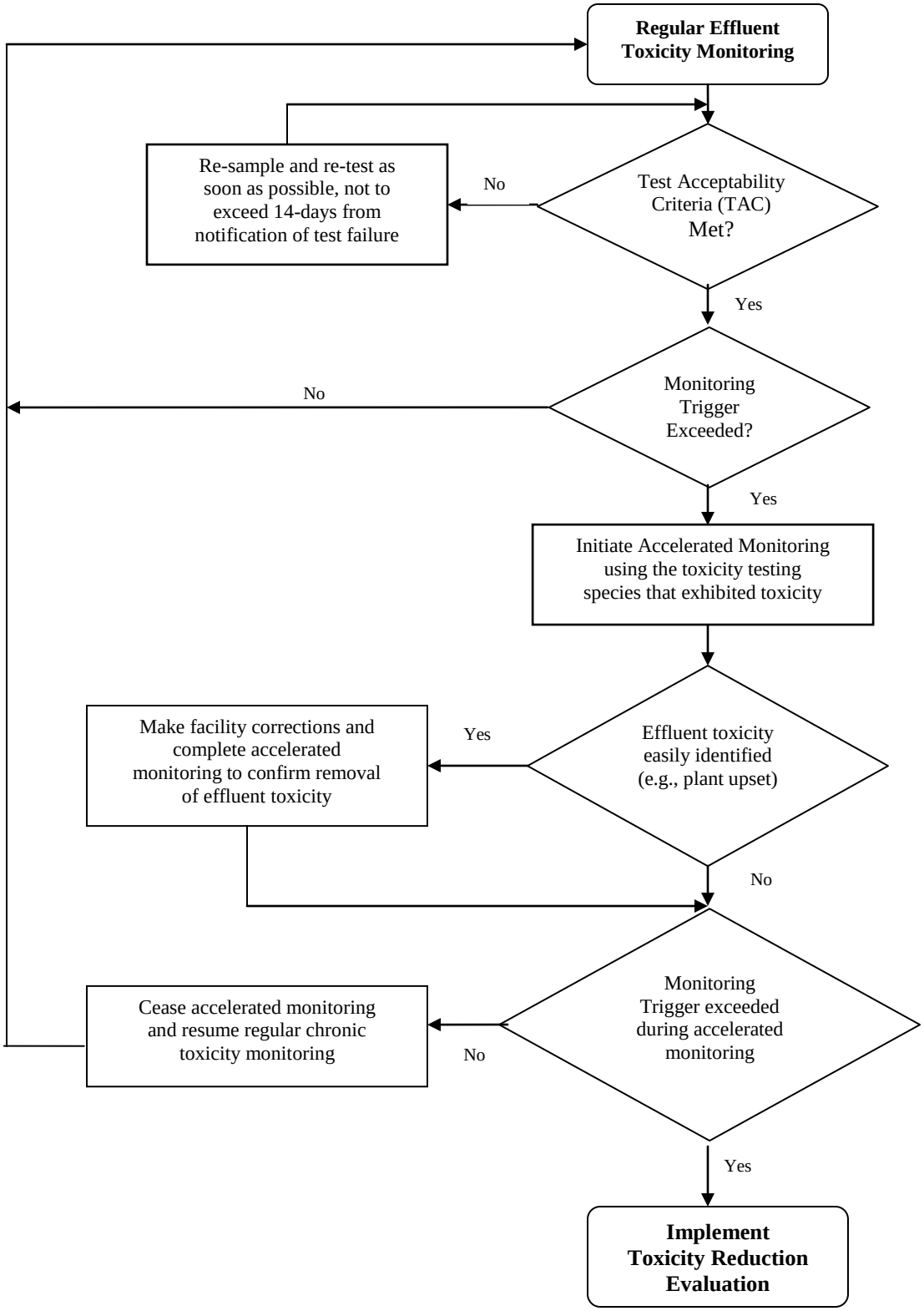
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.

- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.

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

- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

## Figure F-1
## WET Accelerated Monitoring Flow Chart



b. **Constituent Study.** There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. This Order requires the Discharger to complete a study of these constituents' potential effect in the receiving water. If after a review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective this Order may be reopened and effluent limitations added for the subject constituents.

c. **Groundwater Monitoring Well Network Report.** To determine compliance with the groundwater limitations contained in section V.B. of this Order, the Discharger is required to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells and a sufficient number of designated monitoring wells downgradient of the percolation.

d. **Title 27 Exemption Analysis.** To evaluate potential groundwater impacts from the discharge to the percolation ponds and to evaluate compliance with the Basin Plan, the Discharger is required to submit, within 36 months of the effective date of this Order, a Title 27 Exemption Analysis (Title 27 Analysis). The Title 27 Analysis shall present the results of the land discharge and groundwater monitoring to date, and an evaluation of whether the discharge to the percolation ponds is in compliance with the Basin Plan, including the Basin Plan water quality objectives.

e. **Groundwater Water Quality Characterization.** To evaluate potential groundwater impacts from the discharge to the percolation ponds and to evaluate compliance with the Basin Plan, the Discharger is required to submit, within 36 months of the effective date of this Order, a groundwater water quality characterization study. The study shall include, but is not limited to; characterization of natural background quality of monitored constituents. For each groundwater monitoring parameter/constituent identified in the Monitoring and Reporting Program, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and a comparison of background groundwater quality to that in wells used to monitor the facility discharge. Determination of background quality shall be made using the methods described in Title 27 California Code of Regulations Section 20415(e)(10), and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events.

f. **Ammonia Reduction Study**. To evaluate whether best practicable treatment or control measures are being implemented at the facility in order to minimize the size of the ammonia mixing zone, the Discharger is required to submit an Ammonia Reduction Study. The study shall include a description of ammonia reduction measures implemented during the current permit cycle and/or scheduled for future implementation, site-specific constraints, if any, related to effluent ammonia reduction, and an evaluation of whether there are additional practicable ammonia reduction measures that may be implemented at the facility

in order to reduce ammonia concentrations in the effluent and minimize the size of the ammonia mixing zone. The study shall be submitted by the Discharger 180 days prior to the expiration date of this Order.

3. **Best Management Practices and Pollution Prevention**

   a. **Salinity Evaluation and Minimization Plan**. An Evaluation and Minimization plan for salinity is required by this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Sacramento River.

4. **Construction, Operation, and Maintenance Specifications**

   a. **Treatment Pond Operating Requirements.**

      i. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

      ii. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

      iii. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

         - An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
         - Weeds shall be minimized.
         - Dead algae, vegetation, and debris shall not accumulate on the water surface.

      iv. Freeboard shall never be less than two feet (measured vertically to the lowest point of overflow.

      v. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the non-irrigation season. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard shall never be less than two feet (measured vertically to the lowest point of overflow).

      vi. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with Land Discharge Specification.

5. **Special Provisions for Municipal Facilities (POTWs Only).**

   a. **Pretreatment Requirements. –** The design flow of the Dunsmuir WWTP is less than 5 mgd, and the facility does not receive discharges from industrial users.

Under these conditions, the Discharger is not required to develop a pretreatment program pursuant to USEPA regulations at 40 CFR Part 403.

b. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

   Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by 1 December 2006.

6. **Other Special Provisions**

a. **Ownership Change.** To maintain the accountability of the operation of the Facility, the Discharger is required to notify the succeeding owner or operator of the existence of this Order by letter if, and when, there is any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger.

b. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, Sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

c. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition or limitation contained in this Order, this Order requires the Discharger to notify the Regional Water Board by telephone (530) 224-4845 (or to the Regional Water Board staff assigned to the facility) within 24 hours of having knowledge of such noncompliance, and shall confirm

this notification in writing within five days, unless the Regional Water Board waives confirmation. The written notification shall include the information required by Federal Standard Provision [*40 CFR §122.41(l)(6)(i)*].

7. **Compliance Schedules**

a. The Discharger submitted a request, and justification (dated 26 July 2012), for a compliance schedule for facility wet weather capacity improvements. The compliance schedule justification included all items specified in the Compliance Schedule Policy. This Order establishes a compliance schedule for the new, final WQBELs for ammonia and requires full compliance by **5 years from the effective date of this Order**.

## VIII. PUBLIC PARTICIPATION

The Central Valley Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

### A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through physical posting, mailing, and internet posting.

### B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5 p.m. on **27 August 2012**.

### C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 4/5 October 2012
Time: 8:30 am
Location: Regional Water Quality Control Board, Central Valley Region

11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/centralvalley where you can access the current agenda for changes in dates and locations.

### D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

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

### E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (530) 224-4845.

### F. 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 this Facility, and provide a name, address, and phone number.

### G. Additional Information

Requests for additional information or questions regarding this order should be directed to Daniel Warner at (530) 224-4848.

# ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS.

| Constituent | Units | MEC | B | C | CMC | CCC | Water & Org | Org. Only | Basin Plan | MCL | Reasonable Potential |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia Nitrogen (as N) | mg/L | 17.6 | 0.14 | 3.18 | 5.62 | 3.18 | -- | -- | -- | -- | MEC>C |
| Copper, Total recoverable | ug/L | 24.7 | 1.1 | 4.63 [4]<br>5.86 [5] | 6.46 [4]<br>8.38 [5] | 4.63 [4]<br>5.86 [5] | 1,300 | -- | 6.38 [4]<br>8.19 [5] | 1000 [8] | MEC>C |
| Dichlorobromomethane | ug/L | 3.9 | 0.1 | 0.56 | N/A | N/A | 0.56 | 46 | N/A | -- | MEC>C |
| Nitrate Nitrogen (as N) | mg/L | 15.5 | 4.63 | 10 | -- | -- | -- | -- | 10 | 10 [7] | MEC>C |
| Zinc, Total recoverable | ug/L | 57.7 | 17.3 | 17.71 [4]<br>22.27 [5] | 59.76 [4]<br>75.52 [5] | 59.76 [4]<br>75.52 [5] | -- | -- | 17.71 [4]<br>22.27 [5] | 5000[8] | MEC>C |
| Arsenic | ug/L | 0.6 | 10.3 | 10.00 | 340 | 150 | -- | -- | -- | 10 [7] | B>C [1] |
| Carbon Tetrachloride | ug/L | 0.4 | 0.1 | 0.25 | -- | -- | 0.25 | 4.4 | -- | 0.50 | MEC>C [2] |
| Heptachlor | ug/L | 0.007<br>DNQ | 0.002 | 0.00021 | 0.52 | 0.0038 | 0.00021 | 0.00021 | -- | 0.010 | MEC>C [3] |
| Aluminum | ug/L | 13.2 | -- | 87 | 750 [6] | 87 [6] | -- | -- | -- | 200 [8] | No |
| Antimony | ug/L | 0.2 | 0.1 | 6.00 | -- | -- | 14 | 4300 | 6 | -- | No |
| Iron | ug/L | 39 | -- | 300 | -- | 1000[6] | -- | -- | -- | 300 [8] | No |
| Manganese | ug/L | 11.5 | -- | 50 | -- | -- | -- | -- | -- | 50 [8] | No |
| Mercury | ug/L | 0.00242 | 0.00129 | 0.05 | 1.4 | 0.77 | 0.05 | -- | -- | -- | No |
| Nickel | ug/L | 1.5 | 5.7 | 26.04 | 234.26 | 26.04 | 610 | 4600 | -- | -- | No |
| Selenium | ug/L | 0.5 | -- | 5 | -- | 5 | -- | -- | -- | -- | No |

General Note: All inorganic concentrations are given as a total recoverable.
Background data range is 1 January 2008 to 30 June 2011.
Effluent data range is 1 January 2008 to 30 June 2011.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Applicable
ND = Non-detect

Footnotes:
1. RPA based on B>C, no limits, monitoring required.
2. RPA based on one detection during two sampling events, no limits, monitoring required.
3. RPA based on one detection during two sampling events, no limits, monitoring required.
4. Based on minimum receiving water hardness of 44 mg/L $CaCO_3$
5. Based on minimum effluent hardness of 58 mg/L $CaCo_3$
6. NAWQC
7. Primary MCL
8. Secondary MCL

## ATTACHMENT H – CALCULATION OF WQBELS

| Parameter | Units | Most Stringent Criteria | | | Dilution Factors | | | HH Calculations | | | Aquatic Life Calculations | | | | | | | | | Final Effluent Limitations | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | HH | CMC or BP Max Obj. | CCC | HH | CMC | CCC | $ECA_{HH}$ = $AMEL_{HH}$ | AMEL/MDEL $Multiplier_{HH}$ | $MDEL_{HH}$ | ECA $Multiplier_{acute}$ | $LTA_{acute}$ | ECA $Multiplier_{chronic}$ | $LTA_{chronic}$ | Lowest LTA | AMEL $Multiplier_{95}$ | $AMEL_{AL}$ | MDEL $Multiplier_{99}$ | $MDEL_{AL}$ | Lowest AMEL | Lowest MDEL |
| Ammonia (as N) | mg/L | -- | 5.62 | 3.18 [1]<br>7.95 [2] | -- | 13.0 | 16.0 | -- | -- | -- | 0.18 | 13.7 | 0.63 [1]<br>0.33 [2] | 32.6 [1]<br>43.9 [2] | 13.7 | 2.1 | 28.8 | 5.59 | 76.8 | 28.8[3] | 76.8[3] |
| Copper | ug/L | 1300 | 8.19 | 5.86 | -- | 13.0 | 16.0 | -- | -- | -- | 0.39 | 39.2 | 0.60 | 49.1 | 39.2 | 1.43 | 55.9 | 2.56 | 100.4 | 55.9 [3] | 100.4 [3] |
| Dichlorobromomethane | ug/L | 0.56 | -- | -- | 105.0 | -- | -- | 48.86 | 2.83 | 138.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 49 [3] | 138 [3] |
| Nitrate (as N) | mg/L | 10 | -- | -- | 105.0 | -- | -- | 573.8 | 2.99 | 1714.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 574 [3] | 1714 [3] |
| Zinc | ug/L | | 22.27 | 75.52 | -- | 13.0 | -- | -- | -- | -- | 0.62 | 58.9 | 0.78 | 58.9 | 58.9 | 1.19 | 63.7 | 1.62 | 86.9 | 63.7 | 86.9 |

1. 30-day ammonia criteria.
2. 4-day ammonia criteria
3. See performance based limits IV.D.6. for ammonia, copper, DCBM, and nitrate limits.

## ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

**I. Background.** Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.waterboards.ca.gov/iswp/index.html). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. In addition to specific requirements of the SIP, the Regional Water Board is requiring the following monitoring:

**A. Drinking water constituents**. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

**B. Effluent and receiving water temperature.** This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

**C. Effluent and receiving water hardness and pH.** These are necessary because several of the CTR constituents are hardness and pH dependent.

**D. Dioxin and furan sampling.** This Order does not require the Discharger to conduct dioxin and furan congener sampling. Monitoring for dioxin and furan congeners has been performed by the Discharger in conjunction with past monitoring requirements. Based on the results of past dioxin and furan congener sampling these pollutants are not present in the discharge. [Semiannual monitoring for 2,3,7,8-TCDD (Dioxin), as described below and contained in Table I-1, is required in this Order]

**II. Monitoring Requirements.**

**A.** Semi-annual priority pollutant samples shall be collected from the effluent (EFF-001), and receiving waters (RWS-001) and analyzed for the constituents listed in Table I-1. Semi-annual monitoring shall be conducted for during years three and four of the permit term and results of such monitoring submitted to the Regional Water Board, during the fourth year of the permit term. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

**B. Monitoring (dioxins and furans only)**. NOT APPLICABLE

**C. Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

**D. Sample type.** All effluent samples shall be taken as 24-hour flow proportioned or time composited samples[1]. All receiving water samples shall be taken as grab samples.

**Table I-1. Priority Pollutants**

| CTR # | Constituent | CAS Number | Controlling Water Quality Criterion for Surface Waters | | Criterion Quantitation Limit ug/L or noted | Suggested Test Methods |
|---|---|---|---|---|---|---|
| | | | Basis | Criterion Concentration ug/L or noted[1] | | |
| **VOLATILE ORGANICS** | | | | | | |
| 28 | 1,1-Dichloroethane | 75343 | Primary MCL | 5 | 0.5 | EPA 8260B |
| 30 | 1,1-Dichloroethene | 75354 | National Toxics Rule | 0.057 | 0.5 | EPA 8260B |
| 41 | 1,1,1-Trichloroethane | 71556 | Primary MCL | 200 | 0.5 | EPA 8260B |
| 42 | 1,1,2-Trichloroethane | 79005 | National Toxics Rule | 0.6 | 0.5 | EPA 8260B |
| 37 | 1,1,2,2-Tetrachloroethane | 79345 | National Toxics Rule | 0.17 | 0.5 | EPA 8260B |
| 75 | 1,2-Dichlorobenzene | 95501 | Taste & Odor | 10 | 0.5 | EPA 8260B |
| 29 | 1,2-Dichloroethane | 107062 | National Toxics Rule | 0.38 | 0.5 | EPA 8260B |
| | cis-1,2-Dichloroethene | 156592 | Primary MCL | 6 | 0.5 | EPA 8260B |
| 31 | 1,2-Dichloropropane | 78875 | Calif. Toxics Rule | 0.52 | 0.5 | EPA 8260B |
| 101 | 1,2,4-Trichlorobenzene | 120821 | Public Health Goal | 5 | 0.5 | EPA 8260B |
| 76 | 1,3-Dichlorobenzene | 541731 | Taste & Odor | 10 | 0.5 | EPA 8260B |
| 32 | 1,3-Dichloropropene | 542756 | Primary MCL | 0.5 | 0.5 | EPA 8260B |
| 77 | 1,4-Dichlorobenzene | 106467 | Primary MCL | 5 | 0.5 | EPA 8260B |
| 17 | Acrolein | 107028 | Aquatic Toxicity | 21 | 2 | EPA 8260B |
| 18 | Acrylonitrile | 107131 | National Toxics Rule | 0.059 | 2 | EPA 8260B |
| 19 | Benzene | 71432 | Primary MCL | 1 | 0.5 | EPA 8260B |
| 20 | Bromoform | 75252 | Calif. Toxics Rule | 4.3 | 0.5 | EPA 8260B |
| 34 | Bromomethane | 74839 | Calif. Toxics Rule | 48 | 1 | EPA 8260B |
| 21 | Carbon tetrachloride | 56235 | National Toxics Rule | 0.25 | 0.5 | EPA 8260B |
| 22 | Chlorobenzene (mono chlorobenzene) | 108907 | Taste & Odor | 50 | 0.5 | EPA 8260B |
| 24 | Chloroethane | 75003 | Taste & Odor | 16 | 0.5 | EPA 8260B |
| 25 | 2- Chloroethyl vinyl ether | 110758 | Aquatic Toxicity | 122 (3) | 1 | EPA 8260B |
| 26 | Chloroform | 67663 | OEHHA Cancer Risk | 1.1 | 0.5 | EPA 8260B |
| 35 | Chloromethane | 74873 | USEPA Health Advisory | 3 | 0.5 | EPA 8260B |
| 23 | Dibromochloromethane | 124481 | Calif. Toxics Rule | 0.41 | 0.5 | EPA 8260B |
| 27 | Dichlorobromomethane | 75274 | Calif. Toxics Rule | 0.56 | 0.5 | EPA 8260B |
| 36 | Dichloromethane | 75092 | Calif. Toxics Rule | 4.7 | 0.5 | EPA 8260B |

[1] Constituents shall be sampled in accordance with 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

| CTR # | Constituent | CAS Number | Controlling Water Quality Criterion for Surface Waters | | Criterion Quantitation Limit ug/L or noted | Suggested Test Methods |
|---|---|---|---|---|---|---|
| | | | Basis | Criterion Concentration ug/L or noted[1] | | |
| 33 | Ethylbenzene | 100414 | Taste & Odor | 29 | 0.5 | EPA 8260B |
| 88 | Hexachlorobenzene | 118741 | Calif. Toxics Rule | 0.00075 | 1 | EPA 8260B |
| 89 | Hexachlorobutadiene | 87683 | National Toxics Rule | 0.44 | 1 | EPA 8260B |
| 91 | Hexachloroethane | 67721 | National Toxics Rule | 1.9 | 1 | EPA 8260B |
| 94 | Naphthalene | 91203 | USEPA IRIS | 14 | 10 | EPA 8260B |
| 38 | Tetrachloroethene | 127184 | National Toxics Rule | 0.8 | 0.5 | EPA 8260B |
| 39 | Toluene | 108883 | Taste & Odor | 42 | 0.5 | EPA 8260B |
| 40 | trans-1,2-Dichloroethylene | 156605 | Primary MCL | 10 | 0.5 | EPA 8260B |
| 43 | Trichloroethene | 79016 | National Toxics Rule | 2.7 | 0.5 | EPA 8260B |
| 44 | Vinyl chloride | 75014 | Primary MCL | 0.5 | 0.5 | EPA 8260B |
| | Methyl-tert-butyl ether (MTBE) | 1634044 | Secondary MCL | 5 | 0.5 | EPA 8260B |
| | Trichlorofluoromethane | 75694 | Primary MCL | 150 | 5 | EPA 8260B |
| | 1,1,2-Trichloro-1,2,2-Trifluoroethane | 76131 | Primary MCL | 1200 | 10 | EPA 8260B |
| | Styrene | 100425 | Taste & Odor | 11 | 0.5 | EPA 8260B |
| | Xylenes | 1330207 | Taste & Odor | 17 | 0.5 | EPA 8260B |
| **SEMI-VOLATILE ORGANICS** | | | | | | |
| 60 | 1,2-Benzanthracene | 56553 | Calif. Toxics Rule | 0.0044 | 5 | EPA 8270C |
| 85 | 1,2-Diphenylhydrazine | 122667 | National Toxics Rule | 0.04 | 1 | EPA 8270C |
| 45 | 2-Chlorophenol | 95578 | Taste and Odor | 0.1 | 2 | EPA 8270C |
| 46 | 2,4-Dichlorophenol | 120832 | Taste and Odor | 0.3 | 1 | EPA 8270C |
| 47 | 2,4-Dimethylphenol | 105679 | Calif. Toxics Rule | 540 | 2 | EPA 8270C |
| 49 | 2,4-Dinitrophenol | 51285 | National Toxics Rule | 70 | 5 | EPA 8270C |
| 82 | 2,4-Dinitrotoluene | 121142 | National Toxics Rule | 0.11 | 5 | EPA 8270C |
| 55 | 2,4,6-Trichlorophenol | 88062 | Taste and Odor | 2 | 10 | EPA 8270C |
| 83 | 2,6-Dinitrotoluene | 606202 | USEPA IRIS | 0.05 | 5 | EPA 8270C |
| 50 | 2-Nitrophenol | 25154557 | Aquatic Toxicity | 150 (5) | 10 | EPA 8270C |
| 71 | 2-Chloronaphthalene | 91587 | Aquatic Toxicity | 1600 (6) | 10 | EPA 8270C |
| 78 | 3,3'-Dichlorobenzidine | 91941 | National Toxics Rule | 0.04 | 5 | EPA 8270C |
| 62 | 3,4-Benzofluoranthene | 205992 | Calif. Toxics Rule | 0.0044 | 10 | EPA 8270C |
| 52 | 4-Chloro-3-methylphenol | 59507 | Aquatic Toxicity | 30 | 5 | EPA 8270C |
| 48 | 4,6-Dinitro-2-methylphenol | 534521 | National Toxics Rule | 13.4 | 10 | EPA 8270C |
| 51 | 4-Nitrophenol | 100027 | USEPA Health Advisory | 60 | 5 | EPA 8270C |
| 69 | 4-Bromophenyl phenyl ether | 101553 | Aquatic Toxicity | 122 | 10 | EPA 8270C |
| 72 | 4-Chlorophenyl phenyl ether | 7005723 | Aquatic Toxicity | 122 (3) | 5 | EPA 8270C |
| 56 | Acenaphthene | 83329 | Taste and Odor | 20 | 1 | EPA 8270C |
| 57 | Acenaphthylene | 208968 | No Criteria Available | | 10 | EPA 8270C |
| 58 | Anthracene | 120127 | Calif. Toxics Rule | 9,600 | 10 | EPA 8270C |

| CTR # | Constituent | CAS Number | Controlling Water Quality Criterion for Surface Waters | | Criterion Quantitation Limit ug/L or noted | Suggested Test Methods |
|---|---|---|---|---|---|---|
| | | | Basis | Criterion Concentration ug/L or noted[1] | | |
| 59 | Benzidine | 92875 | National Toxics Rule | 0.00012 | 5 | EPA 8270C |
| 61 | Benzo(a)pyrene (3,4-Benzopyrene) | 50328 | Calif. Toxics Rule | 0.0044 | 0.1 | EPA 8270C |
| 63 | Benzo(g,h,i)perylene | 191242 | No Criteria Available | | 5 | EPA 8270C |
| 64 | Benzo(k)fluoranthene | 207089 | Calif. Toxics Rule | 0.0044 | 2 | EPA 8270C |
| 65 | Bis(2-chloroethoxy) methane | 111911 | No Criteria Available | | 5 | EPA 8270C |
| 66 | Bis(2-chloroethyl) ether | 111444 | National Toxics Rule | 0.031 | 1 | EPA 8270C |
| 67 | Bis(2-chloroisopropyl) ether | 39638329 | Aquatic Toxicity | 122 (3) | 10 | EPA 8270C |
| 68 | Bis(2-ethylhexyl) phthalate | 117817 | National Toxics Rule | 1.8 | 3 | EPA 8270C |
| 70 | Butyl benzyl phthalate | 85687 | Aquatic Toxicity | 3 (7) | 10 | EPA 8270C |
| 73 | Chrysene | 218019 | Calif. Toxics Rule | 0.0044 | 5 | EPA 8270C |
| 81 | Di-n-butylphthalate | 84742 | Aquatic Toxicity | 3 (7) | 10 | EPA 8270C |
| 84 | Di-n-octylphthalate | 117840 | Aquatic Toxicity | 3 (7) | 10 | EPA 8270C |
| 74 | Dibenzo(a,h)-anthracene | 53703 | Calif. Toxics Rule | 0.0044 | 0.1 | EPA 8270C |
| 79 | Diethyl phthalate | 84662 | Aquatic Toxicity | 3 (7) | 2 | EPA 8270C |
| 80 | Dimethyl phthalate | 131113 | Aquatic Toxicity | 3 (7) | 2 | EPA 8270C |
| 86 | Fluoranthene | 206440 | Calif. Toxics Rule | 300 | 10 | EPA 8270C |
| 87 | Fluorene | 86737 | Calif. Toxics Rule | 1300 | 10 | EPA 8270C |
| 90 | Hexachlorocyclopentadiene | 77474 | Taste and Odor | 1 | 1 | EPA 8270C |
| 92 | Indeno(1,2,3-c,d)pyrene | 193395 | Calif. Toxics Rule | 0.0044 | 0.05 | EPA 8270C |
| 93 | Isophorone | 78591 | National Toxics Rule | 8.4 | 1 | EPA 8270C |
| 98 | N-Nitrosodiphenylamine | 86306 | National Toxics Rule | 5 | 1 | EPA 8270C |
| 96 | N-Nitrosodimethylamine | 62759 | National Toxics Rule | 0.00069 | 5 | EPA 8270C |
| 97 | N-Nitrosodi-n-propylamine | 621647 | Calif. Toxics Rule | 0.005 | 5 | EPA 8270C |
| 95 | Nitrobenzene | 98953 | National Toxics Rule | 17 | 10 | EPA 8270C |
| 53 | Pentachlorophenol | 87865 | Calif. Toxics Rule | 0.28 | 0.2 | EPA 8270C |
| 99 | Phenanthrene | 85018 | No Criteria Available | | 5 | EPA 8270C |
| 54 | Phenol | 108952 | Taste and Odor | 5 | 1 | EPA 8270C |
| 100 | Pyrene | 129000 | Calif. Toxics Rule | 960 | 10 | EPA 8270C |
| **INORGANICS** | | | | | | |
| | Aluminum | 7429905 | Ambient Water Quality | 87 | 50 | EPA 6020/200.8 |
| 1 | Antimony | 7440360 | Primary MCL | 6 | 5 | EPA 6020/200.8 |
| 2 | Arsenic | 7440382 | Ambient Water Quality | 0.018 | 0.01 | EPA 1632 |
| 15 | Asbestos | 1332214 | National Toxics Rule/ Primary MCL | 7 MFL | 0.2 MFL >10um | EPA/600/R-93/116(PCM) |
| | Barium | 7440393 | Basin Plan Objective | 100 | 100 | EPA 6020/200.8 |
| 3 | Beryllium | 7440417 | Primary MCL | 4 | 1 | EPA 6020/200.8 |
| 4 | Cadmium | 7440439 | Public Health Goal | 0.07 | 0.25 | EPA 1638/200.8 |

| CTR # | Constituent | CAS Number | Controlling Water Quality Criterion for Surface Waters | | Criterion Quantitation Limit ug/L or noted | Suggested Test Methods |
|---|---|---|---|---|---|---|
| | | | Basis | Criterion Concentration ug/L or noted[1] | | |
| 5a | Chromium (total) | 7440473 | Primary MCL | 50 | 2 | EPA 6020/200.8 |
| 5b | Chromium (VI) | 18540299 | Public Health Goal | 0.2 | 0.5 | EPA 7199/1636 |
| 6 | Copper | 7440508 | National Toxics Rule | 4.1 (2) | 0.5 | EPA 6020/200.8 |
| 14 | Cyanide | 57125 | National Toxics Rule | 5.2 | 5 | EPA 9012A |
| | Fluoride | 7782414 | Public Health Goal | 1000 | 0.1 | EPA 300 |
| | Iron | 7439896 | Secondary MCL | 300 | 100 | EPA 6020/200.8 |
| 7 | Lead | 7439921 | Calif. Toxics Rule | 0.92 (2) | 0.5 | EPA 1638 |
| 8 | Mercury | 7439976 | TMDL Development | | 0.0002 (11) | EPA 1669/1631 |
| | Manganese | 7439965 | Secondary MCL/ Basin Plan Objective | 50 | 20 | EPA 6020/200.8 |
| 9 | Nickel | 7440020 | Calif. Toxics Rule | 24 (2) | 5 | EPA 6020/200.8 |
| 10 | Selenium | 7782492 | Calif. Toxics Rule | 5 (8) | 5 | EPA 6020/200.8 |
| 11 | Silver | 7440224 | Calif. Toxics Rule | 0.71 (2) | 1 | EPA 6020/200.8 |
| 12 | Thallium | 7440280 | National Toxics Rule | 1.7 | 1 | EPA 6020/200.8 |
| | Tributyltin | 688733 | Ambient Water Quality | 0.063 | 0.002 | EV-024/025 |
| 13 | Zinc | 7440666 | Calif. Toxics Rule/ Basin Plan Objective | 54/ 16 (2) | 10 | EPA 6020/200.8 |
| **PESTICIDES - PCBs** | | | | | | |
| 110 | 4,4'-DDD | 72548 | Calif. Toxics Rule | 0.00083 | 0.02 | EPA 8081A |
| 109 | 4,4'-DDE | 72559 | Calif. Toxics Rule | 0.00059 | 0.01 | EPA 8081A |
| 108 | 4,4'-DDT | 50293 | Calif. Toxics Rule | 0.00059 | 0.01 | EPA 8081A |
| 112 | alpha-Endosulfan | 959988 | National Toxics Rule | 0.056 (9) | 0.02 | EPA 8081A |
| 103 | alpha-Hexachlorocyclohexane (BHC) | 319846 | Calif. Toxics Rule | 0.0039 | 0.01 | EPA 8081A |
| | Alachlor | 15972608 | Primary MCL | 2 | 1 | EPA 8081A |
| 102 | Aldrin | 309002 | Calif. Toxics Rule | 0.00013 | 0.005 | EPA 8081A |
| 113 | beta-Endosulfan | 33213659 | Calif. Toxics Rule | 0.056 (9) | 0.01 | EPA 8081A |
| 104 | beta-Hexachlorocyclohexane | 319857 | Calif. Toxics Rule | 0.014 | 0.005 | EPA 8081A |
| 107 | Chlordane | 57749 | Calif. Toxics Rule | 0.00057 | 0.1 | EPA 8081A |
| 106 | delta-Hexachlorocyclohexane | 319868 | No Criteria Available | | 0.005 | EPA 8081A |
| 111 | Dieldrin | 60571 | Calif. Toxics Rule | 0.00014 | 0.01 | EPA 8081A |
| 114 | Endosulfan sulfate | 1031078 | Ambient Water Quality | 0.056 | 0.05 | EPA 8081A |
| 115 | Endrin | 72208 | Calif. Toxics Rule | 0.036 | 0.01 | EPA 8081A |
| 116 | Endrin Aldehyde | 7421934 | Calif. Toxics Rule | 0.76 | 0.01 | EPA 8081A |
| 117 | Heptachlor | 76448 | Calif. Toxics Rule | 0.00021 | 0.01 | EPA 8081A |
| 118 | Heptachlor Epoxide | 1024573 | Calif. Toxics Rule | 0.0001 | 0.01 | EPA 8081A |
| 105 | Lindane (gamma-Hexachlorocyclohexane) | 58899 | Calif. Toxics Rule | 0.019 | 0.019 | EPA 8081A |
| 119 | PCB-1016 | 12674112 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 120 | PCB-1221 | 11104282 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |

| CTR # | Constituent | CAS Number | Controlling Water Quality Criterion for Surface Waters | | Criterion Quantitation Limit ug/L or noted | Suggested Test Methods |
|---|---|---|---|---|---|---|
| | | | Basis | Criterion Concentration ug/L or noted[1] | | |
| 121 | PCB-1232 | 11141165 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 122 | PCB-1242 | 53469219 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 123 | PCB-1248 | 12672296 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 124 | PCB-1254 | 11097691 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 125 | PCB-1260 | 11096825 | Calif. Toxics Rule | 0.00017 (10) | 0.5 | EPA 8082 |
| 126 | Toxaphene | 8001352 | Calif. Toxics Rule | 0.0002 | 0.5 | EPA 8081A |
| | Atrazine | 1912249 | Public Health Goal | 0.15 | 1 | EPA 8141A |
| | Bentazon | 25057890 | Primary MCL | 18 | 2 | EPA 643/ 515.2 |
| | Carbofuran | 1563662 | CDFG Hazard Assess. | 0.5 | 5 | EPA 8318 |
| | 2,4-D | 94757 | Primary MCL | 70 | 10 | EPA 8151A |
| | Dalapon | 75990 | Ambient Water Quality | 110 | 10 | EPA 8151A |
| | 1,2-Dibromo-3-chloropropane (DBCP) | 96128 | Public Health Goal | 0.0017 | 0.01 | EPA 8260B |
| | Di(2-ethylhexyl)adipate | 103231 | USEPA IRIS | 30 | 5 | EPA 8270C |
| | Dinoseb | 88857 | Primary MCL | 7 | 2 | EPA 8151A |
| | Diquat | 85007 | Ambient Water Quality | 0.5 | 4 | EPA 8340/ 549.1/HPLC |
| | Endothal | 145733 | Primary MCL | 100 | 45 | EPA 548.1 |
| | Ethylene Dibromide | 106934 | OEHHA Cancer Risk | 0.0097 | 0.02 | EPA 8260B/504 |
| | Glyphosate | 1071836 | Primary MCL | 700 | 25 | HPLC/EPA 547 |
| | Methoxychlor | 72435 | Public Health Goal | 30 | 10 | EPA 8081A |
| | Molinate (Ordram) | 2212671 | CDFG Hazard Assess. | 13 | 2 | EPA 634 |
| | Oxamyl | 23135220 | Public Health Goal | 50 | 20 | EPA 8318/632 |
| | Picloram | 1918021 | Primary MCL | 500 | 1 | EPA 8151A |
| | Simazine (Princep) | 122349 | USEPA IRIS | 3.4 | 1 | EPA 8141A |
| | Thiobencarb | 28249776 | Basin Plan Objective/ Secondary MCL | 1 | 1 | HPLC/EPA 639 |
| 16 | 2,3,7,8-TCDD (Dioxin) | 1746016 | Calif. Toxics Rule | 1.30E-08 | 5.00E-06 | EPA 8290 (HRGC) MS |
| | 2,4,5-TP (Silvex) | 93765 | Ambient Water Quality | 10 | 1 | EPA 8151A |
| | Diazinon | 333415 | CDFG Hazard Assess. | 0.05 | 0.25 | EPA 8141A/GCMS |
| | Chlorpyrifos | 2921882 | CDFG Hazard Assess. | 0.014 | 1 | EPA 8141A/GCMS |
| **OTHER CONSTITUENTS** | | | | | | |
| | Ammonia (as N) | 7664417 | Ambient Water Quality | 1500 (4) | | EPA 350.1 |
| | Chloride | 16887006 | Agricultural Use | 106,000 | | EPA 300.0 |
| | Flow | | | 1 CFS | | |
| | Hardness (as $CaCO_3$) | | | 5000 | | EPA 130.2 |
| | Foaming Agents (MBAS) | | Secondary MCL | 500 | | SM5540C |
| | Nitrate (as N) | 14797558 | Primary MCL | 10,000 | 2,000 | EPA 300.0 |

| CTR # | Constituent | CAS Number | Controlling Water Quality Criterion for Surface Waters | | Criterion Quantitation Limit ug/L or noted | Suggested Test Methods |
|---|---|---|---|---|---|---|
| | | | Basis | Criterion Concentration ug/L or noted[1] | | |
| | Nitrite (as N) | 14797650 | Primary MCL | 1000 | 400 | EPA 300.0 |
| | pH | | Basin Plan Objective | 6.5-8.5 | 0.1 | EPA 150.1 |
| | Phosphorus, Total (as P) | 7723140 | USEPA IRIS | 0.14 | | EPA 365.3 |
| | Specific conductance (EC) | | Agricultural Use | 700 umhos/cm | | EPA 120.1 |
| | Sulfate | | Secondary MCL | 250,000 | 500 | EPA 300.0 |
| | Sulfide (as S) | | Taste and Odor | 0.029 | | EPA 376.2 |
| | Sulfite (as $SO_3$) | | No Criteria Available | | | SM4500-SO3 |
| | Temperature | | Basin Plan Objective | $^0$F | | |
| | Total Disolved Solids (TDS) | | Agricultural Use | 450,000 | | EPA 160.1 |

FOOTNOTES:

(1) - The Criterion Concentrations serve only as a point of reference for the selection of the appropriate analytical method. They do not indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses. Available technology may require that effluent limits be set lower than these values.

(2) - Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. Values displayed correspond to a total hardness of 40 mg/L.

(3) - For haloethers

(4) - Freshwater aquatic life criteria for ammonia are expressed as a function of pH and temperature of the water body. Values displayed correspond to pH 8.0 and temperature of 22°C.

(5) - For nitrophenols.

(6) - For chlorinated naphthalenes.

(7) - For phthalate esters.

(8) - Basin Plan objective = 2 ug/L for Salt Slough and specific constructed channels in the Grassland watershed.

(9) - Criteria for sum of alpha- and beta- forms.

(10) - Criteria for sum of all PCBs.

(11) - Mercury monitoring shall utilize "ultra-clean" sampling and analytical methods. These methods include:

Method 1669: Sampling Ambient Water for Trace Metals at USEPA Water Quality Criteria Levels, USEPA; and

Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluoresence, USEPA

## III. Additional Study Requirements

**A. Laboratory Requirements.** The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code 13176 and must include quality assurance/quality control data with their reports (ELAP certified).

**B. Criterion Quantitation Limit (CQL).** The criterion quantitation limits will be equal to or lower than the minimum levels (MLs) in Appendix 4 of the SIP or the detection limits for purposes of reporting (DLRs) below the controlling water quality criterion concentrations summarized in Table I-1 of this Order. In cases where the controlling water quality criteria concentrations are below the detection limits of all approved analytical methods, the best available procedure will be utilized that meets the lowest

of the MLs and DLR. Table I-1 contains suggested analytical procedures. The Discharger is not required to use these specific procedures as long as the procedure selected achieves the desired minimum detection level.

**C. Method Detection Limit (MDL**). The method detection limit for the laboratory shall be determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).

**D. Reporting Limit (RL).** The reporting limit for the laboratory. This is the lowest quantifiable concentration that the laboratory can determine. Ideally, the RL should be equal to or lower than the CQL to meet the purposes of this monitoring.

**E. Reporting Protocols.** The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

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

2. Sample results less than the reported 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.

3. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may shortened to "Est. Conc.). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quality may be percent accuracy (+ or – a percentage of the reported value), numerical ranges (low and high), or any other means considered appropriate by the laboratory.

4. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

**F. Data Format.** The monitoring report shall contain the following information for each pollutant:

1. The name of the constituent.

2. Sampling location.

3. The date the sample was collected.

4. The time the sample was collected.

5. The date the sample was analyzed. For organic analyses, the extraction data will also be indicated to assure that hold times are not exceeded for prepared samples.

6. The analytical method utilized.

7. The measured or estimated concentration.

8. The required Criterion Quantitation Limit (CQL).

9. The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).

10. The laboratory's lowest reporting limit (RL).

11. Any additional comments.

## ATTACHMENT J – DIOXIN AND FURAN SAMPLING – NOT APPLICABLE