

2. Groundwater .....	F-43
E. Other Monitoring Requirements .....	F-44
VII. Rationale for Provisions .....	F-44
A. Standard Provisions .....	F-44
B. Special Provisions .....	F-45
1 Reopener Provisions .....	F-45
2. Special Studies and Additional Monitoring Requirements .....	F-46
3. Best Management Practices and Pollution Prevention .....	F-52
4. Construction, Operation, and Maintenance Specifications .....	F-53
5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable .....	F-53
6. Other Special Provisions-Not Applicable .....	F-53
7. Compliance Schedules-Not Applicable .....	F-53
VIII. Public Participation .....	F-53
A. Notification of Interested Parties .....	F-53
B. Written Comments .....	F-53
C. Public Hearing .....	F-53
D. Waste Discharge Requirements Petitions .....	F-54
E. Information and Copying .....	F-54
F. Register of Interested Persons .....	F-54
G. Additional Information .....	F-54

**List of Tables**

Table F-1. Facility Information .....	F-3
Table F-2. Historic Effluent Limitations and Monitoring Data .....	F-5
Table F-3. Summary of Technology-based Effluent Limitations .....	F-14
Table F-4. Copper Design Hardness Evaluation .....	F-17
Table F-5. Lead Design Hardness Evaluation .....	F-18
Table F-6. Cadmium Design Hardness Evaluation .....	F-18
Table F-7. Silver Design Hardness Evaluation .....	F-19
Table F-8. Summary of Reasonable Potential Analysis .....	F-22
Table F-9. Salinity Water Quality Criteria/Objectives .....	F-28
Table F-10. WQBEL Calculations for Ammonia .....	F-32
Table F-11. WQBEL Calculations for Copper .....	F-32
Table F-12. Summary of Water Quality-based Effluent Limitations .....	F-32
Table F-13. Summary of Final Effluent Limitations .....	F-36

**ATTACHMENT F – FACT SHEET**

As described 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**

<b>WDID</b>	5A320102001
<b>Discharger</b>	City of Portola
<b>Name of Facility</b>	Portola Wastewater Treatment Plant
<b>Facility Address</b>	120 Main Street
	Portola, California, 96122
	Plumas County
<b>Facility Contact, Title and Phone</b>	Michael Achter, Operator, (530) 258 6598
<b>Authorized Person to Sign and Submit Reports</b>	Michael Achter, Operator, (530) 258 6598
<b>Mailing Address</b>	P.O. Box 1225, Portola, CA 96122
<b>Billing Address</b>	P.O. Box 1225, Portola, CA 96122
<b>Type of Facility</b>	POTW
<b>Major or Minor Facility</b>	Minor
<b>Threat to Water Quality</b>	2
<b>Complexity</b>	B
<b>Pretreatment Program</b>	No
<b>Reclamation Requirements</b>	Not Applicable
<b>Facility Permitted Flow</b>	0.5 MGD
<b>Facility Design Flow</b>	0.5 MGD
<b>Watershed</b>	Feather River, Middle Fork
<b>Receiving Water</b>	Feather River, Middle Fork
<b>Receiving Water Type</b>	Inland surface water

A. The City of Portola (hereinafter Discharger) is the owner and operator of the City of Portola Wastewater Treatment Plant (hereinafter Facility), a POTW.

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

- B. The Facility discharges wastewater to the Middle Fork of the Feather River, a water of the United States, and is currently regulated by Order R5-2003-0110 which was adopted on 11 July 2003 and expired on 1 July 2008. The Discharger is currently operating under Order R5-2003-0110, which has been administratively extended.
- C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 10 December 2007. Site visits were conducted on 20 March and 30 April 2008, to observe operations and collect additional data to develop permit limitations and conditions.

## II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Portola and serves a population of approximately 2,500. The WWTP design daily average flow capacity is 0.5 mgd.

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

Wastewater is collected in two lift stations, one on the North side of the Feather River, and one on the South side of the River. At the Facility headworks, influent parshall flumes equipped with sonic level sensors measure influent flow.

The treatment system at the Facility consists of bar screening; treatment in 8 ponds, two of which are aerated by mechanical aerators, and 4 of which are aerated by wind driven aerators (aeration capability of the wind driven aerators is minor); disinfection with chlorine (sodium hypochlorite); and dechlorination (sodium bisulfite). Treated effluent is discharged to a small wetlands pond prior to discharge to the Feather River. A Parshall Flume measures effluent flow.

During the period of 16 May to 31 October, and at times when flow in the Feather River at the point of Discharge is less than 40 cubic feet per second, wastewater is held in the ponds. The wastewater can be discharged at other times.

Sludge is removed from the ponds when necessary. Dried biosolids are hauled to a permitted landfill or landspreading operation.

### B. Discharge Points and Receiving Waters

1. The Facility is located in Sections 2 and 3, T22, R13E, MDB&M, as shown in Attachment B (Figure B-1), a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point D-001 to the Middle Fork of the Feather River, a water of the United States at a point Latitude 39°, 48',

15" N and longitude 120°, 29', 29" W. The outfall is not equipped with a diffuser and discharges at the bank of the River.

- Discharge Point 001 is located within the Sloat Hydrologic Unit No. 518.33 as defined by the interagency hydrologic map for the Sacramento Hydrologic Basin prepared by the Department of Water Resources (1986).

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

Effluent limitations/Discharge Specifications contained in the existing Order for discharges from D-001, (Monitoring Location Eff-001) and representative monitoring data from the term of the previous Order are as follows:

**Table F-2. Historic Effluent Limitations and Monitoring Data**

Parameter	Units	Effluent Limitations					Monitoring Data Apr 2003 –Apr 2008	
		Average Monthly	Average Weekly	Max Daily	4-day Average	Monthly Median	Highest Average Monthly Discharge	Highest Daily Discharge
BOD	mg/L	30	45	90			19.3	43
Total Suspended Solids	mg/L	30	45	90			28.5	35.6
Chlorine Residual	mg/L	--	--	.02	0.01	--		0.01
Total Coliform Organisms	MPN/100mL	--	--	500	--	23		>1600

**D. Compliance Summary**

**Coliform**-On 20 March 2008, the assistant executive officer issued an Administrative Civil Liability in the amount of \$15,000 against the Discharger for effluent Coliform violations that occurred in 2005.

In 2004, from Mid March to Mid April, the Discharger experienced three to four weeks of discharges exceeding their effluent pH limitation. On 9 December 2008, the discharger was issued an Administrative Civil Liability Complaint No. R5-2008-0633 in the amount of \$63,000 for those violations. The Discharger waived his right to a hearing within 90 days and Board staff is negotiating whether the amount must be paid in full or whether the Discharger may meet the criteria allowing them to perform a compliance project.

**BOD and TSS**-On September 9, 2003 the discharger was sent a letter noting apparent violations of effluent BOD and TSS. However, Regional Water Board Staff also performed a comparative study of laboratory results from three ELAP approved

laboratories (including Portola's laboratory), which indicated that Portola's Contract laboratory was producing erroneously high results. Therefore no enforcement action was taken against the discharger at that time.

**Monitoring Reports-**On 12 December 2006, the Discharger was issued a letter informing them that their Monitoring and Reporting forms were not being filled out completely, including metals results shown as "ND" with no detection limit given, lack of effluent chlorine data during some days, lack of pond freeboard data during one month, influent BOD and TSS missing in one case (weekly data), and TKN data missing in another case.

**Chlorine Residual-**On 3 April 2008, the Discharger was issued a Notice of Violation for failure to maintain a continuous readout of chlorine residual in the treatment plant effluent subsequent to a plant inspection. This violation was due to an instrumentation problem that has since been resolved.

**BOD percentage Removal-** The discharger has experienced problems meeting the percentage removal effluent limitations for BOD. The 85 percent BOD removal requirement was not met twice in 2004 (although the BOD values are suspect due to the potential laboratory error noted above), three times in 2005 and four times in 2006. For the last two discharge seasons, the Discharger has met the requirement for BOD percentage removal. Removal percentages during months that requirements were not met were generally around 80 percent, and there have been no violations of effluent BOD concentration limitations. The Discharger performed extensive work on their collection system in the late 1990s to reduce infiltration/inflow (I/I) in response to Cease and Desist Order No. 93-068.

In part, the problem of effluent percentage BOD removals is also due to the fact that discharge occurs only during months in which I/I is more likely to dilute the influent, but the discharge consists of wastewater that has been received both during dry (low dilution) and wet (high dilution) months. Another situation that is contributing to the problem is the Discharger's receipt of septage. Septage is very high in BOD and total suspended solids. Although septage is discharged to the Facility, its pollutant contribution has not been taken into account when assessing influent pollutant loads and pollutant removal. This Order requires the Discharger to obtain monthly samples of septage for BOD and TSS analysis, and allows the Discharger to take into account the contribution of septage to the influent BOD and TSS load when calculating percentage removals. The Order also requires that the Discharger perform a study to determine if the amount of septage being accepted may be interfering with the plants performance.

**Effluent Toxicity-** No acute toxicity testing was performed during the 2008 discharge season, and the discharger was sent a Notice of Violation due to their failure to perform the test. Effluent sampling for acute toxicity has been increased in this Order from the previous Order (from quarterly to monthly) because the discharge has had problems complying with the effluent toxicity limitation. The Discharger has little input from industries, if any, but does sometimes have high effluent ammonia concentrations and elevated effluent pH, the combination of which can be very toxic to aquatic organisms.

In late January of 2004, acute toxicity testing showed no survival of the test species in 100% effluent. pH of the effluent was approximately 8.0 and ammonia was detected at 14 mg/L that month. A subsequent sample later in the season showed 100 percent survival. In March of 2007, another acute bioassay demonstrated no survival. Average ammonia in the discharge for this month was 17 mg/l and median effluent pH was approximately 8.8. A subsequent acute toxicity monitoring test in 2007 demonstrated 70% survival. During this test, pH was still elevated (9.0), but ammonia had been reduced substantially, to approximately 4 mg/L. Effluent toxicity testing in two other samples showed 70 percent and 100 percent survival.

If any of the testing in the new Order, which again has been increased substantially, shows unacceptable results, retesting must be performed. If that test fails, analysis to determine if ammonia is the toxicant must be initiated, and if that proves not to be the case, a toxicity identification evaluation is required.

#### **E. Planned Changes-Not Applicable**

### **III. APPLICABLE PLANS, POLICIES, AND REGULATIONS**

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in section II of the Limitations and Discharge Requirements (Findings). This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

#### **A. Legal Authority**

See Limitations and Discharge Requirements - Findings, Section II.C.

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

See Limitations and Discharge Requirements - Findings, Section II.E.

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

- 1. Water Quality Control Plans.** The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised February 2007), for the Sacramento and San Joaquin River Basins* (Basin Plan) 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, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. The beneficial uses of the Middle Fork of the Feather River downstream of the discharge are municipal and domestic supply, water contact recreation, other non-contact water recreation, warm and cold freshwater aquatic habitat, cold spawning habitat, and wildlife habitat.

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 November 28, 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.

2. **Thermal Plan-Not Applicable**
3. **Bay-Delta Plan-Not Applicable.**
4. **Antidegradation Policy.** Section 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 water quality be maintained unless degradation is justified based on specific findings. The Regional 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 (Attachment F, Section IV.D.4.) the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Board Resolution 68-16.
5. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Compliance with the Anti-Backsliding requirements is discussed in Section IV.D.3.
6. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a), California 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 Emergency Planning and Community Right to Know Act (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 CWC 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.

7. **Stormwater 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 stormwater program and are obligated to comply with the Federal Regulations.
8. **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.

#### **D. Impaired Water Bodies on CWA 303(d) List-Not Applicable**

#### **E. Other Plans, Policies 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). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:
  - a. The waste consists of domestic sewage and treated effluent;

b. All treatment and storage facilities described herein are part of the treatment train and are therefore associated with a municipal wastewater treatment plant.

2. The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*. The requirements within this Order are consistent with the Policy.

#### 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 Federal 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 Section 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 CFR, §122.44(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: 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 water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Regional Water Board's Basin Plan, 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 Regional 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 contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. 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 Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

#### **A. Discharge Prohibitions**

1. 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.
2. Discharge is prohibited when flow in the River is less than 40 cfs to assure adequate assimilative capacity for the wastewater.
3. Discharge after 31 April and prior to 1 November has been prohibited to better coincide with the recreational (fishing) season in the Feather River.

#### **B. Technology-Based Effluent Limitations**

##### **1. Scope and Authority**

Regulations promulgated in section 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 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 biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH.

Following publication of the secondary treatment regulations, legislative history indicates that Congress was concerned that USEPA had not "sanctioned" the use of certain biological treatment techniques that were effective in achieving significant reductions in BOD<sub>5</sub> and TSS for secondary treatment. Therefore to prevent unnecessary construction of costly new facilities, Congress included language in the 1981 amendment to the Construction Grants statutes [Section 23 of Pub. L. 97-147] that required USEPA to provide allowance for alternative biological treatment technologies such as trickling filters or waste stabilization ponds. In response to this requirement, definition of secondary treatment was modified on September 20, 1984 and June 3, 1985, and published in the revised secondary treatment regulations contained in section 133.105. These regulations allow alternative limitations for facilities using trickling filters and waste stabilization ponds that meet the requirements for "equivalent to secondary treatment." These "equivalent to secondary treatment" limitations are up to 45 mg/L (monthly average) and up to 65 mg/L (weekly average) for BOD<sub>5</sub> and TSS.

Therefore, POTWs that use waste stabilization ponds, identified in section 133.103, as the principal process for secondary treatment and whose operation and maintenance data indicate that the TSS values specified in the equivalent-to-secondary regulations cannot be achieved, can qualify to have their minimum levels of effluent quality for TSS adjusted upwards.

To be eligible for equivalent-to-secondary limitations, a POTW must meet all of the following criteria:

- The principal treatment process must be either a trickling filter or waste stabilization pond.
- The effluent quality consistently achieved, despite proper operations and maintenance, is in excess of 30 mg/L BOD<sub>5</sub> and TSS.
- The treatment works provide significant biological treatment of municipal wastewater.

Recent data gathered by the discharger indicate that the pond system cannot consistently meet effluent limitations required by secondary treatment standards. The 95<sup>th</sup> percentile effluent values for BOD and TSS using the last two years of data are 55.6 and 103 mg/L, respectively, thus exceeding the effluent values given in 40 CFR

133.102. The data also show that the treatment process results in significant biological treatment in accordance with 40 CFR 133.101(k) (65% BOD removal).

## 2. Applicable Technology-Based Effluent Limitations

- a. **BOD<sub>5</sub> 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<sub>5</sub> and TSS. A daily maximum effluent limitation for BOD<sub>5</sub> and TSS is also included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. The Federal Clean Water Act, Section 301, requires that not later than July 1, 1977, publicly owned wastewater treatment works meet effluent limitations based on secondary treatment or any more stringent limitation necessary to meet water quality standards. Federal Regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for five-day BOD and TSS. BOD is a measure of the amount of oxygen necessary for the biochemical oxidation of organic matter, as well as ammonia in some cases. The secondary treatment standards for BOD and TSS are used as indicators of the effectiveness of the treatment processes. The principal design parameters for wastewater treatment plants are the daily BOD and TSS loading rates and the corresponding removal rate of the system. See Table F-3 for final technology-based effluent limitations required by this Order. 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. 40 CFR 133.105 provides adjustment of these limitations where waste stabilization ponds are the principal processes used for secondary treatment. Pursuant to the regulations at 40 CFR Parts 133.105(a), (b), and 133.103, absent any adjustment, the BOD and TSS 30-day average discharge limits for such pond stabilization systems shall not exceed 45 mg/L, the 7-day average shall not exceed 65 mg/L, and the 30-day BOD and TSS percent removal shall not be less than 65 percent. This permit requires that the Discharger meet effluent limits of 30 mg/L average monthly effluent concentration for BOD and TSS as this has historically been the capability of the discharger during the months discharge is authorized. However, the pond system cannot consistently meet these secondary treatment limitations on a year-round basis. Effluent percentage removal for BOD and TSS is set at 65 percent because of the Discharger's inability to meet effluent limitations of 30 mg/l for BOD and TSS (average monthly) on a year round basis (See IV.B.I)
- b. The Portola Wastewater Treatment Plant was designed to provide a secondary level of treatment for up to a design flow of 0.5 mgd.
- c. 40 CFR 133.102, in describing the maximum pH range of the effluent, states that the pH shall not be less than 6.0 standard units or greater than 9.0 standard units.

## 3. Summary of Technology-based Effluent Limitations- Discharge Point EFF-001

**Table F-3. Summary of Technology-based Effluent Limitations**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD <sub>5</sub>	mg/L lbs/day <sup>1</sup>	30 1	45 1	90 1	--	--
Total Suspended Solids	mg/L lbs/day <sup>1</sup>	30 1	45 1	90 1	--	--
pH	standard units	--	--	--	6.0	9.0
Removal	65% removal BOD <sub>5</sub> , TSS					

<sup>1</sup>The daily average mass discharge for the period from 1 November to 31 April shall not exceed 125.1 lb/day.

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

**1. Scope and Authority**

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. 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**

- a. **Receiving Water.** The Middle Fork of the Feather River is the receiving water for the Portola Wastewater treatment plant. The beneficial uses downstream of the discharge are municipal and domestic supply, water contact recreation including canoeing and rafting; non-contact water recreation, warm freshwater habitat, cold freshwater habitat, cold water spawning, and wildlife habitat.
- b. **Hardness.** While effluent limitations for hardness are not necessary in this Order, hardness is critical to the assessment of the need for, and the development of effluent limitations for certain metals. 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<sup>1</sup>, the CTR<sup>2</sup> 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)(2), Table 4, note 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 effluent limitations can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Regional Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10.).

The hardness values must also be protective under all flow conditions (*Id.*, pp. 10-11). As discussed below, scientific literature provides a reliable method for calculating protective effluent limitations for metals with hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces effluent limitations that prevent these metals from causing receiving water toxicity, while avoiding effluent limitations that are unnecessarily stringent.

A 2006 Study<sup>3</sup> evaluated the relationships between hardness and the CTR metals criteria as the effluent and receiving water mix. The 2006 Study demonstrates that it is necessary to evaluate all discharge conditions (e.g. high and low flow conditions) when determining the appropriate hardness for calculating effluent limitations for hardness-dependent metals. Simply using the lowest recorded receiving water hardness may result in over or under protective effluent limitations and would not represent the reasonable worst-case hardness of the receiving water.

As is discussed in detail below, using the methodology described in the 2006 Study, the Design Hardness for calculating protective hardness-dependent metals limits in this Order ranged from 46mg/L to 48 mg/L (as CaCO<sub>3</sub>), depending on the metal. The upstream receiving water hardness ranged from 46 mg/L to 81 mg/L (as CaCO<sub>3</sub>).

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

- 
- <sup>1</sup> 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.
  - <sup>2</sup> The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO<sub>3</sub>), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.
  - <sup>3</sup> 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.

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

Where:

H = Design Hardness

b = metal- and criterion-specific constant

m = metal- and criterion-specific constant

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 Design Hardness “H” is the hardness of the receiving water that results in hardness-dependent metals effluent limits that are adequately protective under all discharge conditions.

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for estimating the Design Hardness 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 Design Hardness for acute cadmium, lead, and acute silver, which are referred to hereafter as “Concave Up Metals”.

Design Hardness for Concave Down Metals – For Concave Down Metals (i.e. chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 study demonstrates that effluent limits based on a Design Hardness equivalent to the lowest recorded effluent hardness is adequately protective under all discharge conditions. The minimum effluent hardness was 48 mg/L (as CaCO<sub>3</sub>), based on five samples. The upstream receiving water hardness varied from 46 mg/L to 81 mg/L (as CaCO<sub>3</sub>), based on eleven samples. Using a Design Hardness of 48 mg/L for all Concave Down Metals will result in effluent limitations that are protective under all discharge conditions, as demonstrated in Table F-4, below. This example assumed the following conservative conditions:

- Receiving water always at the lowest observed upstream receiving water hardness (i.e. 46 mg/L as CaCO<sub>3</sub>)
- Upstream receiving water copper concentration always at the CTR criteria (i.e. no assimilative capacity). Based on available data, the receiving water never exceeded the CTR criteria for any metal with hardness-dependent criteria.

**Table F-4: Copper Design Hardness Evaluation**

Design Hardness		48 mg/L	
Effluent Copper <sup>1</sup>		5.0 µg/L	
Effluent Fraction	Mixed Downstream Ambient		
	Hardness <sup>2</sup> (mg/L)	Criteria <sup>3</sup> (µg/L)	Copper <sup>4</sup> (µg/L)
1%	46.02	4.8	4.8
25%	46.5	4.8	4.8
50%	47	4.9	4.9
75%	47.5	4.9	4.9
100%	48	5.0	5.0

- <sup>1</sup> Effluent Copper concentration calculated using Equation 1 for chronic criteria at the Design Hardness.
- <sup>2</sup> Mixed Downstream Ambient Hardness is the mixture of the receiving water and effluent hardness using the lowest observed hardnesses (i.e. 46 mg/L and 48 mg/L) for the receiving water and effluent, respectively)
- <sup>3</sup> Mixed Downstream Ambient Criteria is the chronic criteria calculated using Equation 1 at the Mixed Hardness.
- <sup>4</sup> Mixed Downstream Ambient Copper concentration is the mixture of the receiving water and effluent copper concentrations using a receiving water copper concentration assumed to be at the chronic criteria (calculated using 46 mg/L hardness) and the effluent copper concentration equal to the Effluent Copper concentration.

As demonstrated in Table F-4, a Design Hardness of 48 mg/L results in effluent limits that are protective under all discharge conditions (i.e. the Mixed Downstream Ambient Copper Concentration never exceed the Mixed Downstream Ambient Criteria). In this example, the effluent is always in compliance with the CTR criteria and any mixture of the effluent and receiving water is always in compliance with the CTR criteria. Effluent limits based on a lower hardness (e.g. lowest upstream receiving water hardness) would also be protective, but is overly protective and would result in unreasonably stringent effluent limits. Therefore, a Design Hardness of 48 mg/L has been used in this Order for all Concave Down Metals.

Design Hardness for Concave Up Metals – For Concave Up Metals (i.e. acute cadmium, lead, and acute silver), the 2006 Study also demonstrates that the Design Hardness must not exceed the lowest recorded effluent hardness in order to be adequately protective. However, for these metals the Design Hardness is not readily apparent, due to a different relationship between hardness and the metals criteria. Based on the 2006 Study, it is necessary to use an iterative approach to determine the appropriate Design Hardness to calculate effluent limits that are protective under all discharge conditions.

A similar example as was done for the Concave Down Metals is shown below for lead, cadmium, and silver (see Tables F-5, F-6, and F-7). The same conservative assumptions for the receiving water were made. As shown in following tables, the Design Hardness is different for each constituent. A Design

Hardness of 47, 46, and 47 mg/L for lead, acute cadmium, and acute silver respectively, result in effluent limits that are protective under all discharge conditions. In these examples, the effluent is always in compliance with the CTR criteria and any mixture of the effluent and receiving water is always in compliance with the CTR criteria. Use of a lower hardness (e.g. the lowest upstream receiving water hardness) is also protective, but is overly protective and would lead to unreasonably stringent effluent limits. Therefore, a Design Hardness of 47, 46, and 47 mg/L for lead, acute cadmium, and acute silver, respectively, has been used in this Order.

**Table F-5: Lead Design Hardness Evaluation**

Design Hardness (mg/L as CaCO <sub>3</sub> )			
			47
Effluent Lead (ug/L) <sup>1</sup>			
			1.2
Effluent Fraction	Mixed <sup>2</sup> Hardness	Mixed Criteria <sup>3</sup>	Mixed Lead <sup>4</sup> Concentration
1%	46.02	1.2	1.2
25%	46.5	1.2	1.2
50%	47	1.2	1.2
75%	47.5	1.2	1.2
100%	48	1.2	1.2

<sup>1</sup>Effluent Lead concentration calculated using Equation 1 for chronic criteria at the Design Hardness.

<sup>2</sup>Mixed Downstream Ambient Hardness is the mixture of the receiving water and effluent hardness using the lowest observed hardnesses (i.e. 46 mg/L and 48 mg/L) for the receiving water and effluent, respectively)

<sup>3</sup>Mixed Downstream Ambient Criteria is the chronic criteria calculated using Equation 1 at the Mixed Hardness.

<sup>4</sup>Mixed Downstream Ambient Lead concentration is the mixture of the receiving water and effluent lead concentrations using a receiving water lead concentration assumed to be at the chronic criteria (calculated using 46 mg/L hardness) and the effluent lead concentration equal to the Effluent Lead concentration.

**Table F-6: Cadmium Design Hardness Evaluation**

Design Hardness (mg/L as CaCO <sub>3</sub> )			
			46
Effluent Cadmium (ug/L) <sup>1</sup>			
			1.9
Effluent Fraction	Mixed <sup>2</sup> Hardness	Mixed Criteria <sup>3</sup>	Mixed Cadmium Concentration <sup>4</sup>
1%	46.02	1.9	1.9
25%	46.5	1.9	1.9
50%	47	1.9	1.9
75%	47.5	2.0	1.9
100%	48	2.0	1.9

<sup>1</sup> Effluent Cadmium concentration calculated using Equation 1 for chronic criteria at the Design Hardness.

<sup>2</sup> Mixed Downstream Ambient Hardness is the mixture of the receiving water and effluent hardness using the lowest observed hardnesses (i.e.46 mg/L and 48 mg/L) for the receiving water and effluent, respectively)

<sup>3</sup> Mixed Downstream Ambient Criteria is the chronic criteria calculated using Equation 1 at the Mixed Hardness.

<sup>4</sup> Mixed Downstream Ambient Cadmium concentration is the mixture of the receiving water and effluent cadmium concentrations using a receiving water cadmium concentration assumed to be at the chronic criteria (calculated using 46 mg/L hardness) and the effluent cadmium concentration equal to the Effluent Cadmium concentration.

**Table F-7: Silver Design Hardness Evaluation**

		Design Hardness (mg/L as CaCO <sub>3</sub> ) <sup>1</sup>	
		47	
		Effluent Silver (ug/L)	
		1.1	
Effluent Fraction	Mixed Hardness <sup>2</sup>	Mixed Criteria <sup>3</sup>	Mixed Silver <sup>4</sup> Concentration
1%	46.02	1.1	1.1
25%	46.5	1.1	1.1
50%	47	1.1	1.1
75%	47.5	1.1	1.1
100%	48	1.1	1.1

<sup>1</sup> Effluent Silver concentration calculated using Equation 1 for chronic criteria at the Design Hardness.

<sup>2</sup> Mixed Downstream Ambient Hardness is the mixture of the receiving water and effluent hardness using the lowest observed hardnesses (i.e.46 mg/L and 48 mg/L) for the receiving water and effluent, respectively)

<sup>3</sup> Mixed Downstream Ambient Criteria is the chronic criteria calculated using Equation 1 at the Mixed Hardness.

<sup>4</sup> Mixed Downstream Ambient Silver concentration is the mixture of the receiving water and effluent silver concentrations using a receiving water silver concentration assumed to be at the chronic criteria (calculated using 46 mg/L hardness) and the effluent silver concentration equal to the Effluent Silver concentration.

**c. Assimilative Capacity/Mixing Zone.**

USEPA established numeric criteria for priority toxic pollutants in the California Toxics Rule (CTR). The State Water Resources Control Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) to implement the CTR. The Regional Water Board’s Basin Plan allows mixing zones provided the Discharger has demonstrated that the mixing zone will not adversely impact beneficial uses. The Basin Plan further requires that in determining the size of a mixing zone, the Regional Water Board will consider the applicable procedures in USEPA’s Water Quality Standards Handbook and the Technical Support Document for Water Quality Based Toxics Control (TSD). It is the Regional Water Board’s discretion

whether to allow a mixing zone. The SIP, in part, states that mixing zones shall not:

- Compromise the integrity of the entire water body.
- Cause acutely toxic conditions to aquatic life passing through the mixing zone.
- Restrict passage of aquatic life.
- Adversely impact biologically sensitive or critical habitats, including but not limited to, habitat of species listed under Federal or State endangered species laws.
- Dominate the receiving water body.
- Overlap a mixing zone from a different outfall.

USEPA's Water Quality Standards Handbook (WQSH) states that States may, at their discretion, allow mixing zones. The WQSH recommends that mixing zones be defined on a case-by-case basis after it has been determined that the assimilative capacity of the receiving stream can safely accommodate the discharge. This assessment should take into consideration the physical, chemical, and biological characteristics of the discharge and the receiving stream; the life history of and behavior of organisms in the receiving stream; and the desired uses of the waters. Mixing zones should not be allowed where they may endanger critical areas (e.g., drinking water supplies, recreational areas, breeding grounds and areas with sensitive biota). USEPA's TSD states, in part in Section 4.3.1, that mixing zones should not be permitted where they may endanger critical areas.

The Basin Plan, the SIP and USEPA's TSD state that allowance of a mixing zone is discretionary on the part of the Regional Board. Mixing zones will be limited to the amount of assimilative capacity necessary to comply with discharge limitations. There are no water intakes downstream of the discharge point within a distance that could be impacted by the proposed mixing zone.

Discharge to the Middle Fork of the Feather River is prohibited when river flow is less than 40 cfs; In addition, discharge is prohibited unless the complete mixing dilution in the River is 50:1 or greater.

A mixing model referred to in the Technical support document was consulted by the Discharger's Engineer to verify the mixing regime of the outfall and river. The model is applicable to point discharges where rapid vertical mixing occurs. According to the Technical support document, the model is based on *Mixing in Inland and Coastal Waters* by H.B. Fischer et al. (1979, Academic Press Inc.).

The configuration of the River is complex at the discharge location. The discharge is just upstream of a railroad bridge that spans the Middle Fork of the Feather River. The Bridge Abutments separate the stream into two primary channels at the point of discharge, a middle channel and a western channel when the River is at approximately 40 cfs. The Discharger's engineer indicates

this flow regime is typical even at substantially higher flows. There is also another channel to the east, which receives approximately 20% of the River flow, and passes by the effluent discharge location. Directly downstream of the effluent discharge, the stream turns approximately 45 degrees due to the adjacent topography and railroad bridge abutment, and also increases its velocity to approximately 3 feet per second. Both of these conditions should provide good mixing.

Use of this mixing model by the Discharger's engineer allows the assumption of a dilution of at least 40% of the ultimate dilution in the River at the edge of the acute toxicity mixing zone (note that the ultimate dilution in the River is not used as the dilution credit, rather only 40% of the ultimate dilution is used). The edge of the mixing zone is 100 feet downstream of the discharge and the width of the mixing zone is 15 feet on either side of the center of the outfall. With the current configuration of the discharge location, the mixing zone is as small as practicable. The 20:1 dilution has been used for both the acute and chronic toxicity mixing zones, because of the specified method of discharge, which is based upon a volumetric percentage of the River flow. The toxicity mixing zone also allows a zone of passage, and should not prove toxic to organisms floating through the mixing zone.

The Discharger must confirm, by a dye or tracer study, that the minimum dilution is 20:1 within the boundaries of the mixing zone modeled by the discharger that complies with the SIP, the Basin Plan, and the USEPA Technical support document.

### **3. Determining the Need for WQBELs**

- a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes 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.) With regards to the narrative chemical constituents objective, the Basin Plan 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 the CCR. 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 flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.”

- b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for copper, ammonia, total residual chlorine, electrical conductivity, and pathogens. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A detailed discussion of the RPA for each constituent is provided below.
- c. The Regional Water Board conducted the 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.<sup>4</sup> 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.
- d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

**Table F-8. Summary of Reasonable Potential Analysis**

Parameter (ug/L)	Jan 04	May 08	MEC	BC	Applicable Hardness Value (mg/L)	Most Stringent Applicable Criteria	Reasonable Potential?
Antimony	0.2j	<1	0.2	0.2	n/a	6	No
Arsenic	2.4	2	2.4	0.3	n/a	10	No
Beryllium	<0.06	<0.2	0.06	0.06	n/a	4	No
Cadmium	<0.03	<2	0.03	0.03	48	1.4	No
Chromium III	0.4j	2	2	0.8	48	113	No
Chromium(VI)	<0.9	<10	0.9	0.9	n/a	11.4	No
Copper <sup>1</sup>	5.3	7	10	2	48	5.0	Yes
Lead <sup>2</sup>	0.17j	0.5	0.7	0.1	47	1.2	No

<sup>4</sup> See, Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City)

Mercury	0.006	<0.02	0.006	0.03	n/a	0.05	No
Nickel	1.8	2	2	0.6	48	28	No
Selenium	<0.5	<2	0.5	0.5	n/a	5	No
Silver	0.3	<1.0	0.3	0.02	46	1.1	No
Zinc	8	40	40	10	48	64	No
Cyanide	3	8	8	0.9	n/a	5.2	Monitor <sup>3</sup>
Bis-2 ethyl hexyl pthalate	1j	<5	1	0.8	n/a	1.8	No
Chloroform	<0.31	0.6	0.6	0.31	n/a	No Criteria	Monitor
4,4'-DDD	<0.002	0.0027j	.0027	0.002	n/a	0.00083	Monitor

<sup>1</sup> In addition, copper was detected at 10 ug/l, 5.8 ug/L, 5.8 ug/l, and 5 ug/L, in February 2005, March 2007, April 2007, and April 2008, respectively.

<sup>2</sup> In addition, lead was detected at 0.7 ug/l in April 2008

<sup>3</sup> There is no expected source of cyanide in the Portola area. In addition some recent work has shown that the sodium hydroxide preservative used in the cyanide test produces some false positive readings.

j: "Lab detected but not quantified."

MEC: Maximum Effluent Concentration. If all samples values are non-detect then MEC equals lowest detection limit.

BC: Maximum Background Concentration.

Lowest effluent hardness value is 48 mg/L as CaCO<sub>3</sub> and lowest receiving water hardness value is 46 mg/L as CaCO<sub>3</sub>.

n/a: Not Applicable.

e. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Nitrification of the wastewater in the Portola ponds is sporadic due to the area's cold climate and the Plant's minimal aeration. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR section 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms.

USEPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life*, for total ammonia, recommends acute (1-hour average, criteria maximum concentration) standards based on pH and chronic (30-day average, criteria continuous concentration) standards based on pH and temperature. 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 Middle Fork of the Feather River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Feather River is well documented, the recommended criteria for waters where salmonids and early life stages are present were used. USEPA's recommended criteria are shown below:

$$CCC_{30\text{-day}} = \left( \frac{0.0577}{1 + 10^{7.688 - pH}} + \frac{2.487}{1 + 10^{pH - 7.688}} \right) \times \text{MIN}(2.85, 1.45 \cdot 10^{0.028(25 - T)}), \text{ and}$$

$$CMC = \left( \frac{0.275}{1 + 10^{7.204 - pH}} + \frac{39.0}{1 + 10^{pH - 7.204}} \right),$$

where  $T$  is in degrees Celsius

The maximum permitted effluent pH is 9.0. The Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. The maximum observed 30-day average effluent temperature was 66.2 °F (19 °C). The maximum observed 30-day R-1 temperature was 60.3 °F (15.7 °C). Using the Basin Plan high pH receiving water value of 8.5 (In accordance with 42 R-1 receiving water monitoring samples submitted by the City, the River pH has not exceeded 7.9) and the worst-case average temperature values at the edge of the mixing zone (15.9°C as a flow weighted average of effluent and R-1 temperature) on a 30-day basis (without dilution credit) the CMC and CCC are 2.14 mg/L and 0.996 mg/l, respectively. The chronic 4 day average criterion is derived by multiplying the chronic criterion (30 day) for ammonia by 2.5, for a criterion of 2.49 mg/L.

The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day chronic criteria. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day chronic criteria was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day average, and 30-day chronic criteria is then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (MDEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. The ammonia effluent limitations, with the provision for a dilution credit of 20, are 23 mg/L (as N) as the AMEL and 45 mg/L as the MDEL (See Section IV.C.4, Table F-10, of the Fact Sheet for calculations of the AMEL and MDEL for ammonia.)

The MEC for ammonia was 24 mg/L based on 36 samples. Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream

excursion above a level necessary to protect aquatic life resulting in a violation of the Basin Plan's narrative toxicity objective. In accordance with the ammonia MEC and the dilution credit of 20, the Discharger should be able to meet their effluent limitations for ammonia.

- f. **Chlorine Residual.** The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sodium bisulfite chemical addition system to dechlorinate the effluent prior to discharge to The Middle Fork of the Feather 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 Basin Plan's narrative toxicity objective.

The USEPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (four-day) and acute (one-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 one-hour limitation is considered more appropriate than an average daily limitation. Average one-hour and four-day limitations for chlorine, based on these criteria, are included in this Order. The Discharger can immediately comply with these new effluent limitations for chlorine residual.

- g. **Chloroform.** The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicological assumptions used by OEHHA and USEPA in evaluating health risks via drinking water exposure of 70 kg body weight and two liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/L (ppb) at the one-in-a-million cancer risk level. This risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters.

The observed chloroform MEC was 0.6 µg/L. The equivalent concentration for the OEHHA cancer potency factor is 1.1 µg/L. The MEC does not exceed the

cancer potency factor even excluding dilution; therefore, an Effluent Limitation for chloroform is not required. However, monitoring for total trihalomethanes is included in this Order

**Copper.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the worst-case measured hardness from the effluent (48 mg/L as CaCO<sub>3</sub>) and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum four-day average concentration) is 5.0 and the applicable acute criterion (maximum one-hour average concentration) is 7.0, as total recoverable.

The MEC for total copper was 10 µg/L, based on detected copper in 7 samples, while the maximum observed upstream receiving water total copper concentration was 2 µg/L. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. An AMEL and MDEL for total copper of 53 µg/L and 106µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life, after dilution in the acute toxicity mixing zone (See Attachment F, Table F-11 for WQBEL calculations). Based on the effluent sample results, it appears the Discharger can meet these new limitations.

- h. **Cyanide.** The CTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/L and 5.2 µg/L, respectively, for the protection of freshwater aquatic life. The MEC for cyanide was 8 µg/L, based on 2 CTR sampling events, while the maximum observed upstream receiving water cyanide concentration was <0.9 µg/L, based on the same two CTR sampling events. No sources of cyanide are expected in the service area of the treatment facility. In addition some recent work has shown that the sodium hydroxide preservative used in the cyanide test produces some false positive readings. With the data available, it cannot be determined if there is a reasonable potential for cyanide and this Order calls for additional cyanide monitoring.
- i. **Electrical Conductivity. (see Subsection m.-Salinity)**
- j. **Nitrite and Nitrate.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. The California DHS has adopted Primary MCLs at Title 22 of the California Code of Regulations (CCR), Table 64431-A, 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. Title 22 CCR, Table 64431-A, also

includes a primary MCL of 10,000 µg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10,000 µg/L as Primary Maximum Contaminant Level) and Ambient Water Quality Criteria for protection of human health (10,000 µg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. However, the concentrations of nitrate or nitrite outside the acute toxicity mixing zone, and after the effluent has been completely mixed with the River, a substantial distance before any drinking water intakes are encountered, do not represent reasonable potential for exceedance of a water quality objective. However, monitoring for these compounds is included in the Order.

- k. **Pathogens.** Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the receiving stream. Coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways. In a letter to the Regional Water Board dated 8 April 1999, the California Department of Health Services indicated that DHS 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. The Discharger is prohibited from discharging to the Middle Fork of the Feather River when ultimate dilution in the River is less than 50:1 or during the recreational season. Therefore the 23 MPN/100 mL limitation is found to be appropriate.
1. **Persistent Chlorinated Hydrocarbon Pesticides.** 4,4'-DDD was detected in the effluent at a concentration of 0.0027 µg/L (detected but not quantified). 4,4'-DDD is a chlorinated hydrocarbon pesticide. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The CTR contains numeric criteria for 4,4'-DDD of 0.0001 µg/L for the protection of human health. However, with the very low concentration of 4,4'-DDD detected and the fact that 4,4'-DDD is no longer registered for use as an agricultural pesticide, there is inadequate information to determine if 4,4'-DDD has a reasonable potential for the exceedance of its water quality objective. This Order calls for monitoring of

4,4'-DDD, and contains a reopener if 4,4'-DDD is found to create a reasonable potential for exceedance of its water quality objective.

- m. **pH.** 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." Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.
- n. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human consumption. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC, TDS, Sulfate, and Chloride.

**Table F-9. Salinity Water Quality Criteria/Objectives**

Parameter	Agricultural WQ Goal <sup>1</sup>	Secondary MCL <sup>3</sup>	Basin Plan	Effluent	
				Avg	Max
EC (µmhos/cm)	Varies <sup>2</sup>	900, 1600, 2200	150 umhos/cm <sup>4</sup>	282	684
TDS (mg/L)	Varies <sup>2</sup>	500, 1000, 1500	--	153	340
Sulfate (mg/L)	N/A	250, 500, 600	--	n/a	n/a
Chloride (mg/L)	106 <sup>2</sup>	250, 500, 600	--	n/a	n/a

- 1 Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)
- 2 Agricultural water quality goals listed provide no restrictions on crop type or irrigation methods for maximum crop yield. Higher concentrations may require special irrigation methods to maintain crop yields or may restrict types of crops grown.
- 3 The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.
- 4 At a 90<sup>th</sup> percentile for well mixed waters of the Middle Fork of the Feather River at 25°C as a 10 year rolling average.

- i. **Electrical Conductivity (EC).** The water quality objective for electrical conductivity for the section of the Middle Fork of the Feather River from Frenchman Reservoir to Lake Oroville is 150 umhos/cm at a 90<sup>th</sup> percentile at in well mixed waters of the River at 25°C applied as a 10 year rolling average. A review of the Discharger's monitoring reports shows an average effluent EC of 411 µmhos/cm, with a range from 282 µmhos/cm to 684 µmhos/cm. These levels exceed the applicable objectives. The background receiving water EC averaged 140 µmhos/cm in 33 sampling events collected by the Discharger,

in the last 5 years, with a maximum value of 185 ug/L. Discharge of effluent to the Middle Fork of the Feather River is restricted to a maximum of 2 percent of the River's flow and the effluent discharge could therefore (at the maximum measured EC concentration of 684 umhos/cm) raise the EC in the River approximately 10 umhos/cm). At this time, since there is inadequate data to determine the 90<sup>th</sup> percentile EC value for well mixed waters of the Middle Fork of the Feather River as a 10 year rolling average, the Board cannot determine whether a 10 umhos/cm increase would cause or contribute to an exceedance of the water quality objective. A performance based annual average effluent limitation of 684 umhos/cm (maximum observed electrical conductivity) has been set in this Order until adequate receiving water quality data have been obtained (10 years of data) to determine if there is assimilative capacity in the Middle Fork of the Feather River for electrical conductivity.

- ii. **Total Dissolved Solids (TDS).** 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. Sulfate and Chloride similarly have Secondary MCLs. Compliance with the electrical conductivity Water Quality Objective would assure that the TDS, sulfate, and chloride of the River does not adversely affect any beneficial use of the receiving water.
- iii. **Salinity Effluent Limitations.** This Order includes a performance-based annual average effluent limitation of 684 µmhos/cm for electrical conductivity while the discharger gathers data to determine whether there is reasonable potential to cause or contribute to an exceedance of the Basin Plan objective for the Middle Fork of the Feather River (see discussion under Electrical Conductivity). This Order requires quarterly monitoring of EC of the Discharger's water supply (see Attachment E, Section IX.B). This Order also includes a receiving water limitation that the discharge cannot cause or contribute to the receiving water exceeding the water quality objective for EC in the Middle Fork of the Feather River.

Special Provision VI.C.3.b requires the Discharger to report on progress in reducing salinity discharges to the Feather River. Implementation measures to reduce salt loading may include source control, mineralization reduction, chemical addition reductions, changing to water supplies with lower salinity, and limiting the salt load from domestic and industrial dischargers. Compliance with these requirements may result in a salinity reduction in the effluent discharged to the receiving water; however, the discharge may cause or contribute to an exceedance of a water quality objective for salinity until adequate measures are implemented to meet those objectives. Until additional data is obtained for receiving water electrical conductivity it is unknown whether or not the discharge will cause or contribute to an exceedance of the River water quality objective.

- o. **Total Trihalomethanes (THMs).** Information submitted by the Discharger indicates that the effluent contains THMs, specifically chloroform. The Basin Plan contains the narrative "chemical constituent" objective that requires, at a minimum, that waters with a designated MUN use not exceed California MCLs. In addition, the chemical constituent objective prohibits chemical constituents in concentrations that adversely affect beneficial uses. The California primary MCL for total THMs is 100 µg/L. The USEPA primary MCL for total THMs is 80 µg/L, which was effective on January 1, 2002 for surface water systems that serve more than 10,000 people. Pursuant to the Safe Drinking Water Act, DHS must revise the current total THMs MCL in Title 22, CCR to be as low or lower than the USEPA MCL. Total THMs include bromoform, dichlorobromomethane, chloroform, and chlorodibromomethane. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the regional boards, departments, and offices within Cal/EPA. This cancer potency factor is equivalent to a chloroform concentration in drinking water of 1.1 µg/L (ppb) at the 1-in-a-million cancer risk level with an average daily consumption of two liters of drinking water over a 70-year lifetime. This risk level is consistent with that used by the DHS to set de minimis risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels, and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters.

MUN is a designated beneficial use of the receiving water. However, there are no known drinking water intakes in the Middle Fork of the Feather River until the River discharges to Lake Oroville, approximately 60 miles downstream, and chloroform is a non-conservative pollutant. Therefore, to protect the MUN use of the receiving waters, the Regional Water Board finds that, in this specific circumstance, application of the USEPA MCL for total THMs for the effluent is appropriate, as long as the receiving water does not exceed the OEHHA cancer potency factor's equivalent receiving water concentration at a reasonable distance from the outfall. There was one detection of chloroform in the effluent (see Chloroform) at 0.6 µg/L. Total THMs in the discharge do not have a reasonable potential to cause or contribute to an in-stream excursion above the USEPA primary MCL for total THMs

- p. **Toxicity.** See Section IV.C.5. of the Fact Sheet regarding whole effluent toxicity.

#### 4. WQBEL Calculations

- a. Effluent limitations for ammonia and copper were calculated in accordance with section 1.4 of the SIP. The following paragraphs describe the methodology used for calculating effluent limitations.

b. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives.

$$ECA = C + D[X(C - B)] \quad \text{when } C > B, \text{ and}$$

$$ECA = C \quad \text{when } C \leq B$$

where:

$ECA_{acute}$  = effluent concentration allowance for acute (one-hour average) toxicity criterion, adjusted, if necessary, for hardness, pH, and translators.

$ECA_{chronic}$  = effluent concentration allowance for chronic (four-day average) toxicity criterion adjusted, if necessary, for hardness, pH, and translators.

$ECA_{HH}$  = effluent concentration allowance for human health, or other long-term criterion/objective

X = receiving water allocation factor

C = human health, aquatic life, or other long-term criterion/objective

D = dilution credit (dilution ratio \* estimated mixing)

B = maximum receiving water concentration

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

Human health ECAs are set equal to the AMEL and a statistical multiplier is 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 CMC to LTA  
 $M_C$  = statistical multiplier converting CCC to LTA

Water quality-based effluent limitations were calculated for ammonia and copper as follows in Tables F-10 and F-11, below.

**Table F-10. WQBEL Calculations for Ammonia**

	Acute	Chronic(30 day)	Chronic (4-day)
Criteria (mg/L) <sup>(1)</sup>	2.14	0.996	2.49
Dilution Credit	20:1	20:1	20:1
ECA	44.9	20.9	52.2
ECA Multiplier	0.329	0.786	0.537
LTA	14.8	16.42	28.05
AMEL Multiplier (95 <sup>th</sup> %)	1.53	(2)	(2)
<b>AMEL (mg/L)</b>	<b>23</b>	<b>(2)</b>	<b>(2)</b>
MDEL Multiplier (99 <sup>th</sup> %)	3.04	(2)	(2)
<b>MDEL (mg/L)</b>	<b>45</b>	<b>(2)</b>	<b>(2)</b>

<sup>(1)</sup> USEPA Ambient Water Quality Criteria

<sup>(2)</sup> Limitations based on Acute (Acute LTA < Chronic (30 day) < Chronic 4day)

**Table F-11. WQBEL Calculations for Copper**

	Acute	Chronic
Criteria, dissolved (µg/L) <sup>(1)</sup>	7.01	4.98
Dilution Credit	20:1	20:1
Translator	0.96	0.96
ECA, total recoverable	107.2	64.58
ECA Multiplier	0.32	0.53
LTA	34.2	34.2
AMEL Multiplier (95 <sup>th</sup> %)	1.55	(2)
<b>AMEL (µg/L)</b>	<b>53</b>	<b>(2)</b>
MDEL Multiplier (99 <sup>th</sup> %)	3.11	(2)
<b>MDEL (µg/L)</b>	<b>106</b>	<b>(2)</b>

<sup>(1)</sup> CTR aquatic life criteria, based on a hardness of 48 mg/L as CaCO<sub>3</sub>.

<sup>(2)</sup> Limitations based on acute or Chronic LTA (Chronic LTA = Acute LTA)

**Summary of Water Quality-based Effluent Limitations  
Discharge Point D-001**

**Table F-12. Summary of Water Quality-based Effluent Limitations**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Chlorine			0.01 <sup>(1)</sup>			0.02 <sup>(2)</sup>
Copper, Total Recoverable	mg/L	53		106		
Ammonia		23		45		
Total Coliform	MPN/ 100 mL	23 <sup>(3)</sup>		240	--	--

(1)-Applied as a 4-day average effluent limitation.

(2)-Applied as a 1-hour average effluent limitation.

(3)-Expressed as a 7 sample median.

**Electrical Conductivity.** Electrical Conductivity shall not exceed 684 umhos/cm on a monthly average basis.

## 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 20 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 -----	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) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provisions VI.C.2.a. requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan 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 and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

## **D. Final Effluent Limitations**

### **1. Mass-based Effluent Limitations.**

Title 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. This Order does not include mass based limitations due to the criteria for copper, ammonia, and chlorine, being expressed in terms of concentration. Electrical Conductivity cannot be expressed in terms of mass limitations.

### **2. Averaging Periods for Effluent Limitations.**

Title 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, the US EPA 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 utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for copper and ammonia, 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, TSS, pH, and coliform 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 Attachment F, Section IV.C.3., above.

### **3. Satisfaction of Anti-Backsliding Requirements.**

All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order except percentage removal of BOD. The CWA allows revision of effluent limitations only if such revision is subject to and consistent with a State’s antidegradation policy. The antibacksliding requirements also prohibit the reissued permits to contain effluent limitations which are less stringent than the current

effluent limitation guidelines for that pollutant, or which would cause the receiving water to violate the applicable state water quality standard under Section 303 of the CWA.

40 CFR 122.44(l)(1), 122.44(l)(2)(i)(B)(1) and 122.62(a)(2) allow a less stringent technology-based effluent limitation if information is available which was not available at the time of permit issuance, which would have justified the application of a less stringent effluent limitation at the time of permit issuance. The Discharger has recently gathered and supplied data (July and August 2009) that indicates that it cannot meet 30 day average effluent limitations of 30 mg/L for BOD and total suspended solids and have previously shown they cannot achieve 85% removal of BOD and total suspended solids on a year-round basis, as required in 40 CFR 133.102, which is new information. This new information justifies the application of a less stringent effluent limitation in accordance with 40 CFR 133.105. However, the average monthly BOD and total suspended solids effluent limitation for discharge to the Feather River during the allowable discharge period is unchanged from the previous permit and previous versions of this draft permit. The change to this limitation will not result in any reduction of existing effluent quality.

#### 4. Satisfaction of Antidegradation Policy

- a. **Surface Water.** The permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 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 facultative and aerated ponds. Domestic wastewater contains constituents such as total dissolved solids (TDS), specific conductivity, pathogens, nitrates, organics, metals and oxygen demanding substances (BOD). Percolation from the lagoons 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 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 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.

**Table F-13. Summary of Final Effluent Limitations**

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instant. Minimum	Instant. Maximum	
BOD <sup>1</sup>	mg/L	30	45	90	--	--	Tech.
BOD	lbs/day <sup>2</sup>	2	2	2	--	--	Tech.
Total Suspended Solids	mg/L	30	45	90	--	--	Tech.
	lbs/day <sup>2</sup>	2	2	2	--	--	Tech.
pH	--	--	--	--	6.0	9.0	Tech.
Copper, Total Recoverable	ug/L	53	--	106	--	--	CTR
Chlorine Residual	mg/L	--	0.01 <sup>3</sup>	0.02 <sup>4</sup>	--	--	USEPA
Ammonia	mg/L	23		45			BP/USEPA
Total Coliform Organisms	MPN/100 mL	23 <sup>5</sup>	--	240	--	--	BP/DPH

<sup>1</sup> 5-day, 20°C Biochemical Oxygen Demand (BOD)

<sup>2</sup> The daily average mass discharge for the period from 1 November to 31 April shall not exceed 125.1 lb/day

<sup>3</sup> 4-day average

<sup>4</sup> 1-hour average

<sup>5</sup> 7 sample median

**Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 65 percent

**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 consecutive bioassays.

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

- iii. 0.01 mg/L, as a 4-day average;
- iv. 0.02 mg/L, as a 1-hour average;

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

- iii. 23 most probable number (MPN) per 100 mL, as a 7-day median; and
- iv. 240 MPN/100 mL, more than once in any 30-day period.

**Electrical Conductivity.** Electrical Conductivity shall not exceed 684 umhos/cm on an annual average basis.

**E. Interim Effluent Limitations-Not Applicable**

**F. Land Discharge Specifications**

1. The Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater.

**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 for biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH,

pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity.

Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, salinity, temperature, electrical conductivity, and turbidity are applicable to this discharge and have been incorporated as Receiving Surface Water Limitations. Rational for these numeric receiving surface water limitations are as follows:

- a. **Ammonia.** The Basin Plan states that, “[w]aters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia ( $\text{NH}_3$ ) to exceed 0.025 mg/l (as N) in receiving waters.”
- b. **Bacteria.** The Basin Plan includes a water quality objective that “[I]n water designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.” Numeric Receiving Water Limitations for bacteria are included in this Order and are based on the Basin Plan objective.
- c. **Biostimulatory Substances.** The Basin Plan includes a water quality objective that “[W]ater shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for biostimulatory substances are included in this Order and are based on the Basin Plan objective.
- d. **Color.** The Basin Plan includes a water quality objective that “[W]ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses.” Receiving Water Limitations for color are included in this Order and are based on the Basin Plan objective.
- e. **Chemical Constituents.** The Basin Plan includes a water quality objective that “[W]aters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.” Receiving Water Limitations for chemical constituents are included in this Order and are based on the Basin Plan objective.
- f. **Dissolved Oxygen.** The Middle Fork of the Feather River has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/L of dissolved oxygen. Since the beneficial use of COLD does apply to the Middle Fork of the Feather River, a receiving water limitation of 7.0 mg/L for dissolved oxygen was included in this Order.

For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that “...the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water

*mass, and the 95 percentile concentration shall not fall below 75 percent of saturation.” This objective was included as a receiving water limitation in this Order.*

- g. **Floating Material.** The Basin Plan includes a water quality objective that “[W]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for floating material are included in this Order and are based on the Basin Plan objective.
- h. **Oil and Grease.** The Basin Plan includes a water quality objective that “[W]aters shall not contain oils, greases, waxes, or other materials 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.” Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.
- i. **pH.** The Basin Plan includes water quality objective that “[T]he 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.” This Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in this Order.

- j. **Pesticides.** The Basin Plan includes a water quality objective for pesticides beginning on page III-6.00. Receiving Water Limitations for pesticides are included in this Order and are based on the Basin Plan objective.
- k. **Radioactivity.** The Basin Plan includes a water quality objective that “[R]adionuclides shall not 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.” The Basin Plan states further that “[A]t a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations...” Receiving Water Limitations for radioactivity are included in this Order and are based on the Basin Plan objective.
- l. **Electrical Conductivity.** The Basin Plan includes a water quality objective that states: Electrical **conductivity** (at 25°C) “[s]hall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River.” The Basin Plan

objective is applied as a 10-year rolling average. A numeric Receiving Surface Water Limitation for electrical conductivity is included in this Order and is based on the Basin Plan objective for electrical conductivity.

- m. **Sediment.** The Basin Plan includes a water quality objective that “[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for suspended sediments are included in this Order and are based on the Basin Plan objective.
- n. **Settleable Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.” Receiving Water Limitations for settleable material are included in this Order and are based on the Basin Plan objective.
- o. **Suspended Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.” Receiving Water Limitations for suspended material are included in this Order and are based on the Basin Plan objective.
- p. **Taste and Odors.** The Basin Plan includes a water quality objective that “[W]ater 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 flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.” Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.
- q. **Temperature.** The Middle Fork of the Feather River has the beneficial uses of both **COLD** and **WARM**. The Basin Plan includes the objective that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.” This Order includes a receiving water limitation based on this objective
- r. **Toxicity.** The Basin Plan includes a water quality objective that “[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” Receiving Water Limitations for toxicity are included in this Order and are based on the Basin Plan objective.
- s. **Turbidity.** The Basin Plan includes a water quality objective that “[I]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."*

A numeric Receiving Surface Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

## **B. Groundwater-**

The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

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. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

## **VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS**

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), 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 MRP 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 and TSS reduction requirements).
2. As described in Section IV.C.3 above for salinity, monitoring for salinity (EC) in the influent will be required quarterly in conjunction with effluent and water supply monitoring as a means to provide data to evaluate BPTC for discharges from the Facility.

## 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.
2. The SIP states that if "...all reported detection limits of the pollutant in the effluent are greater than or equal to the C [water quality criterion or objective] value, the RWQCB [Regional Water Board] shall establish interim requirements...that require additional monitoring for the pollutant..." All reported detection limits for 2,3,7,8 TCDD, acrylonitrile, carbon tetrachloride, pentachlorophenol, benzidine, benzo (a) anthracene, benzo (a) pyrene, benzo (b) fluoranthene, benzo (k) fluoranthene, bis (2-chloroethyl) ether, chrysene, dibenzo (a, h) anthracene, 3,3 dichlorobenzidine, 2,4-dinitrotoluene, 1,2-diphenylhydrazine, hexachlorobutadiene, n-nitrosodimethylamine, n-nitrosodi-n-propylamine, aldrin, alpha-bhc, chlordane, 4,4'-DDT, 4,4'-DDE, 4,4'-DDD, dieldrin, heptachlor, heptachlor epoxide, PCB 1016, PCB 1221, PCB 1232, PCB 1242, PCB 1248, PCB 1254, PCB 1260, and toxaphene are greater than or equal to corresponding applicable water quality criteria or objectives. Monitoring for these constituents has been included in this Order in accordance with the SIP.

## C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Chronic whole effluent toxicity testing is required twice during the permit life 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.

### 2. Groundwater

- a. Section 13267 of the California Water Code 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.”* 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 (Attachment E) is issued pursuant to California Water Code 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, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, 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 68-16 and the Basin Plan.

- c. This Order requires the Discharger to begin 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 Board plans and policies, including Resolution 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

## **E. Other Monitoring Requirements**

### **1. Biosolids Monitoring**

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.6.a.). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

### **2. Water Supply Monitoring**

Water supply monitoring is required to evaluate the source of constituents in the wastewater and to establish a final, BPTC effluent in the next permit for this facility. In particular, quarterly monitoring for electrical conductivity and total dissolved solids is required.

## **VII. RATIONALE FOR PROVISIONS**

### **A. Standard Provisions**

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 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.

Section 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. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under

the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

## B. Special Provisions

### 1 Reopener Provisions

- a. **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.
- b. **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. 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. 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.
- c. **Dilution Study.** The discharger is required to perform an effluent dilution study with a dye or tracer within one year of Order adoption. The permit may be reopened at that time if the results of the dilution study are substantially different from the modeling results used to establish an acute toxicity mixing zone for this Order.
- d. **Chloroform.** Chloroform was detected in one sample at a concentration of 0.6 ug/L. Although this result is below the relevant cancer potency factor, it is prudent to monitor effluent chloroform, bromoform, bromodichloromethane, and chlorodibromomethane and reopen the permit if detection of any of these constituents, singly or in combination, indicates a reasonable potential for exceedance of a water quality objective for total trihalomethanes.
- e. **Cyanide.** cyanide was detected in a concentration of 8 ug/l in one out of two CTR sampling events, above the CTR criteria of 5 ug/L. Another CTR sampling event detected cyanide at 3 ug/L. If the initial sample is representative of the actual concentration of cyanide, then cyanide could represent a reasonable potential. However, the minimal amount of data is insufficient to determine if reasonable potential exists. This Order calls for monitoring of cyanide, and may be reopened if cyanide is found to cause a reasonable potential for exceedance of a water quality objective.

- f. **4,4'-DDD.** 4,4'-DDD was detected in a concentration of 0.0048 ug/l (detected but not quantified) in one round of CTR sampling. If this sample is representative of the actual concentration of 4,4'-DDD, then 4,4'-DDD could represent a reasonable potential. However, 4,4'-DDD, is no longer registered as an agricultural pesticide, and there are no agricultural activities in the vicinity of the treatment plant or town that should result in contamination of the wastewater with 4,4'-DDD. Therefore, this order requires monitoring of 4,4'-DDD. This Order may be reopened if 4,4'-DDD is found to cause a reasonable potential for exceedance of a water quality objective.
- g. **Treatment Equivalent to Secondary Treatment.** If the Discharger can demonstrate that the Facility is not capable of meeting effluent limitations of 30/30 for BOD and Total Suspended Solids in spite of proper operation and maintenance they may be eligible for relaxed standards for BOD and Total Suspended Solids removal, and this Order may be reopened for that purpose in accordance with 40 CFR 133.101(g).

## 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 III-8.00.) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires chronic WET monitoring twice during the term of the permit for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, this provision requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan 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 and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

**Monitoring Trigger.** A numeric toxicity monitoring trigger of >20 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does allow dilution for the chronic condition.

**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 a pattern of 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 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 a pattern 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.

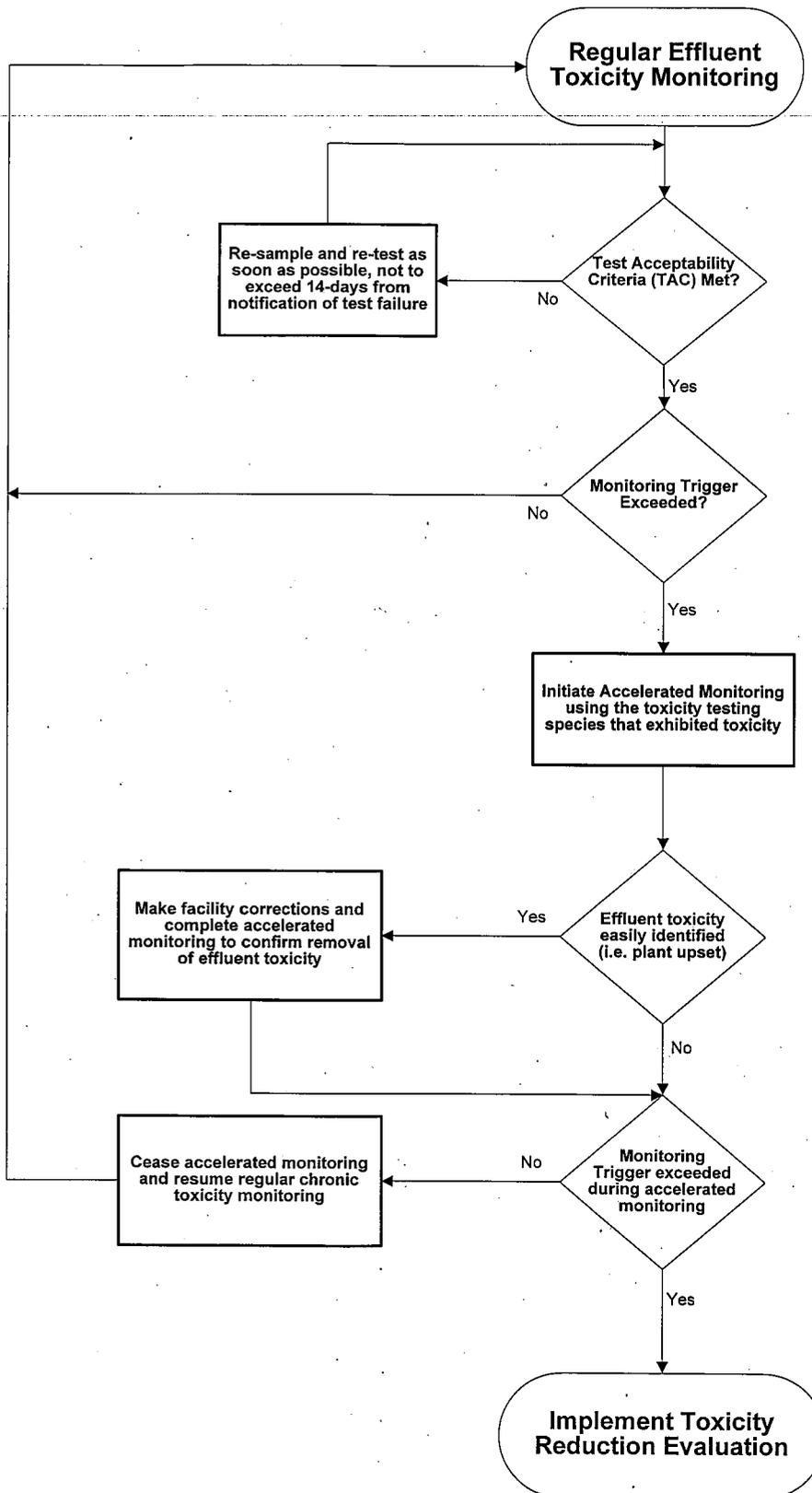
See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

**TRE Guidance.** The Discharger is required to prepare a TRE Work Plan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, (EPA/833B-99/002), August 1999.
- *Generalized Methodology for Conducting Industrial TREs*, (EPA/600/2-88/070), April 1989.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures*, Second Edition, EPA 600/6-91/005F, 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. **BPTC Evaluation Tasks.** The Discharger shall propose a work plan and schedule for re-evaluating BPTC to assure ongoing compliance with Resolution 68-16. The technical report describing the work plan and schedule shall contain a preliminary evaluation of each component and propose a time schedule for completing the comprehensive technical evaluation.

Following completion of the comprehensive technical evaluation, the Discharger shall submit a technical report describing the evaluation's results and critiquing each evaluated component with respect to BPTC and minimizing the discharge's impact on groundwater quality. Where deficiencies are documented, the technical report shall provide recommendations for necessary modifications (e.g., new or revised salinity source control measures, WWTP component upgrade and retrofit) to achieve BPTC and identify the source of funding and proposed schedule for modifications. The schedule shall be as short as practicable but in no case shall completion of the necessary modifications exceed four years past the Executive Officer's determination of the adequacy of the comprehensive technical evaluation, unless the schedule is reviewed and specifically approved by the Regional Water Board. The technical report shall include specific methods the Discharger proposes as a means to measure processes and assure continuous optimal performance of BPTC measures. The Discharger shall comply with the following compliance schedule in implementing the work required by this Provision:

<u>Task</u>	<u>Compliance Date</u>
1 -Submit technical report: work plan and schedule for comprehensive evaluation	<b>Within 6 months</b> following Order adoption
2 -Commence comprehensive evaluation	<b>30 days</b> following Executive Officer approval of Task 1.
3 -Complete comprehensive evaluation	As established by Task 1 and/or 2 years following Task 2, whichever is sooner
4 -Submit technical report: comprehensive evaluation results	<b>60 days</b> following completion of Task 3.
5 -Submit annual report describing the overall status of BPTC implementation and compliance with groundwater limitations over the past reporting year	To be submitted in accordance with the MRP (Attachment E, Section X.D.1.)

- c. **Groundwater Monitoring.** To determine compliance with Groundwater Limitations V.B., the Discharger is required to install a groundwater monitoring network. 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 the

ponds. Currently, there are no groundwater monitoring wells at the site, although there are monitoring wells at the Union Pacific Railroad facility, which is located contiguously and to the Southeast, and its wells are presumed to be upgradient. If the monitoring shows that any constituent concentrations are increased above background water quality, by 2 years and 6 months from the date of this Order, the Discharger shall submit a technical report describing the groundwater evaluation report results and critiquing each evaluated facility component with respect to BPTC and minimizing the discharge's impact on groundwater quality.

- d. **Mixing Zone/Dilution Study.** This dye or tracer study must be performed to assure that a minimum effluent dilution of 20:1 is achieved in a mixing zone that conforms to the modeling analysis of the discharger, to the SIP, the Basin Plan, and the USEPA Technical Support Document.
- e. **Septage Study.** The Discharger must provide a study on their ability to accept septage, and assure that septage is not adversely affecting their treatment capacity.
- f. **Reclamation, Reduction of River Discharge, and Regionalization.** The State Water Board adopted a State Policy for Water Quality Control on 6 July 1972 in which the State Water Board found that protection of the State's waters required implementation programs that conformed to specific principles. The State Policy for Water Quality Control included the following principles that relate to reclaimed water and consolidation of wastewater collection and treatment systems.
  - i. Municipal, agricultural, and industrial wastewaters must be considered as a potential integral part of the total available fresh water resource.
  - ii. Coordinated management of water supplies and wastewaters on a regional basis must be promoted to achieve efficient utilization of water.
  - iii. Wastewater collection and treatment facilities must be consolidated in all cases where feasible and desirable to implement sound water quality management programs based upon long-range economic and water quality benefits to an entire basin.
  - iv. Institutional and financial programs for implementation of consolidated wastewater management systems must be tailored to serve each particular area in an equitable manner.
  - v. Wastewater reclamation and reuse systems which assure maximum benefit from available fresh water resources shall be encouraged. Reclamation systems must be an appropriate integral part of the long-range solution to the water resources needs of an area and incorporate provisions for salinity control and disposal on nonreclaimable residues.

The Basin Plan includes a wastewater reuse policy that encourages the reclamation and reuse of wastewater where practicable and requires as part of a Report of Waste Discharge an evaluation of reuse and land disposal options as alternative disposal methods.

State and federal antidegradation policies require dischargers to demonstrate that degradation from new or expanded discharges are necessary, and to implement BPTC of the discharge necessary to maintain the highest water quality consistent with maximum benefit to the people of the State. Regionalization, reclamation, reuse and conservation may enhance the implementation of these policies.

Within eighteen months of the issuance of this Order, the Discharger shall submit a plan for the minimization of effluent discharge to the Middle Fork of the Feather River and maximization of recycling and surface water discharge. The plan shall include, as a minimum:

- An analysis of methods of reclamation on and off site;
  - An analysis of the effects of adding additional pond storage onsite;
  - An analysis to maximize pond evaporation;
  - An analysis of any opportunities for Regionalization
- g. Within 180 days of the adoption of this Order, the Discharger must submit a study determining whether discharge may be minimized or eliminated during times Electrical Conductivity in the Feather River exceeds 150 umhos/cm.

### 3. Best Management Practices and Pollution Prevention

- b. **Pollutant Minimization Program.** As required in Section 2.4.5.1 of the SIP, a pollutant minimization program (PMP) is required when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either: 1) A sample result is reported as DNQ and the effluent limitation is less than the RL; or 2) A sample result is reported as ND and the effluent limitation is less than the MDL. The goal of a PMP is to reduce all potential sources of a priority pollutant through pollution minimization strategies and measures to maintain effluent concentrations at or below WQBELs.
- c. **Salinity Reduction Goal** In an effort to monitor progress in reducing salinity discharges to the Feather River, the Discharger shall provide annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to the Feather River. Based on effluent data for this Facility, the Regional Water Board finds that an annual average salinity effluent limitation of 684  $\mu$ mhos/cm as electrical conductivity (EC) is a reasonable performance-based limitation that can be immediately achieved upon the effective date of this Order. The annual reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.)

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

##### **a. Pond Operating Requirements.**

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

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

#### **6. Other Special Provisions-Not Applicable**

#### **7. Compliance Schedules-Not Applicable**

### **VIII. PUBLIC PARTICIPATION**

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Portola Wastewater Treatment Plant. 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 (posting at city offices, county courthouse or city hall) 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 5:00 p.m. on 30 September 2009.

#### **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: 7/8/9 October 2009

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/rwqcb5/> 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 Regional 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 Ronald S. Dykstra at (530) 224-4858.