ATTACHMENT 1

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER R5-2014-0052-01
NPDES NO. CA0079511

WASTE DISCHARGE REQUIREMENTS FOR THE
CITY OF SHASTA LAKE
WASTEWATER TREATMENT FACILITY
SHASTA COUNTY

The following Discharger is subject to waste discharge requirements (WDR's) as set forth in this Order:

Table 1. Discharger Information

Discharger	City of Shasta Lake
Name of Facility	City of Shasta Lake Wastewater Treatment Facility
Facility Address	3700 Tibbits Road
	Shasta Lake, CA 96019
	Shasta County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Advanced Secondary Treated Wastewater	40º 39' 53"	122º 22' 46"	Churn Creek
002	Advanced Secondary Treated WWTP Effluent	40º 39' 22"	122º 22' 26"	Unnamed tributary to Churn Creek

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**28 March 2014**
This Order shall become effective on:	**1 May 2014**
This Order shall expire on:	**30 April 2019**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, as application for issuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**1 November 2018**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	**Major**

I, **PAMELA C. CREEDON**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **28 March 2014** and amended by Order R5-2018-xxxx on xx December 2018.

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TENTATIVE DRAFT

ATTACHMENT 1

~~**PAMELA C. CREEDON**~~**PATRICK PULUPA**, Executive Officer

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I. FACILITY INFORMATION

Information describing the City of Shasta Lake Wastewater Treatment Facility (Facility) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

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

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

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

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

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

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

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relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."

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

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

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

THEREFORE, IT IS HEREBY ORDERED that Order R5-2008-0037 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater from the Facility, as the Facility is specifically described in the Fact Sheet in section II, in a manner different from that described in this Order is prohibited.

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

C. Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.

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

E. Discharge of wastewater to Churn Creek, or its tributaries, from 15 April to 15 October is prohibited.

F. Discharge of wastewater to Churn Creek, or its tributaries, from 16 October to14 April when flow in Churn Creek provides less than 10:1 dilution is prohibited. Relaxation of this prohibition to allow discharge to Churn Creek when flow provides at least a 5:1

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dilution may be allowed in extreme drought conditions if approved by the Executive Officer.

G. The discharge of treated wastewater from the spray fields into Churn Creek or its tributaries is prohibited.

H. The discharge of treated wastewater to the spray fields during precipitation and for at least 24-hours after cessation of precipitation is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001 and 002

1. Final Effluent Limitations – Discharge Point 001 and 002

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001 and Discharge Point 002, with compliance measured at Monitoring Locations EFF-001 and EFF-002 as described in the Monitoring and Reporting Program, Attachment E:

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 4:

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)[1]	mg/L	10	15	30	--	--
	lbs/day[2]	108	163	325	--	--
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids[1]	mg/L	10	15	30	--	--
	lbs/day[2]	108	163	325	--	--
Priority Pollutants						
Copper, Total Recoverable	µg/L	5.1	--	7.9	--	--
Dichlorobromomethane	µg/L	0.56	--	1.4	--	--
Zinc, Total Recoverable	µg/L	12	--	22	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.74	--	2.1	--	--
	lbs/day[2]	8.0	--	23	--	--
Nitrite Plus Nitrate (as N)	mg/L	10	--	--	--	--

[1] Effluent limitations applicable at Discharge Point 001 only.
[2] Based on an average dry weather flow of 1.3 million gallons per day (MGD).

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

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

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

d. Average Daily Discharge Flow. The average dry weather discharge flow from Discharge Points 001 and 002 shall not exceed 1.3 MGD.

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

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

~~**f.**~~**e. Total Coliform Organisms.** Effluent total coliform organisms shall not exceed the following for Discharge Point 001. The following limitations do not apply to Discharge Point 002.

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

~~**g.**~~**f. Chlorpyrifos and Diazinon.** Effluent chlorpyrifos and diazinon concentrations shall not exceed the sum of one (1.0) as defined below:

i. Average Monthly Effluent Limitation

$$S_{avg} = \frac{C_{D\ avg}}{0.079} + \frac{C_{C\ avg}}{0.012} \leq 1.0$$

$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

ii. Maximum Daily Effluent Limitation

$$S_{max} = \frac{C_{D\ max}}{0.16} + \frac{C_{C\ max}}{0.025} \leq 1.0$$

$C_{D\text{-}avg}$ = maximum daily diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = maximum daily chlorpyrifos effluent concentration in µg/L

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Discharge Point 003

1. Spray field water shall only come from the reclaimed water reservoir.

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

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C. Recycling Specifications – Discharge Points PND-001 and REC-001

1. Recycling Specifications – Discharge Point PND-001

a. The Discharger shall maintain compliance with the following limitations at Discharge Point PND-001, with compliance measured at Monitoring Location PND-001 as described in Attachment E.

Table 5. Recycling Specifications – Discharge Point PND-001

Parameter	Units	Discharge Specifications		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	30
	lbs/day[1]	108	163	325
Total Suspended Solids	mg/L	10	15	30
	lbs/day[1]	108	163	325

[1] Based on an average dry weather treatment capacity of 1.3 MGD.

b. Percent Removal. The average monthly percent removal of BOD_5 and TSS shall not be less than 85 percent in the effluent.

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

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

d. Turbidity. Effluent turbidity shall not exceed the following:

i. 2 NTU, as a daily average;
ii. 5 NTU, more than 5% of the time within a 24-hour period; and
iii. 10 NTU, at any time.

2. Recycling Specifications – Discharge Point PND-001, REC-001, -002, -003

a. The storage, delivery, or use of reclaimed water shall not result in a pollution or nuisance, or adversely affect water quality, as defined in the California Water Code.

b. The delivery or use of reclaimed water shall be in conformance with the criteria contained in Chapter 3, Division 4, Title 22, California Code of Regulations (CCR) (Section 60301, et seq.), or amendments thereto.

c. The Discharger shall ensure that signs with proper wording of sufficient size shall be placed at storage or reclamation sites to alert the public of the use of reclaimed water.

d. Storage or reclamation areas shall be managed to prevent breeding of mosquitoes.

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V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in Churn Creek or its tributaries:

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

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

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

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

5. **Dissolved Oxygen:**

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

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

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

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

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

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

9. **Pesticides:**

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

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

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

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

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

f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15; nor

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

10. Radioactivity:

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

b. Radionuclides to be present in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

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

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

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

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

15. Temperature. The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.

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

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17. Turbidity.

a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;

b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;

c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;

d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor

e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations

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

2. Release of waste constituents from any storage, treatment, or disposal component associated with the Facility shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the Facility to contain waste constituents in concentrations in excess of natural background quality or that listed below, whichever is greater:

a. Total coliform organisms median of 2.2 MPN/100 mL over any 7-day period.

b. Nitrate plus nitrite (as N) shall not exceed 10 mg/L.

c. Chemical constituents in concentrations that adversely affect beneficial uses.

VI. PROVISIONS

A. Standard Provisions

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

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

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

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

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

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

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

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

The causes for modification include:

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

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

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

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

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

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

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections

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301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

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

ii. Controls any pollutant limited in the Order.

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

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

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

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

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

i. Safeguard to electric power failure:

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

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

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water

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Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

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

The technical report shall:

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

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

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

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

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

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper

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application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

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

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

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

p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (530) 224-4845 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1 [40 CFR 122.41(l)(6)(i)]. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program Requirements

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

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C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:

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

ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

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

c. Mercury. If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

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

e. Water Effects Ratios (WER) and Metal Translators. A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. 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.

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f. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board will consider adoption of the Drinking Water Policy at a future meeting. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

g. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide an implementation plan for NPDES-permitted domestic wastewater dischargers. This Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

h. **Discharge Prohibition III.E. and III.F.** This Order may be reopened for modification or removal of Discharge Prohibition III.E. and/or III.G. upon completion of tasks included in the compliance schedule outlined in TSO R5-2014-0053, which includes compliance with final effluents limitations, and upon submittal of documentation (i.e., an anti-degradation analysis) supporting a surface water discharge during the dry season and/or a discharge to surface water during periods when there is less than a 10:1 receiving water to effluent flow ratio.

i. **Ultraviolet (UV) Disinfection Operating Specifications.** The UV operating specifications in this Order are based on the UV guidelines developed by the National Water Research Institute and American Water Works Association Research Foundation titled, "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse." If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation equivalent to Title 22 disinfected tertiary recycled water, this Order may be reopened to modify the UV operating specifications.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the MRP section V. Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits toxicity, as described in subsection ii below, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the

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effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit aTRE Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. TRE Work Plan. Within 90 days of the effective date of this Order, the Discharger shall submit to the Central Valley Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with U.S. EPA guidance[1] and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.

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

iii. Numeric Toxicity Monitoring Trigger. The numeric toxicity monitoring trigger to initiate a TRE is >2 TU_C (where TU_C = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

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

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

(b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four consecutive accelerated

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

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tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

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

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

3. Best Management Practices and Pollution Prevention

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

4. Construction, Operation and Maintenance Specifications

a. ~~Turbidity~~Filtration System Operating Specifications. ~~Effluent turbidity shall not exceed any of the following at Discharge Point 001 when flow in Churn Creek provides less than 20:1 dilution and at Discharge Point PND-001. The following specifications do not apply to Discharge Point 002.~~ To ensure the filtration system is operating properly to provide adequate disinfection of the wastewater, the turbidity of the filter effluent measured at Monitoring Location FIL-001 shall not exceed:

i. 2 NTU, as a daily average;
ii. 5 NTU, more than 5% of the time within a 24-hour period;
iii. 10 NTU, at any time.

b. Pond Operating Requirements

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

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

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

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

(b) Weeds shall be minimized.

(c) Dead algae, vegetation, and debris shall not accumulate on the water surface.

iv. Freeboard shall never be less than 2 feet (measured vertically to the lowest point of overflow.

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

c. Ultraviolet (UV) Disinfection System Operating Specifications. The UV disinfection system must be operated in accordance with an operations and maintenance program that assures adequate disinfection, and shall meet the following minimum specifications to provide virus inactivation equivalent to Title 22 Disinfected Tertiary Recycled Water:

i. **UV Dose.** The minimum hourly average UV dose in the UV reactor shall be 100 millijoules per square centimeter (mJ/cm^2).

ii. **UV Transmittance**. The minimum hourly average UV transmittance (at 254 nanometers) in the wastewater measured at UVS-001 shall not fall below 55 percent.

iii. The lamp sleeves and cleaning system components must be visually inspected per the manufacturer's operations manual for physical wear (scoring, solarization, seal leaks, cleaning fluid levels, etc.) and to check the efficacy of the cleaning system.

iv. The lamp sleeves must be cleaned periodically as necessary to meet the UV dose requirements.

v. Lamps must be replaced per the manufacturer's operations manual, or sooner, if there are indications the lamps are failing to provide adequate disinfection. Lamp age and lamp replacement records must be maintained.

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5. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements

i. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:

(a) Wastes which create a fire or explosion hazard in the treatment works;

(b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

(c) Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

(d) Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

(e) Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Central Valley Water Board approves alternate temperature limits;

(f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

(g) Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and

(h) Any trucked or hauled pollutants, except at points predesignated by the Discharger.

ii. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

(a) Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or

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(b) Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

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

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

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

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

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

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

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

v. **Within 180 days of the permit effective date**, the Discharger shall submit a biosolids use or disposal plan to the Central Valley Water Board or implement an existing plan previously submitted to the Board. The plan shall describe at a minimum:

(a) Sources and amounts of biosolids generated annually.

(b) Location(s) of on-site storage and description of the containment area.

(c) Plans for ultimate disposal. For landfill disposal, include the present classification of the landfill and the name and location of the landfill.

c. Anaerobically Digestible Material. If the Discharger proposes to receive hauled-in anaerobically digestible material (ADM) for injection into an anaerobic digester, the Discharger shall notify the Central Valley Water Board and develop and implement standard operating procedures (SOP's) for this activity prior to initiation of the hauling. The SOP's shall address material handling, including unloading, screening, or other processing prior to anaerobic digestion; transportation; spill prevention; and spill response. In addition, the SOP's shall address avoidance of the introduction of materials that could cause interference, pass-through, or upset of the treatment processes; avoidance of prohibited material, vector control, odor control, operation and maintenance, and the disposition of any solid waste segregated from introduction to the digester. The Discharger shall provide training to its staff on the SOP's and shall maintain records for a minimum of three years of each load received, describing the hauler, waste type, and quantity received. In addition, the Discharger shall maintain records for a minimum of three years for the disposition, location, and quantity of cumulative pre-digestion-segregated solid waste hauled off-site.

d. Biosolids Storage and Transportation Specifications

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

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

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

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

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

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

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

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

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

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

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

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

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6. Other Special Provisions

a. During periods of effluent discharge to Churn Creek when the receiving water provides less than 20:1 dilution, effluent wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH; formerly the Department of Health Services) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. Effluent need not comply with the Ct[1] requirement specified in Title 22 section 60301.230(a)(1) unless the receiving water provides no dilution. If the receiving water is 100% treated effluent (i.e., effluent-dominated) the effluent shall meet all of the Water Recycling Criteria in Title 22, including Section 60301.230(a)(1).

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

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

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

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

~~**D. Total Residual Chlorine Effluent Limitations (Section IV.A.1.e).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the~~

[1]The product of the total chlorine residual multiplied by the modal contact time measured at the same point.

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~~discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.~~

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

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

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

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

~~F.~~E. **Chlorpyrifos and Diazinon Effluent Limitations (Section IV.A.1.g).** Compliance shall be determined by calculating the sum (S), as provided in this Order, with analytical results that are reported as "non-detectable" concentrations to be considered to be zero.

~~G.~~F. **Reporting Due Dates.** For reports specified in this Order, if the due date is on a Saturday, Sunday, State Holiday, or a day the corresponding Water Board(s) office(s) is closed, the due date shall be on the next business day.

~~H.~~G. **Priority Pollutant Effluent Limitations.** Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:

1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:

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a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or

b. A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).

3. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall not be deemed out of compliance.

~~I.~~H. Chlorpyrifos and Diazinon Effluent Limitations (Section IV.A.1.g). Compliance shall be determined by calculating the sum (S), as provided in this Order, with analytical results that are reported as “non - detectable” concentrations to be considered to be zero.

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ATTACHMENT A – DEFINITIONS

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

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

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

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

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

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

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

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

The daily discharge may be determined by the analytical results of a composite sample taken over the course of 1 day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

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

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

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

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

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

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

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

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

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

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

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

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

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

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

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

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

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

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

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

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in the Central Valley Water Board Basin Plan.

Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

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

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

Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A

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TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

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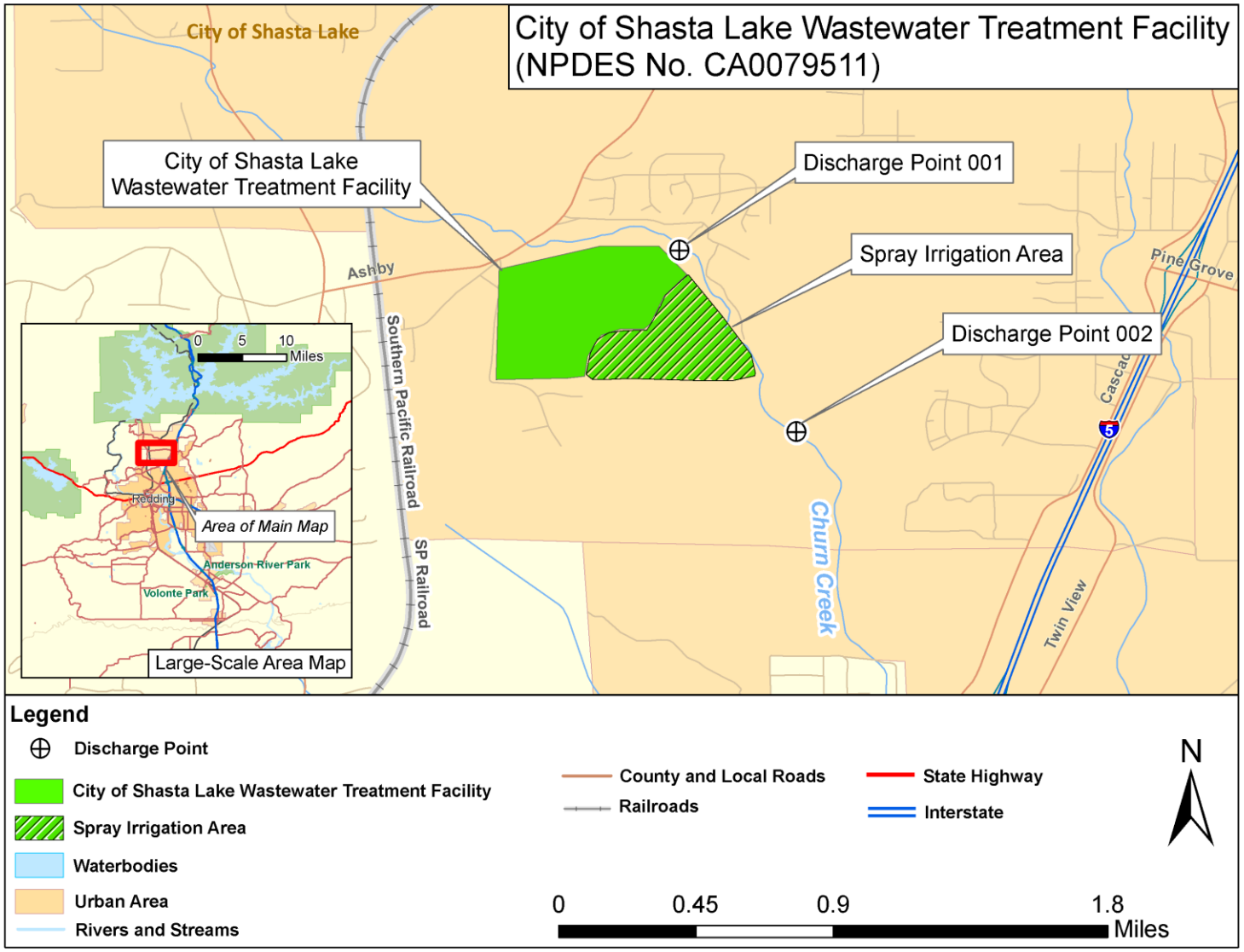
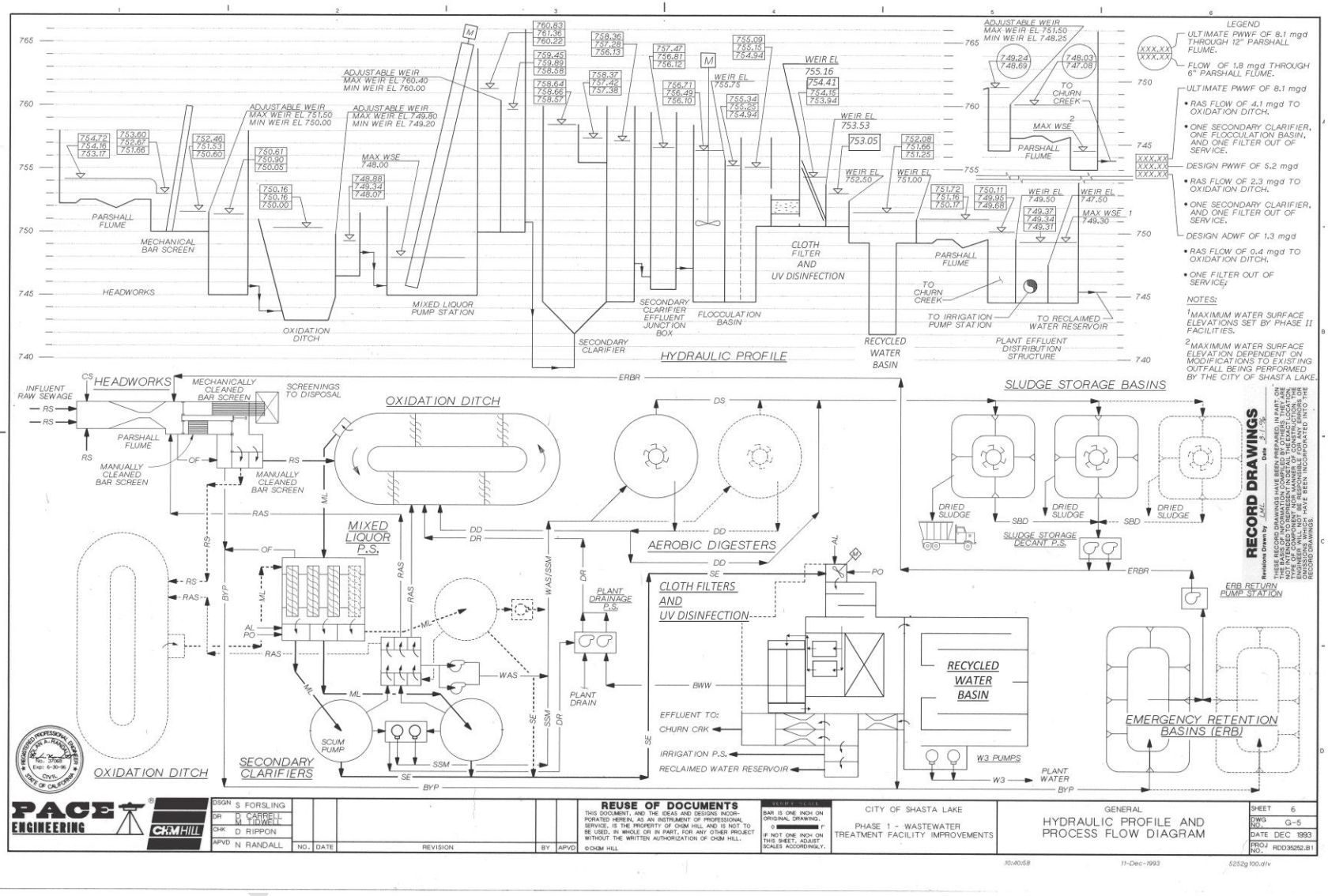
ATTACHMENT B – MAPS



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

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

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR 122.41(i)(1));

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

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

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

G. Bypass

1. Definitions

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

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

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

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

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

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

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

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

5. Notice

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

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

H. Upset

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

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

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly

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signed, contemporaneous operating logs or other relevant evidence that (40 CFR 122.41(n)(3)):

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

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

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

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

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

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

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

III. STANDARD PROVISIONS – MONITORING

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

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under

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40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4) and 122.44(i)(1)(iv))

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2))

B. Records of monitoring information shall include:

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

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

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

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

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

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

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

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

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

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance

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with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267)

B. Signatory and Certification Requirements

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

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR 122.22(a)(3)).

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

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

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

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

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

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

"*I certify under penalty of law that this document and all attachments were prepared*

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

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order or as specified elsewhere in this Order (e.g., Special Provisions). (40 CFR 122.22(l)(4))

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

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

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

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

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taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i))

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

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

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

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

F. Planned Changes

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

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

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR 122.41(l)(1)(ii))

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

G. Anticipated Noncompliance

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

H. Other Noncompliance

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

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I. Other Information

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

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

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

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

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 CFR 122.42(b)(2))

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
(40 CFR 122.42(b)(3).

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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

I. GENERAL MONITORING PROVISIONS

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

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

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

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

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

F. Laboratories analyzing monitoring samples shall be certified by the Department of Public Health (DPH), in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

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

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

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

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II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description[1]
--	INF-001	A location where a representative sample of the influent into the Facility can be collected prior to entering the treatment process Latitude: 40º 39' 49" N, Longitude: 122º 22' 48" W
001	EFF-001	Downstream from the last connection through which wastes can be admitted to the outfall before being discharged to Churn Creek Latitude: 40º 39' 53" N, Longitude: 122º 22' 46" W
002	EFF-002	Effluent discharge from the reclaimed water reservoir to the unnamed tributary of Churn Creek Latitude: 40º 39' 22" N, Longitude:122º, 22', 26" W
--	RSW-001	In Churn Creek, 30 feet upstream from Discharge Point 001 Latitude: 40º 39' 53" N, Longitude: 122º 22' 47" W
--	RSW-002	In Churn Creek, 100 feet downstream from Discharge Point 001 Latitude: 40º 39' 51" N, Longitude: 122º 22' 43" W
--	RSW-003	In Churn Creek, 50 feet upstream of confluence with the unnamed tributary of Churn Creek. Latitude: 40º 39' 24" N, Longitude: 122º 22' 28" W
--	RSW-004	In Churn Creek, 100 feet downstream of confluence with the unnamed tributary of Churn Creek. Latitude: 40º 39' 21" N, Longitude: 122º 22' 25" W
--	REC-001	Discharge to reclamation user: Sierra Pacific Industries
--	UVS-001	A location where a representative sample of wastewater can be collected immediately downstream of the ultraviolet light (UV) disinfection system
--	FIL-001	Monitoring of the filter effluent to be measured downstream of the filters and either prior to or after the UV disinfection system
	REC-002	Discharge to reclamation user: Ca. Dept. of Transportation
	REC-003	Discharge to reclamation user: Knauf Insulation, Inc.
003	LND-001	Effluent discharge to the spray fields
--	PND-001	Effluent discharge into reclaimed water reservoir
--	BIO-001	A location where a representative sample of the biosolids can be obtained
--	SPL-001	A location where a representative sample of the municipal water supply can be obtained

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

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III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	1/Week	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]

[1] 24-hour flow proportional composite.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; or by methods approved by the Central Valley Water Board or the State Water Board.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Locations EFF-001 and EFF-002

1. The Discharger shall monitor treated effluent at Monitoring Locations EFF-001 and EFF-002 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous[18]	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	1/Week	[2]
	lbs/day	Calculate	1/Week	--
pH	standard units	Meter	Continuous[18]	[2,3]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]
	lbs/day	Calculate	1/Week	--
Priority Pollutants				
Bis (2-ethylhexyl) phthalate	µg/L	Grab	1/Year	[2,4,5]
Carbon Tetrachloride	µg/L	Grab	1/Quarter[6]	[2,5]
Copper, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,5]
Dichlorobromomethane	µg/L	Grab	1/Month	[2,5]
Zinc, Total Recoverable	µg/L	24-hr Composite[1]	1/Month	[2,5]
Priority Pollutants and Other Constituents of Concern	µg/L	24-hr Composite[1]	[17]	[2,5]

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Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week[3,7]	[2]
	lbs/day	Calculate	1/Week	--
~~Chlorine, Total Residual~~	~~mg/L~~	~~Meter~~	~~Continuous[18]~~	~~[2,8]~~
Chlorpyrifos	µg/L	Grab	1/Year[9]	[2]
Diazinon	µg/L	Grab	1/Year[9]	[2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[2]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month[10]	[2]
Iron, Total Recoverable	µg/L	24-hr Composite[1]	1/Quarter[6]	[2]
Manganese, Total Recoverable	µg/L	24-hr Composite[1]	1/Quarter[6]	[2]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month[11]	[2]
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month[11]	[2]
Nitrite Plus Nitrate (as N)	mg/L	Grab	1/Month	[2]
Total Kjeldahl Nitrogen	mg/L	Grab	1/Month	[2]
Orthophosphate (as P)	mg/L	24-hr Composite[1]	1/Month	[2]
Phosphorous, Total (as P)	mg/L	24-hr Composite[1]	1/Month	[2]
Standard Minerals[15]	mg/L	Grab	1/Year	[2]
Temperature	°F (°C)	Grab	1/Week[3,13]	[2]
Total Coliform Organisms	MPN/100 mL	Grab	2/Week[14]	[2]
Total Dissolved Solids	mg/L	Grab	1/Month	[2]
Turbidity[15, 16]	NTU	Grab	1/Day	[2]

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Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] 24-hour time of flow proportional composite.
[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[3] pH and temperature shall be recorded at the time of ammonia sample collection.
[4] In order to verify if bis (2-ethylhexyl) phthalate is truly present in the effluent discharge, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant (i.e., Sampling and analysis shall be conducted using ultra-clean techniques.).
[5] For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (See *Effluent and Receiving Water Characterization*, Attachment E, section IX.C., Table E-10).
[6] Monitoring shall be conducted quarterly for the first two years of the permit term.
[7] Concurrent with whole effluent toxicity monitoring.
~~[8] Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.~~
[9] USEPA Method 625M, Method 8141, or equivalent. Minimum reporting limits: <100 ng/L diazinon; <15 ng/L chlorpyrifos.
[10] Hardness samples shall be collected concurrently with metals samples.
[11] Monitoring for nitrite and nitrate shall be conducted concurrently.
[12] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[13] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
[14] Samples for total coliform organisms may be collected at any point following disinfection.
[15] Concurrent with electrical conductivity monitoring.
[16] Monitoring required at Monitoring Location EFF-001 only.
[17] Priority pollutants shall be sampled semiannually during the third and fourth year of the Order (see *Effluent and Receiving Water Characterization*, Attachment E, section IX.C.). Samples shall be conducted concurrently with upstream receiving water monitoring for hardness (as $CaCO_3$) and pH.
[18] Daily grab sample and flow measurement adequate for EFF-002.

2. If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for the constituents listed above having sampling frequencies of weekly or more frequent, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

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

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

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2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Locations EFF-001 and EFF-002.

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

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

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

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

1. *Monitoring Frequency –* The Discharger shall perform annual three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be time or flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this Monitoring and Reporting Program.

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

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

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   - The green alga, *Selenastrum capricornutum* (growth test).

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

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

7. *Dilutions* – For routine and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and one control. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory control water may be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions[a] (%)					Controls
	100	75	50	25	12.5	
% Effluent	100	75	50	25	12.5	0
% Control Water	0	25	50	75	87.5	100

[a] Receiving water control or laboratory water control may be used as the diluent.

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

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

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

C. **WET Testing Notification Requirements.** The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

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

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

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a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.

b. The statistical methods used to calculate endpoints;

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

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

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

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

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

3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Work Plan, or as amended by the Discharger's TRE Action Plan.

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

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

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

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

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS

A. Monitoring Location PND-001

1. The Discharger shall monitor treated effluent discharged to the reclaimed water reservoir at Monitoring Location PND-001 as follows:

Table E-5. Recycled Water Monitoring Requirements – Monitoring Location PND-001

Parameter	Units	Sample Type	Minimum Sampling Frequency

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Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous[1]
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[2]	1/Week
	lbs/day	Calculate	1/Week
~~Chlorine, Total Residual~~	~~mg/L~~	~~Meter~~	~~Continuous[3]~~
Iron, Total Recoverable	µg/L	24-hr Composite[2]	1/Quarter[4]
Manganese, Total Recoverable	µg/L	24-hr Composite[2]	1/Quarter[4]
Total Suspended Solids	mg/L	24-hr Composite[2]	1/Week
	lbs/day	Calculate	1/Week
Total Coliform Organisms	MPN/100 mL	Grab	1/Day
Turbidity	NTU	Grab	1/Day

[1] Report total flow for each day.
[2] 24-hour flow proportioned composite.
~~[3] Report instantaneous minimum and instantaneous maximum for each day.~~
[43] During periods of discharge through Discharge Point 001, monitoring conducted at Monitoring Location EFF-001 for iron and manganese during the sampling period shall negate the necessity to monitor for iron and manganese at PND-001 within the same sampling period.

2. If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for the constituents listed above having sampling frequencies of weekly or more frequent, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

B. Monitoring Locations LND-001 and REC-001, -002, -003

1. The Discharger shall monitor when effluent is discharged from the reclamation reservoir to any land discharge (i.e., spray fields) or reclamation water user at Monitoring Locations LND-001, REC-001, -002, -003 as follows:

Table E-6. Reclamation Monitoring Requirements – Monitoring Locations LND-001, REC-001, -002, -003

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	MGD	Meter	Continuous[1]

[1] Report total flow for each day.

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004

1. The Discharger shall monitor Churn Creek at Monitoring Location RSW-001 as follows:

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Table E-7. Receiving Water Monitoring Requirements – Monitoring Location RSW-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	1/Day	--
Conventional Pollutants				
pH	standard units	Grab	1/Week	[1]
Priority Pollutants				
Priority Pollutants and Other Constituents of Concern	µg/L	Grab	[4]	[1,2]
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Grab	1/Week	[1]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[1]
Hardness (as $CaCO_3$)	mg/L	Grab	4/Year[3]	[1]
Temperature	°F (°C)	Grab	1/Week	[1]
Turbidity	NTU	Grab	1/Week	[1]

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

[2] For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (See *Effluent and Receiving Water Characterization*, Attachment E, section IX.C.).

[3] During period of discharge. Sampling to occur at least 1 month apart and to be concurrent with effluent sampling events.

[4] Priority pollutants shall be sampled quarterly during the year 2016 (see *Effluent and Receiving Water Characterization*, Attachment E, section IX.C.).

2. The Discharger shall monitor Churn Creek at Monitoring Locations RSW-002, RSW-003, and RSW-004 as follows:

Table E-8. Receiving Water Monitoring Requirements – Monitoring Locations RSW-002, RSW-003, and RSW-004

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Conventional Pollutants				
pH	standard units	Grab	1/Week	[1]
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Grab	1/Week	[1]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month[2]	[1]
Temperature	°F (°C)	Grab	1/Week	[1]
Turbidity	NTU	Grab	1/Week	[1]

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

[2] Monitoring only required at Monitoring Location RSW-004.

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3. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-001 and RSW-002 when discharging at Discharge Point 001 and Monitoring Locations RSW-003 and RSW-004 when discharging at Discharge Point 002. Attention shall be given to the presence or absence of:

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

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

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

a. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols).

b. Biosolids monitoring shall be conducted using the methods in *Test Methods for Evaluating Solids Waste, Physical/Chemical Methods* (EPA publication SW-846), as required in 40 CFR 503.8(b)(4). All results must be reported on a 100% dry weight basis. Records of all analyses must state on each page of the laboratory report whether the results are expressed in “100% dry weight” or “as is”.

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

d. Upon removal of sludge, the Discharger shall submit characterization of sludge quality including, sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge are provided in USEPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in USEPA’s POTW Sludge Sampling and Analysis Guidance Document, August 1989.

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B. Municipal Water Supply

1. Monitoring Location SPL-001

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

Table E-9. Municipal Water Supply Monitoring Requirements

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

1 If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.
2 Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).
3 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

C. Filtration System and Ultraviolet Light (UV) Disinfection System

1. Monitoring Locations UVS-001 and FIL-001

a. The Discharger shall monitor the filtration system at Monitoring Location FIL-001 and the UV disinfection system at Monitoring LocationsUVS-001 as follows:

Table E-10. Filtration System and UV Disinfection System Monitoring Requirements

Parameter	Units	Sample Type	Monitoring Location	Minimum Sampling Frequency
Flow	MGD	Meter	UVS-001	Continuous [1]
Turbidity [4]	NTU	Meter	FIL-001	Continuous [1, 2]
Number of UV banks in operation	Number	Observation	N/A	Continuous [1]
UV Transmittance	Percent (%)	Meter	UVS-001	Continuous [1]
UV Dose [3]	mJ/cm [2]	Calculated	N/A	Continuous [1]
Total Coliform Organisms [4]	MPN/100mL	Grab	UVS-001	1/Day

1 For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation. If analyzer(s) fail to provide continuous monitoring for more than two hours and influent and/or effluent from the disinfection process is not diverted for retreatment, the Discharger shall obtain and report hourly manual and/or grab sample results. The Discharger shall not decrease power settings or reduce the number of UV lamp banks in operation while the continuous analyzers are out of service and water is being disinfected.
2 Report daily average and maximum turbidity.

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[3] Report daily minimum hourly average UV dose and daily average UV dose. The minimum hourly average dose shall consist of lowest hourly average dose provided in any channel that had at least one bank of lamps operating during the hour interval. For channels that did not operate for the entire hour interval, the dose will be averaged based on the actual operation time.

[4] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

~~C.~~D. Effluent and Receiving Water Characterization

1. **Semiannual Monitoring.** Semiannual (i.e., 2/Year) priority pollutant samples shall be collected from the effluent and upstream receiving water (EFF-001 and RSW-001) and analyzed for the constituents listed in Table E-10, below. Semiannual monitoring shall be conducted during the third and fourth year of the Order (during periods of discharge to surface water), in accordance with the monitoring periods and reporting schedule outlined in Table E-11. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water. (Note: Duplicative monitoring for a priority pollutant is not required. If monitoring and reporting for a priority pollutant listed in Table E-10 is already required in this Order, the Discharger is not required to perform additional, duplicative monitoring and reporting as specified in this section.)

2. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

3. **Sample type**. All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-10, below.

Table E-11~~0~~. Effluent and Receiving Water Characterization Monitoring

Parameter[2]	Units	Effluent Sample Type	Maximum Reporting Level[1]
1,1-Dichloroethane	µg/L	Grab	1
1,1-Dichloroethene	µg/L	Grab	0.5
1,1,1-Trichloroethane	µg/L	Grab	2
1,1,2-Trichloroethane	µg/L	Grab	0.5
1,1,2,2-Tetrachloroethane	µg/L	Grab	0.5
1,2-Dichlorobenzene	µg/L	Grab	2
1,2-Dichloroethane	µg/L	Grab	0.5
cis-1,2-Dichloroethene	µg/L	Grab	
1,2-Dichloropropane	µg/L	Grab	0.5
1,2,4-Trichlorobenzene	µg/L	Grab	1
1,3-Dichlorobenzene	µg/L	Grab	2
1,3-Dichloropropene	µg/L	Grab	0.5
1,4-Dichlorobenzene	µg/L	Grab	2
Acrolein	µg/L	Grab	2
Acrylonitrile	µg/L	Grab	2
Benzene	µg/L	Grab	0.5
Bromoform	µg/L	Grab	2
Bromomethane	µg/L	Grab	2

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Parameter[2]	Units	Effluent Sample Type	Maximum Reporting Level[1]
Carbon Tetrachloride	µg/L	Grab	0.5
Chlorobenzene (monochlorobenzene)	µg/L	Grab	2
Chloroethane	µg/L	Grab	2
2- Chloroethyl vinyl ether	µg/L	Grab	1
Chloroform	µg/L	Grab	2
Chloromethane	µg/L	Grab	2
Dibromochloromethane	µg/L	Grab	0.5
Dichlorobromomethane	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
Tetrachloroethene	µg/L	Grab	0.5
Toluene	µg/L	Grab	2
trans-1,2-Dichloroethylene	µg/L	Grab	1
Trichloroethene	µg/L	Grab	2
Vinyl chloride	µg/L	Grab	0.5
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	
Trichlorofluoromethane	µg/L	Grab	
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	
Styrene	µg/L	Grab	
Xylenes	µg/L	Grab	
1,2-Benzanthracene	µg/L	Grab	5
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1

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Parameter[2]	Units	Effluent Sample Type	Maximum Reporting Level[1]
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate	µg/L	Grab	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum	µg/L	24-hr Composite	
Antimony	µg/L	24-hr Composite	5
Arsenic	µg/L	24-hr Composite	2
Asbestos	S/L	24-hr Composite	
Barium	µg/L	24-hr Composite	
Beryllium	µg/L	24-hr Composite	2
Cadmium	µg/L	24-hr Composite	0.25
Chromium (III)	µg/L	24-hr Composite	50
Chromium (VI)	µg/L	grab	10
Copper	µg/L	24-hr Composite	2
Cyanide	µg/L	grab	5
Fluoride	µg/L	24-hr Composite	
Iron	µg/L	24-hr Composite	
Lead	µg/L	24-hr Composite	0.5
Mercury	µg/L	Grab	0.2
Manganese	µg/L	24-hr Composite	
Molybdenum	µg/L	24-hr Composite	
Nickel	µg/L	24-hr Composite	20
Selenium	µg/L	24-hr Composite	5
Silver	µg/L	24-hr Composite	0.25
Thallium	µg/L	24-hr Composite	1
Tributyltin	µg/L	24-hr Composite	
Zinc	µg/L	24-hr Composite	10
4,4'-DDD	µg/L	24-hr Composite	0.05
4,4'-DDE	µg/L	24-hr Composite	0.05
4,4'-DDT	µg/L	24-hr Composite	0.01
alpha-Endosulfan	µg/L	24-hr Composite	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite	0.01

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Parameter[2]	Units	Effluent Sample Type	Maximum Reporting Level[1]
Alachlor	µg/L	24-hr Composite	
Aldrin	µg/L	24-hr Composite	0.005
beta-Endosulfan	µg/L	24-hr Composite	0.01
beta-Hexachlorocyclohexane	µg/L	24-hr Composite	0.005
Chlordane	µg/L	24-hr Composite	0.1
delta-Hexachlorocyclohexane	µg/L	24-hr Composite	0.005
Dieldrin	µg/L	24-hr Composite	0.01
Endosulfan sulfate	µg/L	24-hr Composite	0.01
Endrin	µg/L	24-hr Composite	0.01
Endrin Aldehyde	µg/L	24-hr Composite	0.01
Heptachlor	µg/L	24-hr Composite	0.01
Heptachlor Epoxide	µg/L	24-hr Composite	0.01
Lindane (gamma-Hexachlorocyclohexane)	µg/L	24-hr Composite	0.02
PCB-1016	µg/L	24-hr Composite	0.5
PCB-1221	µg/L	24-hr Composite	0.5
PCB-1232	µg/L	24-hr Composite	0.5
PCB-1242	µg/L	24-hr Composite	0.5
PCB-1248	µg/L	24-hr Composite	0.5
PCB-1254	µg/L	24-hr Composite	0.5
PCB-1260	µg/L	24-hr Composite	0.5
Toxaphene	µg/L	24-hr Composite	0.5
Atrazine	µg/L	24-hr Composite	
Bentazon	µg/L	24-hr Composite	
Carbofuran	µg/L	24-hr Composite	
2,4-D	µg/L	24-hr Composite	
Dalapon	µg/L	24-hr Composite	
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	24-hr Composite	
Di(2-ethylhexyl)adipate	µg/L	24-hr Composite	
Dinoseb	µg/L	24-hr Composite	
Diquat	µg/L	24-hr Composite	
Endothal	µg/L	24-hr Composite	
Ethylene Dibromide	µg/L	24-hr Composite	
Glyphosate	µg/L	24-hr Composite	
Methoxychlor	µg/L	24-hr Composite	
Molinate (Ordram)	µg/L	24-hr Composite	
Oxamyl	µg/L	24-hr Composite	
Picloram	µg/L	24-hr Composite	
Simazine (Princep)	µg/L	24-hr Composite	
Thiobencarb	µg/L	24-hr Composite	
2,3,7,8-TCDD (Dioxin)	µg/L	24-hr Composite	
2,4,5-TP (Silvex)	µg/L	24-hr Composite	
Diazinon	µg/L	24-hr Composite	
Chlorpyrifos	µg/L	24-hr Composite	
Ammonia (as N)	mg/L	24-hr Composite	
Boron	µg/L	24-hr Composite	
Chloride	mg/L	24-hr Composite	
Flow	MGD	Meter	
Hardness (as $CaCO_3$)	mg/L	Grab	
Foaming Agents (MBAS)	µg/L	24-hr Composite	
Mercury, Methyl	ng/L	Grab	

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Parameter[2]	Units	Effluent Sample Type	Maximum Reporting Level[1]
Nitrate (as N)	mg/L	24-hr Composite	
Nitrite (as N)	mg/L	24-hr Composite	
pH	Std Units	Grab	
Phosphorus, Total (as P)	mg/L	24-hr Composite	
Specific conductance (EC)	µmhos/cm	24-hr Composite	
Sulfate	mg/L	24-hr Composite	
Sulfide (as S)	mg/L	grab	
Sulfite (as SO_3)	mg/L	24-hr Composite	
Temperature	^oC	Grab	
Total Disolved Solids (TDS)	mg/L	24-hr Composite	

1 The reporting levels required in this table for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP

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

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

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

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

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

B. Self Monitoring Reports (SMRs)

1. The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

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2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly SMR's including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. SMR's are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

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

Table E-12~~1~~. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	Continuous	Submit with monthly SMR
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Month	Permit effective date	First day of calendar month through last day of calendar month	Submit with monthly SMR
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	Submit with quarterly SMR as follows: Q1 by1 May Q2 by 1 August Q3 by 1 November Q4 by 1 February (of following year)
2/Year	Permit effective date	1 January through 30 June 1 July through 31 December	Submit with semiannual SMR as follows: S1 by 1 August S2 by1 February (of the following year)
1/Year	Permit effective date	1 January through 31 December	Submit with annual SMR by 1 February (of following year)

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

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

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

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

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

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

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

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

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

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

6. The Discharger shall submit SMR's in accordance with the following requirements:

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

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

7. The Discharger shall submit in the SMR's calculations and reports in accordance with the following requirements:

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

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

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

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

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

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

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

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

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

8. The Discharger shall submit eSMRs in accordance with the following requirements:

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

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

C. Discharge Monitoring Reports (DMRs)

1. At any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit DMR's. Until such notification is given specifically for the submittal of DMR's, the Discharger shall submit DMR's in accordance with the requirements described below.

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

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1) or on self-generated forms that follow the exact same format of EPA Form 3320-1.

D. Other Reports

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

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to meet the final compliance date, and the remaining tasks to meet the final compliance date.

Table E-13~~2~~. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Salinity Evaluation and Minimization Plan (Special Provision VI.C.3.a)	**Within 9 months** after adoption of this Order

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, and TRE/TIE required by Special Provisions VI.C.2. The Discharger shall report the progress in satisfaction of compliance schedule dates specified in the Special Provisions VI.C.7. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date in compliance with SMR reporting requirements described in subsection X.B.3 above.

3. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table E-10 (Attachment E) provides required maximum reporting levels in accordance with the SIP.

4. **Annual Operations Report.** By 1 February of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

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

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

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

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently

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constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

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

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ATTACHMENT F – FACT SHEET

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

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

VIII. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	5A450105001
Discharger	City of Shasta Lake
Name of Facility	City of Shasta Lake Wastewater Treatment Facility
Facility Address	3700 Tibbits Road
	Shasta Lake, CA 96019
	Shasta County
Facility Contact, Title and Phone	Tom Chism, Wastewater Superintendent, (530) 275-7448
Authorized Person to Sign and Submit Reports	Tom Chism, Wastewater Superintendent, (530) 275-7448
Mailing Address	P.O. Box 777, Shasta Lake, CA 96019
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Not Applicable
Reclamation Requirements	Producer
Facility Permitted Flow	1.3 million gallons per day (MGD), average dry weather flow
Facility Design Flow	1.3 MGD
Watershed	Sacramento-Lower Cow-Lower Clear
Receiving Water	Churn Creek and unnamed tributary to Churn Creek
Receiving Water Type	Inland surface water

A. The City of Shasta Lake (hereinafter Discharger) is the owner and operator of the City of Shasta Lake Wastewater Treatment Facility (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.

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B. The Facility discharges wastewater to Churn Creek and an unnamed tributary of Churn Creek, waters of the United States, within the Sacramento-Lower Cow-Lower Clear Watershed. The Discharger was authorized to discharge pursuant to Order R5-2008-0037 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079511 adopted on 14 March 2008 and expired on 1 March 2013. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. The State Water Board retains the jurisdictional authority to enforce such requirements under Water Code section 1211.

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its WDR's and NPDES permit on 12 September 2012. The application was deemed complete on 1 October 2012. A site visit was conducted on 16 April 2013 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.

IX. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of Shasta Lake and serves a population of approximately 8,800. The design average dry weather flow capacity of the Facility is 1.3 MGD with a design peak wet weather flow of 5.2 MGD.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility provides advanced secondary treatment of wastewater. The treatment system consists of screening, oxidation, secondary clarification, cloth media filtration, ~~chlorination and dechlorination. Conventional gas chlorination is used for disinfection followed by sulfur dioxide dechlorination.~~ and UV disinfection. A 4 million gallon emergency retention basin is available for storage of excess influent flow or partially treated wastewater.

During the recreation season, 15 April to 15 October, all effluent is disposed of as reclaimed water on land by spray irrigation or discharged to the reclaimed water reservoir for other reclamation uses. The reclaimed water reservoir can store up to 420 acre-feet of reclaimed water.

Sludge processing consists of an aerobic digestion and sludge storage basins. The sludge storage basins provide storage for stabilized solids during the wet weather periods and serve as drying beds during the warm summer months. Dried sludge is hauled to a landfill for disposal.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 1, T32N, R4W, MDB&M, as shown in Attachment B, a part of this Order.

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2. Treated municipal wastewater is discharged at Discharge Point 001 to Churn Creek, a water of the United States, at a point latitude 40° 39' 53" N and longitude 122° 22' 46" W.

3. Treated municipal wastewater may also be discharged at Discharge Point 002, an outfall from the reclaimed water reservoir into an unnamed tributary of Churn Creek, a water of the United States, at a point latitude 40° 39' 22" N and longitude 122° 22' 26" W.

4. Treated municipal wastewater may also be discharged to the reclaimed water reservoir, Monitoring Location PND-001 (at a point latitude 40º 39' 46" N and longitude 122º 23' 0" W), which provides reclaimed water to Knauf Fiber Glass, California Department of Transportation, and Sierra Pacific Industries, Shasta Lake Division.

5. Treated municipal wastewater may also be discharged to on-site Facility spray irrigation fields at Discharge Point 003, Monitoring Location LND-001.

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

Effluent limitations contained in Order R5-2008-0037 for discharges from Discharge Points 001 and 002 (Monitoring Locations EFF-001 and EFF-002) and representative monitoring data from the term of Order R5-2008-0037 are as follows:

Table F-2a. Historic Effluent Limitations and Monitoring Data for Monitoring Location EFF-001

Parameter	Units	Effluent Limitation			Monitoring Data (From March 2008 To February 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	1.3[1]	--	--	1.4	--	--
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20ºC)	mg/L	10	15	30	6	7	7
	lbs/day[2]	108	163	325	51	86	86
Total Suspended Solids	mg/L	10	15	30	1.8	5	5
	lbs/day[2]	108	163	325	31	46	46
pH	standard units	--	--	6.0-9.0[3]	--	--	6.01-7.39
Priority Pollutants							
Chlorodibromomethane	µg/L	2.0	--	4.0	0.4[4]	--	0.4[4]
Copper, Total Recoverable	µg/L	25	--	46	8.0	--	8.0
Dichlorobromomethane	µg/L	3.7	--	7.3	3.6	--	3.6
Heptachlor Epoxide	µg/L	--	--	ND[5]	--	--	0.005[5]
Lead, Total Recoverable	µg/L	5	--	10	0.3	--	0.3
Zinc, Total Recoverable	µg/L	42	--	81	30.4	--	30.4
Non-Conventional Pollutants							
Chlorine, Total Residual	mg/L	--	0.01[6]	0.02[7]	--	<0.01	<0.01
Nitrate Nitrogen, Total (as N)	mg/L	60	--	--	--	--	16

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Parameter	Units	Effluent Limitation			Monitoring Data (From March 2008 To February 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Turbidity	NTU	2[8]	5[9]	10[10]	1.3	3.6	3.6
Total Coliform Organisms	MPN/100 mL	2.2[11]	23[12]	240[5]	2	2	2
Acute Toxicity	% Survival	--	--	70[13]/90[14]	--	--	100

1 Monthly average dry weather flow (June through September).
2 Based on a design average dry weather flow of 1.3 MGD.
3 Applied as an instantaneous minimum and maximum at all times.
4 Concentration was detected but not quantified.
5 Applied as an instantaneous maximum effluent limitation.
6 Applied as a 4-day average effluent limitation.
7 Applied as a 1-hour average effluent limitation.
8 Applied as a daily average effluent limitation.
9 Not to be exceeded more than 5 percent of the time within a 24-hour period.
10 Not to be exceeded at any time.
11 Applied as a 7-day median effluent limitation.
12 Not to exceed more than once in any 30-day period.
13 Minimum for any one bioassay.
14 Median for any three consecutive bioassays.

Table F-2b. Historic Effluent Limitations and Monitoring Data for Monitoring Location EFF-002

Parameter	Units	Effluent Limitation			Monitoring Data (From March 2008 To February 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	1.3[1]			1.7	--	6.67
Conventional Pollutants							
pH	standard units	--	--	6.0-9.0[2]	--	--	6.17-10.19
Priority Pollutants							
Chlorodibromomethane	µg/L	2.0	--	4.0	ND	--	ND
Copper, Total Recoverable	µg/L	25	--	46	8.5	--	8.5
Dichlorobromomethane	µg/L	3.7	--	7.3	0.8[3]	--	0.8[3]
Heptachlor Epoxide	µg/L	--	--	ND[4]	0.005[3]	--	0.005[3]
Lead, Total Recoverable	µg/L	5	--	10	0.2[3]	--	0.2[3]
Zinc, Total Recoverable	µg/L	42	--	81	36.5	--	36.5
Non-Conventional Pollutants							
Chlorine, Total Residual	mg/L	--	0.01[5]	0.02[6]	--	ND	ND
Nitrate Nitrogen, Total (as N)	mg/L	60	--	--	7.3	--	7.3

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Parameter	Units	Effluent Limitation			Monitoring Data (From March 2008 To February 2013)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Acute Toxicity	% Survival	--	--	70[7]/90[8]	--	--	100

1 Monthly average dry weather flow (June through September). Combined discharge flow limit from both Monitoring Locations EFF-001 and EFF-002.
2 Applied as an instantaneous minimum and maximum at all times.
3 Concentration was detected but not quantified.
4 Applied as an instantaneous maximum effluent limitation.
5 Applied as a 4-day average effluent limitation.
6 Applied as a 1-hour average effluent limitation.
7 Minimum for any one bioassay.
8 Median for any three consecutive bioassays.

D. Compliance Summary

1. On 17 February 2011, a Staff Enforcement Letter (SEL) was issued to the Discharger notifying them of a complaint received on 31 January 2011 regarding the presence of foam in Churn Creek. Discharge Prohibition III.G of Order R5-2008-0037 prohibits the discharge from creating a nuisance, as defined in Section 13050 of the CWC.

2. The Central Valley Water Board issued a Notice of Violation (NOV) on 1 June 2011 regarding public complaints and observations during a compliance evaluation inspection conducted on 17 March 2011, regarding foam downstream of Discharge Point 001. The NOV states that the discharge of foam to Churn Creek is a violation of Discharge Prohibition III.G and Receiving Water Limitation V.A.6 (The discharge shall not cause floating material to be present in amounts that cause nuisance or adversely affect beneficial uses). The Discharger was required to submit a technical report that identifed the source and cause of the foam and alternatives to eliminate the discharge of foam in the receiving water by 15 October 2011. On 5 July 2011, the Discharger provided an “Effluent Foam Technical Report” to identify the cause of foam and methods to eliminate foam in the effluent discharge.

3. On 6 February 2013, an SEL was issued to the Discharger notifying them that historical concerns with foam in the effluent will be considered during the permit renewal process.

4. The Central Valley Water Board issued a NOV on 8 April 2013 for violations of effluent limitations determined from the Discharger’s self-monitoring reports for the months of February, March, and April 2012 for pH, total residual chlorine, and total coliform. In addition, the NOV addressed Discharge Specification violations determined from self-monitoring reports from June and October 2012 for the discharges into the reclaimed water reservoir at Monitoring Location PND-001 for total coliform organisms and turbidity.

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E. Planned Changes

In Order R5-2008-0037, the Central Valley Water Board granted a dilution credit of 5:1 for parameters with water quality-based effluent limitations (WQBELs) based on aquatic life criteria and a dilution credit of 10:1 for parameters with WQBELs based on human health criteria. Dilution was granted based on an assumption of rapid and complete mixing due to the geometry and other aspects of the receiving stream and outfall. [The existing Discharge Prohibition that limited effluent discharge to surface water to periods when at least 10:1 (receiving water to effluent flow) ratio exists served as the basis for the dilution credit value]. Order R5-2008-0037 required the Discharger to conduct a mixing zone and dilution study and verify rapid and complete mixing and available dilution. As discussed further in section IV.C.2.c of this Fact Sheet, based on the results of the Discharger's mixing zone study, the Discharger has chosen not to pursue a mixing zone or dilution credits during this permit renewal due to unfavorable mixing zone conditions. Alternatively, the Discharger has pro-actively invested considerable effort and funds over the last 4 years to evaluate available discharge alternatives for the Facility, including potential Facility improvements to meet water quality criteria end-of-pipe. The Discharger has chosen to implement Facility improvements rather than further pursue dilution.

Facility improvements and operational changes are anticipated to address foam in the receiving water, which as discussed in section II.C of this Fact Sheet, and has historically been observed at Discharge Point 001 at levels that exceed permit requirements.

In a study dated 21 August 2009, titled *City of Shasta Lake, Effluent Discharge Study*, the Discharger states that, "*the City has come uncomfortably close to topping out the reservoir in the early winter months.*" The reasons provided for topping out the reclaimed water reservoir include lower than expected recycled water distribution and a reluctance to discharge to Churn Creek during the discharge period due to an uncertainty of meeting the 10:1 receiving water dilution requirement. The planned Facility upgrades are anticipated to allow the Discharger to meet water quality criteria end-of-pipe (applied as WQBELs), and potentially avoid future requirements for a 10:1 available dilution for discharge (i.e., pursue a continuous, year-round discharge to surface water operation).

Preliminary design, environmental permitting, funding procurement, and final design have already been completed for the planned Facility upgrades. Planned Facility upgrades include: new screened raw sewage pump station, aeration basins replacing oxidation ditch, additional clarifier, cloth filters replacing traveling bridge filters, ultraviolet (UV) disinfection replacing chlorine disinfection, additional equalization volume and a new sludge drying bed.

Construction of planned Facility upgrades are in progress, with construction scheduled through 2019. As of the date of adoption of this Order, the UV disinfection system and cloth filters have been installed and are operational, but the remaining upgrades to the Facility are not scheduled to be completed until late 2019.

~~Proposed upgrades to the Facility specified in the ROWD include:~~

- ~~pH adjustment/alkalinity addition upstream of biological treatment to support full nitrification;~~

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- ~~Improved coagulation feed system, upstream of filtration;~~
- ~~A new filtration technology (either deep-bed or microfiltration);~~
- ~~Equalization of Title 22 effluent/tertiary treatment feed flows;~~
- ~~Improved nitrogen removal, including:~~
  - ~~Supplemental carbon source, and~~
  - ~~Sludge age and hydraulic residence time supportive of year-round, full nitrification;~~
- ~~Replacement of the gas chlorination system with either UV or ozone disinfection;~~
- ~~Effluent cooling (if necessary)~~

~~The following is a summary of the anticipated timeline for the upgrade project:~~

~~Project Milestone~~	~~Completion Timeframe~~
~~Preliminary Design~~	~~2012 - completed~~
~~Environmental Permitting~~	~~2013-2014~~
~~Funding Procurement~~	~~2013-2015~~
~~Final Design of Improvements~~	~~2016~~
~~Construction~~	~~2017-2018~~
~~Construction Completion and Startup~~	~~2018~~

X. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

F. Legal Authorities

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

G. California Environmental Quality Act (CEQA)

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

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

1. **Water Quality Control Plans.** Requirements of this Order specifically implement the applicable Water Quality Control Plans.

   a. **Basin Plan.** The Central Valley Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins* (hereinafter Basin Plan) that designates beneficial uses, establishes water

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quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, Section II, does not specifically identify beneficial uses for Churn Creek or the unnamed tributary of Churn Creek, but does identify present and potential uses for the Sacramento River from Shasta Dam to the Colusa Basin Drain, to which Churn Creek and the unnamed tributary of Churn Creek, are tributary. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to Churn Creek and the unnamed tributary of Churn Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001/002	Churn Creek and Unnamed Tributary of Churn Creek	Existing: Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial service supply (IND); hydropower generation (POW); water contact recreation, including canoeing and rafting (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm and cold (SPWN): wildlife habitat (WILD), and navigation (NAV).
--	Groundwater	Existing: Municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

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

3. **State Implementation Policy (SIP).** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, that became

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effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Antidegradation Policy.** Federal regulation 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68 16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 CFR 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).

6. **Human Right to Water Act.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

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

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

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

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

9. **Storm Water Requirements.** USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Discharger has submitted a Notice of Intent (NOI) and been approved for coverage under the State Water Board's Industrial Storm water General Order. Therefore, this Order does not regulate storm water.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011 USEPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 CFR Part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." Churn Creek discharges to the Sacramento River between Keswick Dam and Cottonwood Creek. The Sacramento River, from Keswick Dam to Cottonwood Creek, is listed as a WQLS for unknown toxicity in the 2010 303(d) list of impaired water bodies.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. Table 4, below, identifies the 303(d) listings and the status of each TMDL.

Table F-4. 303(d) List for the Sacramento River from Keswick Dam to Cottonwood Creek

Pollutant	Potential Sources	Proposed TMDL Completion
Chlorpyrifos and Diazinon	Agriculture	Approved 10 October 2007

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Pollutant	Potential Sources	Proposed TMDL Completion
Toxicity	Unknown	2019

3. The 303(d) listings and TMDLs have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3. of this Fact Sheet.

J. Other Plans, Policies and Regulations

1. Title 27. 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 primarily of domestic sewage and treated effluent;

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

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

XI. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

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

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 CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical*

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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 dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "*Policy for Application of Water Quality Objectives*", that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA'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 Central Valley Water Board's "*Policy for Application of Water Quality Objectives*")(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

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

K. Discharge Prohibitions

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

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

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

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

5. **Prohibition III.E (No discharge of treated wastewater to Churn Creek, or its tributaries from 15 April to 15 October).** This prohibition has been in place since the discharge to surface water was originally permitted and exists to minimize degradation and maintain high quality water in the receiving water. The time frame (15 April to 15 October) has historically been referred to as the "recreation season," also, many times there is little to no flow in the receiving water during this time period.

   This Order contains a reopener provision to consider removal or modification of this prohibition as a result of compliance with the tasks outlined in TSO R5-2014-0053 and submittal of proper documentation (i.e., anti-degradation analysis) justifying the increase in pollutant discharge during this time period, where historically the discharge to surface water has not been permitted.

6. **Prohibition III.F (No discharge of treated wastewater to Churn Creek, or its tributaries without 10:1 dilution).** This prohibition has been in place since the discharge to surface water was originally permitted and exists to minimize degradation and maintain high quality water in the receiving water. This prohibition is in place to prevent a discharge to surface water during periods of limited or no flow in the receiving water, as such conditions can exist during the discharge to surface water season (16 October to 14 April).

   This Order contains a reopener provision to consider removal or modification of this prohibition as a result of compliance with the tasks outlined in TSO R5-2014-0053 and submittal of proper documentation (i.e., anti-degradation analysis) justifying the increase in pollutant discharge during these flow regimes where historically a discharge to surface water has not been permitted.

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7. **Prohibition III.G (No discharge of treated wastewater from the spray fields into Churn Creek or its tributaries).** Consistent with Order R5-2008-0037, this Order prohibits discharges from the spray fields into Churn Creek and its tributaries.

8. **Prohibition III.H (No discharge of treated wastewater to the spray fields during precipitation and for at least 24-hours after cessation of precipitation).** Consistent with Order R5-2008-0037, this Order prohibits the discharge of treated wastewater to the spray fields during precipitation and for at least 24 hours after cessation of precipitation.

L. Technology-Based Effluent Limitations

1. Scope and Authority

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

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

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

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

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. This Order establishes WQBELs that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR Part 133 and are necessary to protect the beneficial uses of the receiving stream. (See section IV.C.3.d of this Attachment for the discussion on WQBELs for BOD_5 and TSS.) 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. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

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b. Flow. The Facility was designed to provide advanced secondary level of treatment for up to an average dry weather design flow of 1.3 MGD. Therefore, this Order contains an average dry weather discharge flow effluent limit of 1.3 MGD.

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

Summary of Technology-based Effluent Limitations
Discharge Points 001 and 002

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	MGD	1.3[1]	--	--	--	--
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20ºC)[2]	mg/L	30	45	--	--	--
	lbs/day[3]	325	487	--	--	--
	% Removal	85	--	--	--	--
pH[2]	standard units	--	--	--	6.0	9.0
Total Suspended Solids[2]	mg/L	30	45	--	--	--
	lbs/day[3]	325	487	--	--	--
	% Removal	85	--	--	--	--

1 Average dry weather design flow.
2 Note that more stringent WQBELs for BOD_5, pH, and TSS are applicable and are established as final effluent limitations in this Order (see section IV.C.3.d of this Fact Sheet).
3 Based on an average dry weather flow of 1.3 MGD.

M. Water Quality-Based Effluent Limitations (WQBELs)

3. Scope and Authority

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

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

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

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

4. Applicable Beneficial Uses and Water Quality Criteria and Objectives

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

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

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

a. Receiving Water and Beneficial Uses. Refer to section III.C.1 above for a description of the receiving water and beneficial uses.

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b. Effluent and Ambient Background Data. The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from March 2008 through February 2013, which includes effluent data collected at Monitoring Locations EFF-001 and EFF-002 and ambient background data collected at Monitoring Location RSW-001 submitted in SMRs and the ROWD.

c. Assimilative Capacity/Mixing Zone. Order R5-2008-0037 applied a dilution credit of 5:1 for parameters with WQBELs based on aquatic life criteria and a dilution credit of 10:1 for parameters with WQBELs based on human health criteria. Dilution was granted based on an assumption of rapid and complete mixing due to the geometry and other aspects of the receiving stream and outfall. [The existing Discharge Prohibition that limited effluent discharge to surface water to periods when at least 10:1 (receiving water to effluent flow) ratio exists served as the basis for the dilution credit value].

Order R5-2008-0037 required the Discharger to conduct a mixing zone and dilution study and verify rapid and complete mixing and available dilution. The Discharger submitted a report titled, City of Shasta Lake, Effluent Mixing Zone Study, dated 10 June 2010.

In the 10 June 2010 report, the Discharger determined that complete mixing was not obtained within two stream widths downstream of the discharge location as required by the SIP. As a result, the report indicated that incomplete mixing occurred with significantly less receiving water available for dilution throughout the reach of the mixing zone than anticipated. The Discharger acknowledged that a readjustment of dilution credits and corresponding revision of effluent limitations may be appropriate but further statistical analysis would be required in order to assess the ability to comply with new requirements.

Based on the results of the Discharger's mixing zone study, the Discharger has chosen not to pursue a mixing zone or dilution credits during this permit renewal. Therefore, based on the available information, the worst-case dilution is assumed to be zero to provide protection for the receiving water beneficial uses. The impact of assuming zero assimilative capacity within the receiving water is that discharge limitations are end-of-pipe limits with no allowance for dilution within the receiving water.

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

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

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This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[2] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (Id., p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[3]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

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

(a) The SIP requires WQBELs if the MEC is equal to or exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving

[1] 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.

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), 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.

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

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water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas of the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream ambient hardness is outlined in subsection ii, below.

(b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the maximum ambient background concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[1]. For comparing the maximum ambient background concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

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

A 2006 Study[2] developed procedures for calculating the effluent concentration allowance (ECA)[3] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

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[1] The pollutant must also be detected in the effluent.
[2] 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.
[3] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.

The equation describing the total recoverable regulatory criterion, as established in the CTR[1], is as follows:

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

Where:

H = hardness (as $CaCO_3$)[2]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

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

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

ECA = C (when C ≤ B)[3] (Equation 2)

Where:

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

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

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR

[1] 40 CFR § 131.38(b)(2).
[2] For this discussion, all hardness values are in mg/L as $CaCO_3$.
[3] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e., C ≤ B)

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criteria[1]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)[2]. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The effluent hardness ranged from 56 mg/L to 98 mg/L, based on 42 samples collected at Monitoring Locations EFF-001 and EFF-002. The upstream receiving water hardness varied from 45 mg/L to 114 mg/L, based on 14 samples collected at Monitoring Location RSW-001. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 56 mg/L. As demonstrated in the example shown in Table F-6, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 45 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

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

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

Where:

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

In this example, for copper, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient copper concentration is in compliance with the CTR criteria[3].

[1] 2006 Study, p. 5700
[2] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.
[3] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions.

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Table F-6. Copper ECA Evaluation

Lowest Observed Effluent Hardness					**56 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**45 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Copper Concentration					**4.7 µg/L[1]**
Copper $ECA_{chronic}$[2]					**5.7 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Copper [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	45	4.7	4.7	**Yes**
	5%	46	4.8	4.8	**Yes**
	15%	47	4.9	4.9	**Yes**
	25%	48	5.0	5.0	**Yes**
	50%	51	5.2	5.2	**Yes**
	75%	53	5.4	5.4	**Yes**
Low Flow	100%	56	5.7	5.7	**Yes**

1 Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 45 mg/L.
2 ECA calculated using Equation 1 for chronic criterion at a hardness of 56 mg/L.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

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

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

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Table F-6 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

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ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-7).

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

Where:

m, b = criterion specific constants (from CTR)
H_e = lowest observed effluent hardness
H_{rw} = reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal, in Table F-7, below. As previously mentioned, the lowest effluent hardness is 56 mg/L, while the upstream receiving water hardness ranged from 45 mg/L to 114 mg/L. In this case, the reasonable maximum upstream receiving water hardness to use in Equation 4 to calculate the ECA is 114 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-7, for lead.

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Table F-7. Lead ECA Evaluation

Lowest Observed Effluent Hardness					**56 mg/L**
Reasonable Maximum Upstream Receiving Water Hardness					**114 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**3.8 µg/L[1]**
Lead $ECA_{chronic}$[2]					**1.3 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L) (as $CaCO_3$)	**CTR Criteria [4] (µg/L)**	**Lead [5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	113	3.7	3.7	**Yes**
	5%	111	3.6	3.6	**Yes**
	15%	105	3.4	3.4	**Yes**
	25%	100	3.2	3.2	**Yes**
	50%	85	2.6	2.5	**Yes**
Low Flow	75%	71	2.0	1.9	**Yes**
	100%	56	1.5	1.3	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 114 mg/L.
2 ECA calculated using Equation 4 for chronic criteria.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-8 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-8. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)	
	acute	chronic
Copper	8.1	5.7
Chromium III	1,080	129
Cadmium	2.2	1.6
Lead	34	1.3
Nickel	287	32
Silver	0.64	--
Zinc	73	73

5. Determining the Need for WQBELs

a. Constituents with Total Maximum Daily Load (TMDL). The Central Valley Water Board developed WQBELs for chlorpyrifos and diazinon that have available wasteload allocations under a TMDL, which was approved on 11 August 2008. The effluent limitations for these pollutants were established regardless of whether or not there is reasonable potential for the pollutants to be present in the discharge at levels that would cause or contribute to a violation of water quality standards. The Central Valley Water Board developed WQBELs for these pollutants pursuant to 40 CFR section

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122.44(d)(1)(vii), which does not require or contemplate an RPA. Similarly, the SIP at Section 1.3 recognizes that an RPA is not appropriate if a TMDL has been developed.

This Order contains a WQBEL for diazinon and chlorpyrifos. The diazinon and chlorpyrifos limitation was established based on a calculated wasteload allocation, which accounts for synergistic effects of diazinon and chlorpyrifos for the Facility contained in the Sacramento and Feather River Diazinon and Chlorpyrifos TMDL. As required by 40 CFR section 122.44(d)(1)(vii), the Central Valley Water Board shall ensure there is a WQBEL for diazinon and chlorpyrifos in the WDR's that is consistent with the assumptions and requirements of the available wasteload allocation. Based on the water quality monitoring done at the time of the TMDL adoption, which set the wasteload allocation at the level necessary to attain water quality standards, the Central Valley Water Board has determined that the WQBEL is consistent with the assumptions of the TMDL. Similarly, compliance with the effluent limitation will satisfy the requirements of the TMDL.

b. Constituents with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e., constituents were not detected in the effluent or receiving water at concentrations exceeding applicable water quality criteria); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

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

i. Alpha-BHC

(a) WQO. 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 Basin Plan pesticide non-detect objective has been interpreted to be equal to the lowest minimum level value for alpha-BHC contained in Appendix 4 of the SIP (i.e., 0.01 µg/L) for purposes of determination of reasonable potential. In addition, the CTR contains numeric criteria for alpha-BHC of 0.0039 µg/L for freshwaters from which both water and organisms are consumed.

(b) RPA Results. Alpha-BHC was detected in the effluent once out of five monitoring events between March 2008 through February 2013 at Monitoring Location EFF-001 (minimum MDL 0.005 µg/L, minimum RL 0.01 µg/L). Alpha-BHC was not detected at Monitoring Location EFF-002 based on four samples collected between March 2008 and February 2013 (minimum MDL 0.005 µg/L, minimum RL 0.01 µg/L). Alpha-BHC was not detected in the upstream receiving

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water in five samples collected from March 2008 through February 2013 (minimum MDL 0.005 µg/L, minimum RL 0.01 µg/L). The laboratory-detected effluent value at Monitoring Location EFF-001 was estimated to be 0.006 µg/L; however, the result was not quantifiable (i.e., "DNQ"). The date of sample collection was 13 March 2008. The laboratory reporting level was 0.01 µg/L and met the minimum reporting level for alpha-BHC provided in Appendix 4 of the SIP, which is also 0.01 µg/L. The MEC of 0.006 µg/L DNQ does not exceed the Basin Plan objective of non-detect interpreted as the SIP ML of 0.01 µg/L.

Data reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining reasonable potential. Section 1.2 of the SIP states that the Regional Water Board has discretion to consider if any data are inappropriate or insufficient for use in the RPA. Due to one sample having a detectable value and the detected value being "not quantifiable" by the laboratory performing the analysis, the Central Valley Water Board finds that alpha-BHC in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion.

ii. Chlorodibromomethane

(a) WQO. The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0037 included effluent limitations for chlorodibromomethane based on the CTR criterion.

(b) RPA Results. The MEC for chlorodibromomethane was 0.4 µg/L based on 26 samples collected between March 2008 and February 2013 at Monitoring Location EFF-001 (minimum MDL 0.06 µg/L, minimum RL 0.5 µg/L). Chlorodibromomethane was not detected in the effluent based on 19 samples collected between March 2008 and February 2013 at Monitoring Location EFF-002 (minimum MDL 0.06 µg/L, minimum RL 0.5 µg/L). Chlorodibromomethane was not detected in the upstream receiving water based on 18 samples collected between March 2008 and February 2013 (minimum MDL 0.06 µg/L, minimum RL 0.5 µg/L). The applicable ML contained in Appendix 4 of the SIP for chlorodibromomethane is 0.5 µg/L. Therefore, chlorodibromomethane in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion of 0.41 µg/L, and the effluent limitations for chlorodibromomethane have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iii. Heptachlor Epoxide

(a) WQO. 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

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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 Basin Plan pesticide non-detect objective has been interpreted to be equal to the lowest minimum level value for heptachlor epoxide contained in Appendix 4 of the SIP (i.e., 0.01 µg/L) for purposes of determination of reasonable potential. In addition, the CTR contains numeric criteria for heptachlor epoxide of 0.00010 µg/L for freshwaters from which both water and organisms are consumed. Order R5-2008-0037 included an effluent limitation for heptachlor epoxide based on the Basin Plan objective.

(b) RPA Results. Heptachlor epoxide was detected in the effluent once out of 26 monitoring events between March 2008 through February 2013 at Monitoring Location EFF-001 (minimum MDL 0.002 µg/L, minimum RL 0.01 µg/L). The laboratory-detected effluent value at Monitoring Location EFF-001 was estimated to be 0.005 µg/L; however, the result was not quantifiable (i.e., "DNQ"). The date of sample collection was 2 April 2008. The laboratory reporting level was 0.01 µg/L and met the minimum reporting level for heptachlor epoxide provided in Appendix 4 of the SIP, which is also 0.01 µg/L. The laboratory detected, but not quantified value does not exceed the Basin Plan objective of non-detect interpreted as the SIP ML of 0.01 µg/L. Heptachlor epoxide was not detected at Monitoring Location EFF-002 based on 17 samples collected between March 2008 and February 2013 (minimum MDL 0.002 µg/L, minimum RL 0.01 µg/L). Heptachlor epoxide was not detected in the upstream receiving water based on 17 samples collected from March 2008 through February 2013 (minimum MDL 0.002 µg/L, minimum RL 0.01 µg/L).

Data reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining reasonable potential. Section 1.2 of the SIP states that the Regional Water Board has discretion to consider if any data are inappropriate or insufficient for use in the RPA. Due to one sample having a detectable value and the detected value being "not quantifiable" by the laboratory performing the analysis, the Central Valley Water Board finds that heptachlor epoxide in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion. The effluent limitation for heptachlor epoxide has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iv. Lead, Total Recoverable

(a) WQO. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. These criteria for lead are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used in

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this Order. Order R5-2008-0037 included effluent limitations for lead based on the CTR criterion.

(b) RPA Results. Section IV.C.2.e includes procedures for conducting the RPA for lead. The maximum observed upstream receiving water lead concentration was 4.0 µg/L (as total recoverable), based on 18 samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Based on the lowest observed upstream receiving water hardness of 45 mg/L (as $CaCO_3$) the applicable total recoverable criteria for evaluating the ambient background concentration are 1.2 µg/L and 30 µg/L, for the chronic and acute criteria respectively. Based on this data, the maximum ambient lead concentration exceeds the applicable CTR criteria.

As discussed in Section IV.C.2.e for comparing the MEC to the criteria, the reasonable worst-case downstream ambient hardness should be used. Based on the reasonable worst-case downstream hardness, the applicable total recoverable criteria are 1.3 µg/L and 34 µg/L for the chronic and acute criteria, respectively. The MEC for lead at Monitoring Location EFF-001 was 0.3 µg/L based on 26 samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 0.2 µg/L); however the MEC result was not quantifiable (i.e., “DNQ”). The MEC for lead at Monitoring Location EFF-002 was 0.2 µg/L based on 17 samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L); however the MEC result was not quantifiable (i.e., “DNQ”). The MEC of 0.3 µg/L from Monitoring Location EFF-001 occurred on 3 November 2009 and 4 December 2009. The laboratory reporting level was 0.6 µg/L on 3 November 2009 and 0.5 µg/L on 4 December 2009. The 4 December 2009 result met the minimum reporting level for lead provided in Appendix 4 of the SIP, which is also 0.5 µg/L. The 3 November 2009 result is slightly greater than the minimum reporting level for lead (0.6 µg/L versus 0.5 µg/L) as established in the SIP, however still indicates a non-quantifiable result less than the minimum reporting level.

Date reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining reasonable potential. Section 1.2 of the SIP states that the Regional Water Board has discretion to consider if any data are inappropriate or insufficient for use in the reasonable potential analysis. Due to the relatively large data set of 33 samples, with no detectable values above the minimum reporting level of 0.5 µg/L by the laboratory performing the analysis, the Central Valley Water Board finds that lead in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion, and the effluent limitations for lead have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

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v. Salinity

(a) WQO. The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The USEPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no USEPA numeric water quality criteria for the protection of agricultural, live stock, and industrial uses. Numeric values for the protection of these uses are typically based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

Table F-9. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[3]	USEPA NAWQC	Discharge Point 001		Discharge Point 002	
				Average	Maximum	Average	Maximum
EC (µmhos/cm)	Varies[2]	900, 1600, 2200	N/A	374	471	361	478
TDS (mg/L)	Varies	500, 1000, 1500	N/A	247	305	215	290
Sulfate (mg/L)	Varies	250, 500, 600	N/A	26	32	18	23
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	40	62	54	82

[1] Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan. However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

[2] Maximum calendar annual average.

[3] The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

(1) Chloride. The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

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(2) Electrical Conductivity. The Secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum.

(3) Sulfate. The Secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(4) Total Dissolved Solids. The Secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

(b) RPA Results

(1) Chloride. Chloride concentrations in the effluent at Monitoring Location EFF-001 ranged from 28.2 mg/L to 62.2 mg/L, with an average of 40 mg/L. Chloride concentrations in the effluent at Monitoring Location 002 ranged from 24.5 mg/L to 82.3 mg/L, with an average of 54 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in Churn Creek were not available.

(2) Electrical Conductivity. A review of the Discharger's monitoring reports shows an average effluent EC of 374 µmhos/cm at Monitoring Location EFF-001, with a range from 261 µmhos/cm to 471 µmhos/cm. The average effluent EC at Monitoring Location EFF-002 was 361 µmhos/cm, with a range from 220 µmhos/cm to 478 µmhos/cm. These levels do not exceed the Secondary MCL. The background receiving water EC averaged 183 µmhos/cm.

(3) Sulfate. Sulfate concentrations in the effluent from Monitoring Location EFF-001 ranged from 22.4 mg/L to 31.6 mg/L, with an average of 26 mg/L. Sulfate concentrations in the effluent from Monitoring Location EFF-002 ranged from 14.1 mg/L to 23 mg/L, with an average of 18 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in Churn Creek were not available.

(4) Total Dissolved Solids. The average TDS effluent concentration at Monitoring Location EFF-001 was 247 mg/L with concentrations ranging from 159 mg/L to 305 mg/L. The average TDS effluent concentration at Monitoring Location EFF-002 was 215 mg/L with concentrations ranging from 119 mg/L to 290 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in Churn Creek were not available.

Based on the relatively low reported salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. However, since the Discharger discharges to Churn Creek, a tributary of the Sacramento River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Allowing the Discharger to increase its current salt loading may be

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contrary to the Region-wide effort to address salinity in the Central Valley. Therefore, in order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan. Also water supply monitoring is required to evaluate the relative contribution of salinity from the source water to the effluent.

c. Constituents with No Data or Insufficient Data. Reasonable potential cannot be determined for the following constituents because effluent data are limited or ambient background concentrations are not available. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further analysis will be conducted to determine whether to add numeric effluent limitations or to continue monitoring.

i. Bis (2-Ethylhexyl) Phthalate

(a) WQO. The CTR includes a criterion of 1.8 µg/L for bis (2-ethylhexyl) phthalate for the protection of human health for waters from which both water and organisms are consumed.

(b) RPA Results. Bis (2-ethylhexyl) phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of detected bis (2-ethylhexyl) phthalate may be from plastics used for sampling or analytical equipment. “Clean techniques” are used to ensure that sample containers, sampling apparatus, and analytical equipment are not sources of the detections for monitoring bis (2-ethylhexyl) phthalate.

Bis (2-ethylhexyl) phthalate was detected in the effluent in one out of five samples at Monitoring Location EFF-001 collected between March 2008 and January 2012 (minimum MDL 0.2 µg/L, minimum RL 0.9 µg/L). The effluent value was estimated to be 2.0 µg/L on 27 January 2011; however, the result was not quantifiable (i.e., “DNQ”). The laboratory reporting level for this sample met the minimum reporting level for bis (2-ethylhexyl) phthalate provided in Appendix 4 of the SIP, which is 5 µg/L. Data reported below the laboratory reporting level indicates the data may not be valid due to possible matrix interferences during the analytical procedure. Therefore, data reported below the laboratory reporting level is not considered valid data for use in determining reasonable potential. Section 1.2 of the SIP states that the Regional Water Board has discretion to consider if any data are inappropriate or insufficient for use in the RPA. Due to one sample having a detectable value and the detected value being “not quantifiable” by the laboratory performing the analysis, the Central Valley Water Board finds that bis (2-ethylhexyl) phthalate in the discharge at Discharge Point 001 does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion.

Bis (2-ethylhexyl) phthalate was detected in the effluent in two out of four samples at Monitoring Location EFF-002 collected between March 2008 and

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February 2013 with an MEC of 7.0 µg/L (minimum MDL 0.2 µg/L, minimum RL 0.9 µg/L). The laboratory-detected MEC result was 7.0 µg/L on 27 January 2011. The laboratory reporting level for this sample met the minimum reporting level for bis (2-ethylhexyl) phthalate provided in Appendix 4 of the SIP, which is 5 µg/L.

In addition, bis (2-ethylhexyl) phthalate was detected but not quantified once out of five samples in the upstream receiving water at an estimated concentration of 1.0 µg/L (minimum MDL 0.2 µg/L, minimum RL 0.9 µg/L).

According to the Discharger, "clean techniques" were not utilized during the term of Order R5-2008-0037 at any of the monitoring locations. Because clean techniques were not required or utilized during the monitoring events, and due to the high potential for sample contamination for bis (2-ethylhexyl) phthalate when clean techniques are not used, the data may not be representative of actual effluent and receiving water quality for bis (2-ethylhexyl) phthalate. Therefore, potentially contaminated data is not considered valid data for use in determining reasonable potential. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. The Central Valley Water Board is not establishing effluent limitations for bis (2-ethylhexyl) phthalate at this time. Instead of limitations, additional monitoring using "clean techniques" has been established for bis (2-ethylhexyl) phthalate. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitations.

ii. Carbon Tetrachloride

(a) WQO. The CTR includes a criterion of 0.25 µg/L for carbon tetrachloride for the protection of human health for waters from which both water and organisms are consumed.

(b) RPA Results. Carbon tetrachloride was detected, but not quantified by the laboratory, in the effluent once out of five monitoring events at Monitoring Location EFF-001 collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 1 µg/L). The laboratory-detected effluent value at Monitoring Location EFF-001 was estimated to be 0.3 µg/L; however, the result was not quantifiable (i.e., "DNQ"). The date of sample collection was 8 February 2011. The laboratory reporting level was 1.0 µg/L and did not meet the minimum reporting level for carbon tetrachloride provided in Appendix 4 of the SIP, which is 0.5 µg/L. Carbon tetrachloride was not detected at Monitoring Location EFF-002 based on four samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 1 µg/L). Carbon tetrachloride was not detected in the upstream receiving water in five samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 1 µg/L).

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The Discharger has identified that in the production of chlorine gas the carbon tetrachloride byproduct has been found to be present in the bottling process [the Discharger uses chlorine gas for disinfection]. The Discharger is in the process to evaluating alternatives to limit the introduction of the pollutant. Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Therefore, the Central Valley Water Board is not establishing effluent limitations for carbon tetrachloride at this time. Instead of limitations, additional monitoring has been established for carbon tetrachloride.

iii. Iron

(a) WQO. The Secondary MCL – Consumer Acceptance Limit for iron is 300 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply.

(b) RPA Results. For priority pollutants, the SIP dictates the procedures for conducting the RPA. Iron is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average iron concentrations.

Iron in the effluent did not exhibit reasonable potential to exceed the Secondary MCL at Monitoring Location EFF-001 based on four samples collected between March 2008 and February 2013. However, as shown in the following table, the discharge exceeded the Secondary MCL for iron at Monitoring Location EFF-002 in one sample.

Table F-10. Effluent Monitoring Data for Iron

Parameter	Date	Effluent Concentration (µg/L)	
		Discharge Point 001	Discharge Point 002
Iron, Total Recoverable	16 January 2009	42	177
	5 March 2010	26	--
	9 March 2010	--	164
	3 January 2011	23	537
	23 January 2012	38	275

Effluent is stored in a reclaimed water reservoir prior to being discharged from Discharge Point 002. Given the low concentrations in the treated effluent at

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Discharge Point 001, the source of iron observed in the effluent at Discharge Point 002 is uncertain and does not appear to originate in the treated effluent. Further, effluent data is limited to a single sampling event during each year, taken in January or March, which is insufficient for evaluation against the Secondary MCL on an annual average basis. Therefore, the Central Valley Water Board is not establishing effluent limitations for iron at this time. Instead of limitations, additional monitoring has been established for iron. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

iv. Manganese

(a) WQO. The Secondary MCL – Consumer Acceptance Limit for manganese is 50 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply.

(b) RPA Results. For priority pollutants, the SIP dictates the procedures for conducting the RPA. Manganese is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry staining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average manganese concentrations.

Manganese in the effluent did not exhibit reasonable potential to exceed the Secondary MCL at Monitoring Location EFF-001 based on four samples collected between March 2008 and February 2013. However, as shown in the following table, the discharge exceeded the Secondary MCL for manganese at Monitoring Location EFF-002.

Table F-11. Effluent Monitoring Data for Manganese

Parameter	Date	Effluent Concentration (µg/L)	
		Discharge Point 001	Discharge Point 002
Manganese, Total Recoverable	16 January 2009	ND	ND
	26 January 2010	9.6	199
	5 March 2010	2	--
	9 March 2010	--	59.3
	3 January 2011	9.5	62.9
	23 January 2012	12.9	57.5

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Effluent is stored in a reclaimed water reservoir prior to being discharged from Discharge Point 002. Given the low concentrations in the treated effluent at Discharge Point 001, the source of manganese observed in the effluent at Discharge Point 002 is uncertain and does not appear to originate from the treated effluent. Further, effluent data is limited to a single sampling event during each year, taken in January or March, which is insufficient for evaluation against the Secondary MCL on an annual average basis. Therefore, the Central Valley Water Board is not establishing effluent limitations for manganese at this time. Instead of limitations, additional monitoring has been established for manganese. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

d. Constituents with Reasonable Potential. The Central Valley 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 ammonia~~, chlorine residual~~, copper, diazinon and chlorpyrifos, dichlorobromomethane, nitrate plus nitrite, pathogens, pH, and zinc. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. Ammonia

(a) WQO. The NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates (e.g., freshwater unionid mussels) and young fish experienced increasing chronic toxicity effects with increasing temperature.

Review of the *Sensitive Freshwater Mussel Surveys in the Pacific Southwest Region: Assessment of Conservation Status* published August 2010 by The Nature Conservancy, did not contain any survey information for Churn Creek. However, the Sacramento River, at approximately 1 mile upstream of Churn Creek's confluence with the Sacramento River, was surveyed and no mussels were found to be present. The Report did not provide any additional surveys for mussels within 100 river miles downstream of the discharge, in the Sacramento River. At this time there is limited information on whether mussels are present in Churn Creek, however, since mussels were not found at the Sacramento River survey station above the confluence of the receiving water with the Sacramento River, the presence of mussels at the discharge location were not assumed for purposes of calculating the ammonia criteria. Churn Creek and its tributaries

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have a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in Churn Creek and its tributaries is well-documented, therefore the recommended ammonia criteria for waters where salmonids and early life stages are present were used.

The Central Valley Water Board may require additional information from the Discharger in the future to evaluate whether more restrictive ammonia criteria for other species (i.e., unionid mussels) is applicable for Churn Creek. However, at this time, ammonia criteria have been calculated with the assumption that mussels are not present.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

Receiving water monitoring for pH and temperature was conducted once per week, resulting in 86 sets of paired pH and temperature data. In accordance with USEPA's 2013 Aquatic Life Ambient Water Quality Criteria For Ammonia – Freshwater, the 30-day CCC was determined by calculating the CCC for each paired pH and temperature set and taking the 95th percentile CCC (with criteria ranked from less stringent to more stringent). The resulting 30-day CCC is 5.22 mg/L. The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 5.22 mg/L (as N), the 4-day average concentration that should not be exceeded is 13.05 mg/L.

(b) RPA Results. The effluent at Monitoring Location EFF-001 was sampled for ammonia 97 times from March 2008 through February 2013 with a maximum effluent ammonia concentration of 5.72 mg/L. The effluent at Monitoring Location EFF-002 was sampled for ammonia 43 times from March 2008 through February 2013 with a maximum effluent ammonia concentration of 5.91 mg/L. The effluent exceeds the acute criteria and the 30-day CCC. Therefore, ammonia in the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

(c) WQBELs. The Central Valley 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 CCC. 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 CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC 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

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performed according to the SIP procedures. This Order contains a final AMEL and MDEL for ammonia of 0.74 mg/L and 2.1 mg/L, respectively, based on the acute criterion.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 5.91 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Therefore, a compliance time schedule for compliance with the ammonia effluent limitations is established in Time Schedule Order (TSO) No. R5-2014-0053 in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

ii. Biochemical Oxygen Demand/Total Suspended Solids

(a) WQO. Federal regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rate and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed in 40 CFR Part 133; the minimum 30-day average, weekly average, and maximum daily level of effluent quality attainable by a tertiary system are 10 mg/L, 15 mg/L, and 30 mg/L, respectively.

(b) RPA Results. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The Discharger is a POTW that treats domestic wastewater through a tertiary-level treatment system. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rate and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. BOD_5 and TSS are oxygen depleting substances that can lower dissolved oxygen levels in the receiving water causing toxicity to fish if not controlled; such discharges would violate the Basin Plan narrative toxicity objective. BOD_5 and TSS are inherent in the wastestream of a POTW. Levels of BOD_5 and TSS discharged without adequate treatment are toxic and must be controlled. Standard secondary wastewater treatment does not adequately remove BOD_5 and TSS to levels that are protective of fish and other aquatic life. Therefore it is appropriate to control BOD_5 and TSS for the protection of aquatic life by protecting water quality. Therefore, this Order contains effluent limitations for BOD_5 and TSS that are technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is also included in the Order to ensure that the

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treatment works are not organically overloaded and operate in accordance with design capabilities.

(c) WQBELs. This Order contains AMELs and AWELs for BOD_5 and TSS of 10 mg/L and 15 mg/L respectively, which is technically based on the capability of a tertiary system. In addition, a daily maximum effluent limitation for BOD_5 and TSS at 30 mg/L is included in this Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities.

(d) Plant Attainability. Analysis of the effluent data shows that the Facility can meet these WQBELs.

~~**iii. Chlorine Residual**~~

~~**(a) WQO.** USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.~~

~~**(b) RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore does exist and effluent limits are required.~~

~~Federal regulations at 40 CFR 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chlorine is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.~~

~~USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality*~~

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~~*criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." With regard to POTWs, USEPA recommends that, "*POTWs should also be characterized for the possibility of chlorine and ammonia problems*." (TSD, p. 50)~~

~~The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to Churn Creek, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.~~

~~**(c) WQBELs.** The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on USEPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for protection of aquatic life.~~

~~**(d) Plant Performance and Attainability.** Analysis of the effluent data shows that total residual chorine was not detected in the effluent. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.~~

~~iv.~~iii. Copper, Total Recoverable

(a) WQO. The Basin Plan and CTR include hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used in this Order. The Basin Plan objectives and applicable CTR criteria are as follows:

Table F-12. Water Quality Criteria/Objectives for Copper

Hardness (mg/L as $CaCO_3$)	Water Quality Criterion/Objective (Dissolved/Total Recoverable, µg/L)		
	CTR Acute	CTR Chronic	Basin Plan Maximum
45[2]	[1]	4.5 / 4.7	6.3 / 6.5
56[3]	[1]	5.5 / 5.7	7.6 / 7.9

[1] Footnote x for the acute criterion for copper in the CTR at 40 CFR 131.38(b)(1) states, "*The State of California has adopted and EPA has approved site specific criteria for the Sacramento River (and tributaries) above Hamilton City; therefore, these criteria do not apply*

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to these waters." Thus, the acute CTR criterion for copper is not applicable.

[2] Minimum upstream receiving water hardness.

[3] Minimum effluent hardness.

(b) RPA Results. The MEC for copper at Monitoring Location EFF-001 was 8.0 µg/L (total recoverable), based on 29 samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). The MEC for copper at Monitoring Location EFF-002 was 8.5 µg/L (total recoverable), based on 18 samples collected between March 2008 and February 2013 (minimum MDL 0.1 µg/L, minimum RL 0.6 µg/L). The maximum observed upstream receiving water copper concentration was 4.1 µg/L (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). The applicable MLs contained in Appendix 4 of the SIP are 0.5 µg/L and 2 µg/L. Section 1.3, Step 4 of the SIP states that if the MEC is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, copper in the discharge has a reasonable potential to cause or contribute to an exceedance above the CTR criterion for the protection of freshwater aquatic life and the Basin Plan objective.

(c) WQBELs. This Order contains a final AMEL and MDEL of 5.1 µg/L and 7.9 µg/L, respectively based on the CTR criteria for the protection of freshwater aquatic life and the Basin Plan objective.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 8.5 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Therefore, a compliance time schedule for compliance with the total recoverable copper effluent limitations is established in TSO No. R5-2014-0053 in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

~~v.~~iv. Diazinon and Chlorpyrifos

(a) WQO. The Central Valley Water Board recently completed a TMDL for diazinon and chlorpyrifos in the Sacramento and Feather Rivers and amended the Basin Plan to include diazinon and chlorpyrifos waste load allocations and water quality objectives. The Basin Plan Amendment for the Control of Diazinon and Chlorpyrifos was adopted by the Central Valley Water Board on 21 October 2005 and was approved by the State Water Board on 2 May 2006. The Basin Plan amendment was approved by the Office of Administrative Law on 30 June 2006 and is now State law. The amendment was approved by USEPA and went into effect on 20 December 2006.

The amendment modifies the Basin Plan Chapter III (Water Quality Objectives) to establish site specific numeric objectives for chlorpyrifos and diazinon in the

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Sacramento and Feather Rivers. The amendment also "*…identifies the requirements to meet the additive formula already in Basin Plan Chapter IV (implementation), for the additive toxicity of diazinon and chlorpyrifos.*"

The amendment provides that: "*The Waste Load Allocations (WLA) for all NPDES-permitted dischargers… shall not exceed the sum (S) of one (1) ad defined below.*

$$S = \frac{CD}{WQOD} + \frac{Cc}{WQOc} \leq 1.0$$

where:

C_D = diazinon concentration in µg/L of the point source discharge…
C_C = chlorpyrifos concentration in µg/L of the point source discharge… WQ_{OD} = acute or chronic diazinon water quality objective in µg/L.
WQ_{OC} = acute or chronic chlorpyrifos water quality objective in µg/L.

Available samples collected within the applicable averaging period for the water quality objective will be used to determine compliance with the allocations and loading capacity. For purposes of calculating the sum (S) above, analytical results that are reported as 'non detectable' concentrations are considered to be zero."

(b) RPA Results. Effluent and receiving water data for the Facility is not available. However, the waste load allocation applies to all NPDES discharges. As stated above, chlorpyrifos and diazinon have been identified as constituents of concern in the Sacramento River, to which the discharge is hydraulically connected.

(c) WQBELs. An AMEL and MDEL have been calculated using the procedures in Section 1.4 of the SIP and consistent with the TMDL waste load allocation resulting in the following effluent limits for chlorpyrifos and diazinon.

<u>Average Monthly Effluent Limitation</u>

$$S_{AMEL} = \frac{CD-avg}{0.079} + \frac{Cc-avg}{0.012} \leq 1.0$$

$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

<u>Maximum Daily Effluent Limitation</u>

$$S_{MDEL} = \frac{CD-max}{0.079} + \frac{Cc-max}{0.012} \leq 1.0$$

$C_{D\text{-}max}$ = maximum daily diazinon effluent concentration in µg/L
$C_{C\text{-}max}$ = maximum daily chlorpyrifos effluent concentration in µg/L

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(d) Plant Performance and Attainability. No data is available from the Facility to indicate the presence or absence of chlorpyrifos and diazinon. It is unlikely that chlorpyrifos and diazinon will be detected at concentrations exceeding applicable water quality objectives as sales of all non-agricultural uses of diazinon were banned on 31 December 2004 and sales of the majority of non-agricultural uses of chlorpyrifos were banned in December 2001. The Discharger does not add chlorpyrifos or diazinon to the treatment process. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

~~vi.~~v. Dichlorobromomethane

(a) WQO. The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) RPA Results. The MEC for dichlorobromomethane at Monitoring Location EFF-001 was 3.6 µg/L based on 26 samples collected from March 2008 through February 2013 (minimum MDL 0.05 µg/L, minimum RL 0.5 µg/L). The MEC for dichlorobromomethane at Monitoring Location EFF-002 was 0.8 µg/L based on 17 samples collected from March 2008 through February 2013 (minimum MDL 0.08 µg/L, minimum RL 0.5 µg/L). The maximum observed upstream receiving water concentration was 1.0 µg/L based on 18 samples collected between March 2008 and February 2013 (minimum MDL 0.08 µg/L, minimum RL 0.5 µg/L). The applicable ML contained in Appendix 4 of the SIP for dichlorobromomethane is 0.5 µg/L. Section 1.3, Step 4 of the SIP states that if the MEC is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.

(c) WQBELs. This Order contains a final AMEL and MDEL for dichlorobromomethane of 0.56 µg/L and 1.4 µg/L, respectively, based on the CTR criterion for the protection of human health.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 3.6 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Therefore, a compliance time schedule for compliance with the dichlorobromomethane effluent limitations is established in TSO No. R5-2014-0053 in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

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~~vii.~~vi. Nitrite Plus Nitrate

(a) WQO. DPH has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a Primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects). Recent toxicity studies[1] have indicated a possibility that nitrate is toxic to aquatic organisms.

(b) RPA Results. The maximum effluent nitrate concentration at Monitoring Location EFF-001 was 16 mg/L based on 24 samples collected from March 2008 through February 2013 . The maximum effluent nitrate concentration at Monitoring Location EFF-002 was 7.32 mg/L based on 17 samples collected from March 2008 through February 2013. The maximum observed upstream receiving water nitrate concentration was 1.16 mg/L based on 14 samples collected between March 2008 and February 2013. Therefore, based on monitoring data, nitrate in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Effluent and upstream receiving water data for nitrite is not available.

(c) WQBELs. This Order contains a final AMEL for nitrate plus nitrite of 10 mg/L (total as N), based on the Primary MCL. This effluent limitation is included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply. Order R5-2008-0037 did not establish an effluent limitation for nitrate plus nitrite, but did establish an effluent limitation for nitrate (as N). This Order replaces the nitrate (as N) effluent limitation with the effluent limitation for nitrate plus nitrite.

(d) Plant Performance and Attainability. Sufficient effluent and receiving water data for the nitrate plus nitrite is not available; however, analysis of the effluent data shows that the MEC of 16 µg/L for nitrate (as N) is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for nitrate plus nitrite are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was

[1] Camargo, Julio A., Alvaro Alonso, Annabella Salamanca, “Nitrate toxicity to aquatic animals: a review with new data for freshwater invertebrates”. Accepted 25 October 2004-Chemosphere 58 (2005) 1255-1267; Canadian Council of Ministers of the Environment, National Guidelines and Standards Office, “Canadian Water Quality Guidelines for the Protection of Aquatic Life”. 2012; Minnesota Pollution Control Agency, “Developing Surface Water Nitrate Standards and Strategies for Reducing Nitrogen Loading”. December 2010.

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adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the nitrate plus nitrite effluent limitations is established in TSO No. R5-2014-0053 in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

~~viii.~~vii. Pathogens

(a) WQO. DPH has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL, at any time.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as *"…an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.*" Title 22 is not directly applicable to surface waters; however, the Central Valley Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by DPH's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

(b) RPA Results. Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under CWC Section 13050 if discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBELs are required.

Federal regulations at 40 CFR 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. Pathogens are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." (TSD, p. 50)

The beneficial uses of Churn Creek include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

(c) WQBELs. In accordance with the requirements of Title 22, this Order includes effluent limitations for total coliform organisms of 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum.

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity level of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DPH recommended Title 22 disinfection criteria, weekly average specifications are impracticable for turbidity. This Order includes operational specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5 percent of the time within a 24-hour period; and 10 NTU as an instantaneous maximum.

This Order contains effluent limitations for BOD_5, total coliform organisms, and TSS, and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has previously considered the factors in Water Code section 13241 in establishing these requirements.

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(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 2 MPN/100 mL is less than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

~~ix.~~viii. pH

(a) WQO. The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"…pH shall not be depressed below 6.5 nor raised above 8.5."*

(b) RPA Results. Raw domestic wastewater inherently has variable pH that if not properly controlled would violate the Basin Plan's numeric objective for pH in the receiving water Therefore, reasonable potential exists and WQBELs for pH are required.

Federal regulations at 40 CFR §122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data*." (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater. Based on 569 samples collected at Monitoring Location EFF-001 from March 2008 to February 2013, the maximum pH reported was 7.39 and the minimum was 6.01. Although the Discharger has proper pH controls in place, the pH for the Facility's influent

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varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

(c) WQBELs. Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

(d) Plant Performance and Attainability. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Therefore, a compliance time schedule for compliance with the pH effluent limitations is established in TSO No. R5-2014-0053 in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

~~x.~~ix. Zinc, Total Recoverable

(a) WQO. The Basin Plan and CTR include hardness-dependent criteria for the protection of freshwater aquatic life for zinc. These criteria for zinc are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used in this Order. The Basin Plan objectives and applicable CTR criteria are as follows:

Table F-13. Water Quality Criteria/Objectives for Zinc

Hardness (mg/L as $CaCO_3$)	Water Quality Criterion/Objective (Dissolved/Total Recoverable, µg/L)		
	CTR Acute[1]	CTR Chronic	Basin Plan Maximum
45[2]	60 / 61	60 / 61	18 / 18
56[3]	72 / 73	72 / 73	21 / 22

[1] Footnote x for the acute criterion for zinc in the CTR at 40 CFR 131.38(b)(1) states, "*The State of California has adopted and EPA has approved site specific criteria for the Sacramento River (and tributaries) above Hamilton City; therefore, these criteria do not apply to these waters.*" Thus, the acute CTR criterion for zinc is not applicable.
[2] Minimum upstream receiving water hardness.
[3] Minimum effluent hardness.

(b) RPA Results. The MEC for zinc at Monitoring Location EFF-001 was 37.6 µg/L based on 24 samples collected between March 2008 and February 2013 (minimum MDL 0.4 µg/L, minimum RL 2.0 µg/L). The MEC for zinc at Monitoring Location EFF-002 was 36.5 µg/L based on 19 samples collected between March 2008 and February 2013 (minimum MDL 0.5 µg/L, minimum RL 2.0 µg/L).The maximum observed upstream receiving water zinc concentration was 24.2 µg/L (total recoverable), based on 18 samples collected between March 2008 and February 2013 (minimum MDL 0.4 µg/L, minimum RL 2.0 µg/L).

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The applicable MLs contained in Appendix 4 of the SIP are 1 µg/L and 10 µg/L. Section 1.3, Step 4 of the SIP states that if the MEC is greater than or equal to the applicable criteria, an effluent limitation is required. Therefore, zinc in the discharge has a reasonable potential to cause or contribute to an exceedance above the CTR criterion for the protection of freshwater aquatic life and the Basin Plan objective.

(c) WQBELs. This Order contains a final AMEL and MDEL of 12 µg/L and 22 µg/L, respectively based on the CTR criteria for the protection of freshwater aquatic life and the Basin Plan objective.

(d) Plant Performance and Attainability. Analysis of the effluent data shows that the MEC of 37.6 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Therefore, a compliance time schedule for compliance with the total recoverable zinc effluent limitations is established in TSO No. R5-2014-0053 in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

6. WQBEL Calculations

a. This Order includes WQBELs for ammonia~~, chlorine residual~~, copper, diazinon and chlorpyrifos, dichlorobromomethane, nitrate plus nitrite, pathogens, pH, and zinc. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.c through f, below. See Attachment H for the WQBEL calculations.

b. Effluent Concentration Allowance. For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C>B, \text{ and}$$
$$ECA = C \quad \text{where } C \leq B$$

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient

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background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}}\right)\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations
Discharge Points 001 and 002

Table F-14. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	30	--	--
	lbs/day[1]	108	163	325	--	--

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Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids	mg/L	10	15	30	--	--
	lbs/day[1]	108	163	325	--	--
Priority Pollutants						
Copper, Total Recoverable	µg/L	5.1	--	7.9	--	--
Dichlorobromomethane	µg/L	0.56	--	1.4	--	--
Zinc, Total Recoverable	µg/L	12	--	22	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.74	--	2.1	--	--
	lbs/day[1]	8.0	--	23	--	--
~~Chlorine, Total Residual~~	~~mg/L~~	~~0.011[2]~~	--	~~0.019[3]~~	--	--
Diazinon and Chlorpyrifos	µg/L	[4]	--	[5]	--	--
Nitrite Plus Nitrate (as N)	mg/L	10	--	--	--	--
Total Coliform Organisms	MPN/100 mL	2.2[6]	23[7]	--	--	240

[1] Based on a dry weather flow of 1.3 MGD.

~~[2] Applied as a 4-day average limitation.~~

~~[3] Applied as a 1-hour average limitation.~~

~~[4]~~[2] $$S_{avg} = \frac{C_{D\ avg}}{0.079} + \frac{C_{C\ avg}}{0.012} \leq 1.0$$

$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

~~[5]~~[3] $$S_{max} = \frac{C_{D\ max}}{0.16} + \frac{C_{C\ max}}{0.025} \leq 1.0$$

$C_{D\text{-}avg}$ = maximum daily diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = maximum daily chlorpyrifos effluent concentration in µg/L

~~[6]~~[4] Applied as a 7-day median effluent limitation.

~~[7]~~[5] Not to exceed more than once in any 30-day period.

7. 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*

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produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00) The Basin Plan also states that, *"…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…*"

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Acute whole effluent toxicity is not a priority pollutant. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA. USEPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." Although the discharge has been consistently in compliance with the acute effluent limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*" Consistent with Order R5-2008-0037, 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 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 page III-8.00) Based on chronic WET testing performed by the Discharger from February 2008 through February 2012, the discharge has reported a single chronic toxicity effluent result above 1 TUc over five sampling events, for *C. dubia* reproduction. Additional accelerated monitoring was not conducted to verify the toxicity results and survival and growth tests for *P. promelas and S. capricornutum,* and the

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survival test for *C. dubia* all indicate no observed toxicity during that same sampling event. Due to the limited chronic toxicity data, adequate chronic WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective, as shown in Table F-15 below.

Table F-15. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow		Water Flea		Green Algae
	Pimephales promelas		*Ceriodaphnia dubia*		*Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
4 February 2008	1	1	1	16	1
5 February 2009	**	**	1	1	1
1 February 2010	**	**	1	1	1
7 February 2011	**	**	1	1	1
6 February 2012	1	1	1	1	1

** - Receiving water did not meet test acceptability criteria as a control; therefore, dose-response endpoints could not be determined. A comparison restricted to 100% effluent vs DMW control concluded that neither survival nor growth were significantly reduced from the laboratory control.

The Monitoring and Reporting Program of this Order requires annual chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, the Special Provision in section VI.C.2.a of the Order requires the Discharger to submit to the Central Valley Water Board a 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, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next*

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

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year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits." The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE Work Plan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

N. Final Effluent Limitation Considerations

8. Mass-based Effluent Limitations

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for ammonia, BOD_5, and TSS because they are oxygen demanding substances. Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design flow (Average Dry Weather Flow) permitted in section IV.A.1.d of this Order.

9. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic

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pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order uses maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, chlorpyrifos, and diazinon, copper, dichlorobromethane, and zinc, as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD_5~~, chlorine residual~~, pH, TSS, and total coliform organisms, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

10. Satisfaction of Anti-Backsliding Requirements

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2008-0037, with the exception of effluent limitations for chlorodibromomethane, heptachlor epoxide, lead, and turbidity. The effluent limitations for these pollutants are less stringent than those in Order R5-2008-0037. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. CWA section 402(o)(1) and 303(d)(4). CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits "except in compliance with Section 303(d)(4)." CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards.

ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

Churn Creek is considered an attainment water for chlorodibromomethane, heptachlor epoxide, and lead because the receiving water is not listed as impaired

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on the 303(d) list for these constituents[1]. As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for chlorodibromomethane, heptachlor epoxide, and lead from the previous Order meets the exception in CWA section 303(d)(4)(B).

b. CWA section 402(o)(2). CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2008-0037 was issued indicates that chlorodibromomethane, heptachlor epoxide, and lead do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the removal of effluent limitations for these constituents includes the following:

i. Chlorodibromomethane. Effluent and receiving water monitoring data collected between March 2008 and February 2013 indicates that chlorodibromomethane in the discharge does not demonstrate reasonable potential to cause or contribute to an exceedance of the CTR human health criterion.

ii. Heptachlor Epoxide. Effluent and receiving water monitoring data collected between March 2008 and February 2013 indicates that heptachlor epoxide in the discharge does not demonstrate reasonable potential to cause or contribute to an exceedance of the Basin Plan objective of non-detect for pesticides.

iii. Lead. Effluent and receiving water monitoring data collected between March 2008 and February 2013 indicates that lead in the discharge does not demonstrate reasonable potential to cause or contribute to an exceedance of the CTR chronic criterion.

~~iii.~~iv. Chlorine Residual. The Discharger converted from chorine disinfection to UV disinfection in November 2018. Therefore, there is no reasonable potential to cause or contribute to an exceedance of the NAWQC criterion for chlorine.

Thus, removal and relaxation of the effluent limitations for chlorodibromomethane, heptachlor epoxide, ~~and~~ lead, and chlorine residual from Order R5-2008-0037 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal or relaxation of effluent limitations based on information that was not available at the time of permit issuance.

[1] The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list." State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

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c. **Turbidity.** Order R5-2008-0037 contained effluent limitations for turbidity. The prior limitations were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for solids and coliform. The prior effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a WQBEL.

This Order contains operational turbidity specifications to be met in lieu of effluent limitations. The revised Order does not include effluent limitations for turbidity. However, the performance-based specification in this Order is an equivalent limit that is not less stringent, and therefore does not constitute backsliding.

The revised operational specifications for turbidity are the same as the effluent limitations in Order R5-2008-0037. These revisions are consistent with State regulations implementing recycled water requirements. The revision in the turbidity limitation is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than Order R5-2008-0037 and therefore does not allow degradation.

11. Antidegradation Policies

a. **Surface Water.** This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order removes existing effluent limitations for constituents in which updated monitoring data demonstrates that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The Central Valley Water Board finds that the removal of the effluent limitations does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, removal of effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

b. **Groundwater.** The Discharger utilizes a reclaimed water reservoir and spray irrigation fields. Domestic wastewater contains constituents such as total dissolved solids (TDS), specific conductivity, pathogens, nitrates, organics, metals and oxygen demanding substances (BOD). Percolation from the reclaimed water reservoir may result in an increase in the concentration of these constituents in groundwater. The increase in the concentration of these constituents in groundwater must be consistent with Resolution No. 68-16. Any increase in pollutant concentrations in groundwater must be shown to be necessary to allow wastewater utility service necessary to accommodate housing and economic expansion in the area and must be consistent with maximum benefit to

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the people of the State of California. Some degradation of groundwater by the Discharger is consistent with Resolution No. 68-16 provided that:

i. the degradation is limited in extent;

ii. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;

iii. the Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures; and

iv. the degradation does not result in water quality less than that prescribed in the Basin Plan.

Discharge specifications have be retained in this Order when discharging to the reclaimed water reservoir at Discharge Point PND-001 and other reclaimed water uses to ensure compliance with requirements of CCR Title 22, California MCLs, and Basin Plan water quality objectives for groundwater. Recycled water monitoring results for discharges to the reclaimed water reservoir were submitted as part of the Report of Waste Discharge. The treated wastewater discharged to the pond and other reclaimed water uses meets Title 22 recycled water requirements and any related groundwater degradation will be limited and there is no indication that discharges from the Facility cause or contribute to groundwater quality less than prescribed in the Basin Plan.

12. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for BOD_5 and TSS. Restrictions on BOD_5 and TSS are discussed in section IV.B.2 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR section 131.38. The procedures for calculating the individual WQBELs for priority pollutants are based on the CTR implemented by the SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

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This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for total coliform organisms that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C.3 of this Fact Sheet.

Summary of Final Effluent Limitations
Discharge Points 001 and 002

Table F-16. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	1.3	--	--	--	--	DC
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	30	--	--	TTC
	lbs/day[2]	108	163	325	--	--	
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.5	BP
Total Suspended Solids	mg/L	10	15	30	--	--	TTC
	lbs/day[2]	108	163	325	--	--	
	% Removal	85	--	--	--	--	CFR
Priority Pollutants							
Copper, Total Recoverable	µg/L	5.1	--	7.9	--	--	CTR, BP
Dichlorobromomethane	µg/L	0.56	--	1.4	--	--	CTR
Zinc, Total Recoverable	µg/L	12	--	22	--	--	CTR, BP
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	0.74	--	2.1	--	--	NAWQC
	lbs/day[2]	8.0	--	23	--	--	
~~Chlorine, Total Residual~~	~~mg/L~~	~~0.011[3]~~	--	~~0.019[4]~~	--	--	~~NAWQC~~
Diazinon and Chlorpyrifos	µg/L	[5]	--	[6]	--	--	BP, TMDL
Nitrite Plus Nitrate (as N)	mg/L	10	--	--	--	--	MCL
Total Coliform Organisms	MPN/100 mL	2.2[7]	23[8]	--	--	240	Title 22
Acute Toxicity	% Survival	--	--	[9]	--	--	BP
Chronic Toxicity	TUc	--	--	[10]	--	--	BP

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Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

1 DC – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
CFR – Based on secondary treatment standards contained in 40 CFR Part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
TMDL – Based on the TMDL for chlorpyrifos and diazinon in the Sacramento River and Feather River Basins.
Title 22 – Based on CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

2 Mass-based effluent limitations are based on a permitted average dry weather flow of 1.3 MGD.

3 Applied as a 4-day average effluent limitation.

4 Applied as a 1-hour average effluent limitation.

5 $$S_{avg} = \frac{C_{D\ avg}}{0.079} + \frac{C_{C\ avg}}{0.012} \leq 1.0$$

$C_{D\text{-}avg}$ = average monthly diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = average monthly chlorpyrifos effluent concentration in µg/L

6 $$S_{max} = \frac{C_{D\ max}}{0.16} + \frac{C_{C\ max}}{0.025} \leq 1.0$$

$C_{D\text{-}avg}$ = maximum daily diazinon effluent concentration in µg/L
$C_{C\text{-}avg}$ = maximum daily chlorpyrifos effluent concentration in µg/L

7 Applied as a 7-day median effluent limitation.

8 Not to exceed more than once in any 30-day period.

9 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 consecutive bioassays: 90%

10 There shall be no chronic toxicity in the effluent discharge.

O. Interim Effluent Limitations – Not Applicable

P. Land Discharge Specifications

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

Q. Recycling Specifications

Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements and must meet the requirements of CCR, Title 22.

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XII. RATIONALE FOR RECEIVING WATER LIMITATIONS

R. 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 Central Valley 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 Water 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, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

a. pH. Order R5-2008-0037 established a receiving water limitation for pH specifying that discharges from the Facility shall not cause the ambient pH to change by more than 0.5 units based on the water quality objective for pH in the Basin Plan. The Central Valley Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to delete the portion of the pH water quality objective that limits the change in pH to 0.5 units and the allowance of averaging periods for pH. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order does not require a receiving water limitation for pH change.

In Finding No. 14 of Resolution No. R5-2007-0136, the Central Valley Water Board found that the change in the pH receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

Ammonia is the only constituent in the discharge regulated by this Order directly related to pH. The fixed ammonia effluent limitations in this Order are based on reasonable worse-case conditions. Although ammonia criteria are based on pH, and the pH receiving water limitations are more lenient in this Order than in the previous permit, the fixed ammonia limits are new limits, and are developed to protect under worse-case pH conditions. Therefore the relaxation of the pH receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the pH receiving water limitation (i) is to the maximum benefit to the people of the State, (ii) will not

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unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for pH, which is based on the amendment to the Basin Plan's pH water quality objective, reflects current scientifically supported pH requirements for the protection of aquatic life and other beneficial uses. The revised receiving water limitation for pH is more consistent with the current USEPA recommended criteria and is fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in pH when pH is maintained within the range of 6.5 to 8.5 are neither beneficial nor adverse and, therefore, are not considered to be degradation in water quality. Attempting to restrict pH changes to 0.5 pH units would incur substantial costs without demonstrable benefits to beneficial uses. Thus, any changes in pH that would occur under the revised pH limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore the proposed amendment will not violate antidegradation policies.

b. Turbidity. Order R5-2008-0037 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

This Order includes operational specifications that require the Discharger to operate the treatment system to insure that turbidity shall not exceed 2 NTU as a daily average, and 5 NTU more than 5 percent of the time within a 24 hour period, and 10 NTU, at any time. Because this Order limits the average daily discharge of turbidity to 2 NTU, the Order will be protective of the receiving water under all natural background conditions as defined in the Basin Plan’s revised water quality objective for turbidity. The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The

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Central Valley Water Board finds that the relaxation of the turbidity receiving water limitation is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

S. Groundwater

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

2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

3. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the facility is designated as

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municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate as nitrogen to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.

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

XIII. RATIONALE FOR PROVISIONS

T. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

U. 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 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 criteria for applicable 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 and zinc. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

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c. **Drinking Water Policy.** The Central Valley Water Board is developing a Drinking Water Policy. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

d. **Diazinon and Chlorpyrifos Basin Plan Amendment.** Central Valley Water Board staff is developing a Basin Plan Amendment to provide a chlorpyrifos and diazinon effluent limitation exemption if a discharger can demonstrate that diazinon and chlorpyrifos have not been detected in the effluent. The proposed Basin Plan Amendment may result in needed changes to the diazinon and chlorpyrifos requirements in this Order. As discussed in the RPA for diazinon and chlorpyrifos, monitoring data is not available for these constituents. Therefore, this Order may be reopened to modify diazinon and chlorpyrifos effluent limitations, as appropriate, in accordance with an amendment to the Basin Plan.

e. **Discharge Prohibition III.E. and III.F.** The Discharger has proposed Facility upgrades that would improve effluent quality and comply with final effluent limitations. As a result of the proposed upgrades the Discharger anticipates operating the Facility as a year-round, continuous discharge to surface water, rather than the current seasonal discharge operation. The Discharger also anticipates the ability to discharge without any minimum receiving water to effluent flow ratio present, i.e. an effluent–dominated discharge. [Limited or no flow in the receiving water may occur at any time during the year due to climate conditions].

   An antidegradation analysis establishing sufficient findings must be submitted for Central Valley Water Board review in order to consider any new or increased discharge of pollutants to the receiving water body during the dry season and during such periods of low-receiving water flow. At a minimum, sufficient findings must demonstrate whether the new or increased discharge of pollutants will result in any impairment and/or degradation of the receiving water body, whether existing and potential beneficial uses of the receiving water body will be maintained and protected, and whether the receiving water body will maintain compliance with water quality objectives.

   Upon submittal of documentation (i.e., an antidegradation analysis) supporting a surface water discharge during the dry season and/or a discharge during low and/or no receiving water flows, and completion of tasks included in the compliance schedule outlined in TSO R5-2014-0053, this Order may be reopened for modification or removal of Discharge Prohibition III.E. and/or III.F.

f. **Ultraviolet Light (UV) Disinfection Operating Specifications .** UV system operating specifications are required to ensure that the UV system is operated to achieve the required pathogen removal. UV disinfection system specifications and monitoring and reporting requirements are required to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses) in the wastewater. UV dosage is dependent on several factors such as UV transmittance, UV power setting, wastewater turbidity, and wastewater flow through the UV disinfection system. The UV specifications in this Order are

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based on the National Water Research Institute (NWRI) and American Water Works Association Research Foundation (AWWRF) "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse"* first published in December 2000 and revised as a Third Edition dated August 2012 (NWRI guidelines). If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, this Order may be reopened to modify the UV specifications, in accordance with Reopener Provision VI.C.1.i.

2. Special Studies and Additional Monitoring Requirements

a. Chronic Whole Effluent Toxicity Requirements. The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at page III-8.00) Based on whole effluent chronic toxicity testing performed by the Discharger from February 2008 through February 2013, adequate chronic WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision requires the Discharger to submit to the Central Valley Water Board a 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, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 2 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics*

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Control, EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

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

TRE Guidance. The Discharger is required to prepare a TRE 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/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.
- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.
- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.

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- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

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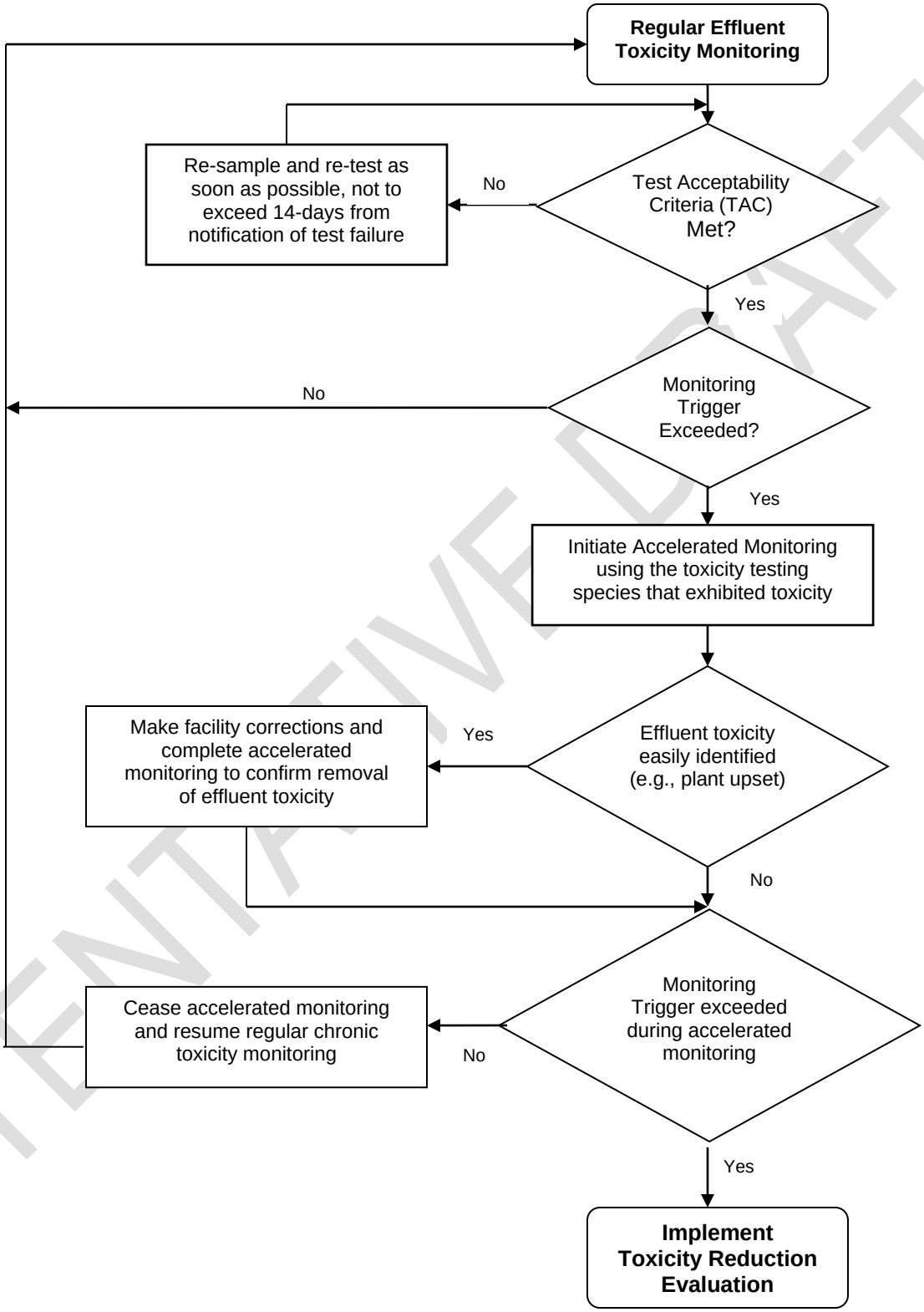
Figure F-1
WET Accelerated Monitoring Flow Chart



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3. Best Management Practices and Pollution Prevention

a. Salinity Evaluation and Minimization Plan. An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are implemented by the Discharger to reduce the discharge of salinity to Churn Creek. The Discharger shall update and implement its salinity evaluation and minimization plan to continue to reduce the discharge of salinity to Churn Creek.

4. Construction, Operation, and Maintenance Specifications

a. ~~Turbidity Operational Requirements~~Filtration System Operating Specifications. ~~Turbidity is included as an operational specification as an indicator of the effectiveness of the treatment process and to assure compliance with effluent limitations for total coliform organisms. The tertiary treatment process utilized at this Facility is capable of reliably meeting a turbidity limitation of 2 NTU as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period, and an instantaneous maximum of 10 NTU. Turbidity specifications are included as operating criteria in section VI.C.4.a of this Order to ensure that adequate disinfection of wastewater is achieved.~~ Turbidity is included as an operational specification as an indicator of the effectiveness of the filtration system for providing adequate disinfection. The tertiary treatment process utilized at this Facility is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity and could impact UV dosage. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period, and an instantaneous maximum of 10 NTU.

b. Pond Operating Requirements. Consistent with the recommendations within the Technical Report supporting State Water Board Order WQO-2004-0013, the treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

~~b.~~c. Ultraviolet (UV) Disinfection System Operating Specifications. This Order requires that wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DDW reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. To ensure that the UV disinfection system is operated to achieve the required pathogen removal, this Order includes effluent limits for total coliform organisms, filtration system operating

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specifications, and UV disinfection system operating specifications. Compliance with total coliform effluent limits alone does not ensure that pathogens in the municipal wastewater have been deactivated by the UV disinfection system. Compliance with the effluent limits and the filtration system and UV disinfection operating specifications demonstrates compliance with the equivalency to Title 22 disinfection requirement.

The NWRI guidelines include UV operating specifications for compliance with Title 22. For water recycling in accordance with Title 22, the UV system shall be an approved system included in the *Treatment Technology Report for Recycled Water*, December 2009 (or a later version, as applicable) published by the DDW. The UV system shall also conform to all requirements and operating specifications of the NWRI guidelines. A memorandum dated 1 November 2004 issued by DDW to Regional Water Board executive offices recommended that provisions be included in permits for water recycling treatment plants employing UV disinfection requiring dischargers to establish fixed cleaning frequency of lamp sleeves, as well as, include provisions that specify minimum delivered UV dose that must be maintained (per the NWRI Guidelines).

For granular media filtration, the NWRI Guidelines recommend a minimum hourly average UV dose of 100 mJ/cm^2. Therefore, this Order includes UV operating specifications requiring a minimum hourly average UV dose of 100 mJ/cm^2 and a minimum hourly average UV transmittance of 55%, per the NWRI Guidelines. If the Discharger conducts a site-specific UV engineering study that demonstrates a lower UV dose meets a Title 22 equivalent virus removal, this Order may be reopened to revise the UV operating specifications accordingly.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements. 40 CFR 403.8(a) requires POTWs with a total design flow greater than 5 MGD and receiving pollutants which pass through or interfere with the operation of the POTW to establish a POTW Pretreatment Program. The design flow of the Facility is less than 5 MGD and the Discharger does not accept wastes from any industrial users. Therefore, this Order does not require the Discharger to develop a pretreatment program at this time pursuant to USEPA regulations at 40 CFR Part 403. However, consistent with Order R5-2008-0037, this Order does require the Discharger to implement the necessary legal authorities, programs, and controls to ensure that incompatible wastes are not introduced into the treatment system and to ensure that indirect discharges do not introduce pollutants into the sewerage system.

b. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. The Monitoring and Reporting Requirements for the General Order were amended by Water Quality Order WQ 2008-0002-EXEC on 20 February 2008. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires

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agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. The Discharger is enrolled under State Water Board General Order No. 2006-0003-DWQ.

c. **Anaerobically Digestible Material.** Managers of publicly owned treatment works (POTW's) increasingly are considering the addition of organic material such as food waste, fats, oils and grease (FOG) into their anaerobic digesters to increase the volume of methane and other biogases for energy production. The State Water Board has been working with the California Department of Resources Recycling and Recovery (CalRecycle), the California Department of Food and Agriculture (CDFA), and the California Association of Sanitation Agencies (CASA) to delineate jurisdictional authority for the receipt of hauled-in anaerobically digestible material (ADM[1]) at POTW's for co-digestion.

CalRecycle is proposing an exclusion from Process Facility/Transfer Station permits for direct injection of ADM to POTW anaerobic digesters that are regulated under waste discharge requirements or NPDES permits. The proposed CalRecycle exclusion assumes that a POTW has developed Standard Operating Procedures (SOP's) for the proper handling, processing, tracking, and management of the ADM received.

The Discharger currently uses aerobic digestion for sludge processing and does not accept hauled-in ADM for direct injection. However, if the Discharger proposes to implement anaerobic digestion and receive hauled-in ADM for direct injection, this provision requires the Discharger to notify the Central Valley Water Board and develop and implement SOP's for this activity prior to initiation of the hauling.

d. **Continuous Monitoring Systems.** This Order, and the Monitoring and Reporting Program which is a part of this Order, requires that certain parameters be monitored on a continuous basis. The Facility is typically staffed for 8 hours a day and unattended for 16 hours per day during the work week, and staffed for 4 hours per day and unattended for 20 hours per day during the weekends. Permit violations or system upsets can go undetected during this period. The Discharger has a system in place to automatically contact Facility operators in the event of alarms generated at the wastewater treatment plant. The Discharger is required to establish an electronic system for operator notification based on continuous recording device alarms. For any future facility upgrades, the

[1] CalRecycle defines "anaerobically digestible material" as: inedible kitchen grease as defined in section 19216 of the Food and Agriculture Code, food material as defined in Title 14, CCR, Chapter 3.1, Article 1, Section 17582(a)(2) and vegetative food material as defined in Title 14, CCR, Chapter 3.1, Article 1, Section 17582(A).

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Discharger shall upgrade the continuous monitoring and notification system simultaneously.

6. Other Special Provisions

a. In accordance with California Department of Public Health recommendations regarding the discharge of treated municipal wastewater to streams where the water may be used or diverted for a beneficial use; during periods of effluent discharge to Churn Creek when the receiving water provides less than 20:1 dilution, effluent wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH; formerly the Department of Health Services) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. Effluent need not comply with the Ct[1] requirement specified in Title 22 section 60301.230(a)(1) unless the receiving water provides no dilution. If the receiving water is 100% treated effluent (i.e., effluent-dominated) the effluent shall meet all of the Water Recycling Criteria in Title 22, including Section 60301.230(a)(1).

7. Compliance Schedules – Not Applicable

XIV. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for the Facility.

V. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS reduction requirements). The monitoring frequencies for flow (continuous), BOD_5 (1/week), and TSS (1/week) have been retained from Order R5-2008-0037.

W. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

[1]The product of the total chlorine residual multiplied by the modal contact time measured at the same point.

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2. Effluent monitoring frequencies and sample types for flow (continuous), ~~chlorine residual (continuous)~~, pH (continuous), temperature (1/week), BOD_5 (1/week), TSS (1/week), turbidity (1/day), total recoverable and dissolved copper (1/month), total coliform organisms (2/week), electrical conductivity (1/month), dichlorobromomethane (1/month), total recoverable and dissolved zinc (1/month), total ammonia nitrogen (1/week), TDS (1/month), hardness (1/month), nitrate (1/month), total kjeldahl nitrogen (1/month), total phosphorous (1/month), ortho phosphate (1/month), and standard minerals (1/year) have been retained from Order R5-2008-0037 to determine compliance with effluent limitations, where applicable, and characterize the effluent for these parameters.

3. Monitoring data collected over the previous permit term for total recoverable and dissolved cadmium, chlorodibromomethane, chromium, heptachlor epoxide, lead, nickel, and settleable solids did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2008-0037.

4. Specific monitoring for total coliform organisms when discharging to the reclaimed water reservoir has been retained from Order R5-2008-0037 with a frequency increase to daily monitoring as specified in the MRP (Attachment E). Duplicate monitoring of the reclaimed water reservoir under drain for total coliform organisms is not necessary to demonstrate compliance with recycle water requirements. Thus, specific under drain monitoring requirements for this parameter at monitoring location REC-DRAIN have not been retained from Order R5-2008-0037.

5. This Order establishes new effluent limitations for diazinon and chlorpyrifos based on the applicable TMDL. Therefore, this Order establishes annual monitoring for diazinon and chlorpyrifos to determine compliance with the applicable effluent limitations.

6. This Order establishes new effluent limitations for nitrate plus nitrite to ensure that the Facility adequately nitrifies and denitrifies the effluent. Therefore, this Order establishes monthly monitoring for nitrate plus nitrite to determine compliance with the applicable effluent limitations.

7. As discussed in section IV.C.3.c.i of this Fact Sheet, bis (2-ethylhexyl) phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of detected bis (2-ethylhexyl) phthalate may be from plastics used for sampling or analytical equipment. Therefore, this Order establishes annual monitoring for bis (2-ethylhexyl) phthalate using clean techniques to verify if bis (2-ethylhexyl) phthalate is truly present in the effluent discharge.

8. As discussed in section IV.C.3.c.ii of this Fact Sheet, this Order requires that the Discharger conduct quarterly effluent monitoring for carbon tetrachloride during the first 2 years following permit adoption.

9. As discussed in section IV.C.3.c.iii and iv of this Fact Sheet, the source of iron and manganese observed in the effluent at Discharge Point 002 is uncertain and does

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not appear to originate in the treated effluent, and limited data is available to evaluate reasonable potential to exceed the applicable Secondary MCLs on an annual average basis. Therefore, this Order requires quarterly monitoring for 2 years to determine the source and presence of iron and manganese in the discharge.

10. Effluent monitoring frequency for priority pollutants has been revised from annually to semiannually during the third and fourth year of the permit term. In accordance with Section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. See *Effluent and Receiving Water Characterization* (Attachement E, section IX.C.) for more detailed requirements related to performing priority pollutant monitoring.

11. California Water Code section 13176, subdivision (a), states: "*The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.*" The DPH certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 CFR § 136.3(e), Table II)

X. Whole Effluent Toxicity Testing Requirements

1. Acute Toxicity. Consistent with Order R5-2008-0037, monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. Chronic Toxicity. Consistent with Order R5-2008-0037, annual chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

Y. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

b. Monitoring Location RSW-001

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i. The receiving water monitoring frequency and sample type for hardness (4/year) have been retained from Order R5-2008-0037.

ii. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires monitoring for priority pollutants and other pollutants of concern quarterly during the third and fourth year of the permit term, concurrent with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See *Effluent and Receiving Water Characterization* (Attachment E, section IX.C.) for more detailed requirements related to performing priority pollutant monitoring.

c. Monitoring Locations RSW-002, RSW-003, and RSW-004

i. Receiving water monitoring frequencies and sample types for dissolved oxygen (1/week), electrical conductivity (1/month), pH (1/week), temperature (1/week), and turbidity (1/week) have been retained from Order R5-2008-0037.

ii. Monitoring requirements for heptachlor epoxide have not been retained from Order R5-2008-0037 as they are not necessary to determine compliance with permit requirements.

2. Groundwater – Not Applicable

Z. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.5.b. of this Order. 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. Consistent with Order R5-2008-0037, this Order requires annual monitoring for TDS, electrical conductivity, and standard minerals. This Order establishes annual monitoring for copper and zinc to determine the contribution of these constituents in the water supply.

3. Ultraviolet (UV) Disinfection System Monitoring

UV system monitoring and reporting are required to ensure that the UV system is operated to adequately inactivate pathogens in the wastewater. UV disinfection system monitoring is imposed to achieve equivalency to requirements established by the DDW and the NWRI guidelines.

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~~3.~~4. Land Discharge Monitoring – Not Applicable

~~4.~~5. Recycled Water Monitoring

a. **Monitoring Location PND-001.** Recycled water monitoring is required to ensure proper operation of the reclaimed water reservoir. Continuous monitoring for flow ~~and total residual chlorine~~, weekly monitoring for BOD_5, TSS, and daily monitoring for turbidity have been retained from Order R5-2008-0037. Monitoring for total coliform organisms has been increased from twice weekly to daily to be consistent with the requirements of chapter 3, division 4, Title 22, CCR, Section 60321. This Order also establishes quarterly monitoring for the first 2 years of the permit term for iron and manganese to characterize the effluent from the treatment system prior to entering the reclaimed water reservoir. During periods of discharge through Discharge Point 001, monitoring conducted at Monitoring Location EFF-001 for iron and manganese during the sampling period shall negate the necessity to monitor for iron and manganese at Monitoring Location PND-001 within the same sampling period.

b. **Monitoring Location REC-DRAIN.** Specific monitoring for total coliform organisms when discharging to the reclaimed water reservoir has been retained from Order R5-2008-0037 with a frequency increase to daily monitoring as specified above under Monitoring Location PND-001. Duplicate monitoring of the reclaimed water reservoir under drain for total coliform organisms is not necessary to demonstrate compliance with recycle water requirements. Thus, specific under drain monitoring requirements for this parameter at monitoring location REC-DRAIN have not been retained from Order R5-2008-0037.

c. **Monitoring Locations REC-001 and LND-001.** Reclaimed water and spray field monitoring is required to ensure that the reclaimed discharge complies with the Land Discharge Specifications at Discharge Point LND-001 and recycling specifications and Discharge Point REC-001. Monitoring frequency and sample type for flow (continuous) have been retained from Order R5-2008-0037.

XV. PUBLIC PARTICIPATION

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

AA. Notification of Interested Parties

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided them with an opportunity to submit written comments and recommendations. Notification was provided through physical posting at the Facility and City Hall, publication in the local newspaper, and by internet posting on the Central Valley Water Board's website.

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The public had access to the agenda and any changes in dates and locations through the Central Valley Water Board's website at:

www.waterboards.ca.gov/centralvalley

BB. Written Comments

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on **~~10 February 2014~~ xx November 2018**.

CC. Public Hearing

The Central Valley Water Board held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date:	~~27/28 March 2014~~6/7 December 2018
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

DD. Reconsideration of Waste Discharge Requirements

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

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

For instructions on how to file a petition for review, see
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

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EE. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received, are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (530) 224-4845.

FF. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

GG. Additional Information

Requests for additional information or questions regarding this order should be directed to ~~Scott Gilbreath~~ Michael Collins at (530) 224-4785~~4851~~.

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ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Table G-1. Summary of Reasonable Potential Analysis for Constituents of Concern – Discharge Point 001

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
alpha-BHC	µg/L	0.006	<0.005	ND	--	--	0.0039	0.013	ND	--	No
Ammonia Nitrogen, Total (as N)	mg/L	5.72	NA	2.14	2.14[1]	5.22[2]	--	--	--	--	Yes
Bis (2-Ethylhexyl) Phthalate	µg/L	2.0 DNQ	1.0	1.8	--	--	1.8	5.9	--	4	Inconclusive
Cadmium, Dissolved	µg/L	<0.05	<1	0.33[3]/0.26[4]	[5]	1.5[3]/1.2[4]	--	--	0.33[3]/0.26[4]	5	No
Cadmium, Total Recoverable	µg/L	<0.05	0.05 DNQ	0.34[3]/0.26[4]	[5]	1.6[3]/1.3[4]	--	--	0.34[3]/0.26[4]	5	No
Carbon tetrachloride	µg/L	0.3 DNQ	<0.1	0.25	--	--	0.25	4.4	--	0.5	Inconclusive
Chloride	mg/L	62.2	NA	230	860	230	--	--	--	250	No
Chlorodibromomethane	µg/L	0.4 DNQ	<0.060	0.41	--	--	0.41	34	--	80[6]	No
Chlorpyrifos	µg/L	NA	NA	0.015	--	--	--	--	0.015	--	Inconclusive
Chromium III	µg/L	NA	NA	129[3]/108[4]	1,080[3]/903[4]	129[3]/108[4]	--	--	--	--	Inconclusive
Copper, Dissolved	µg/L	7.5	<0.1	5.5[3]/4.5[4]	[5]	5.5[3]/4.5[4]	1,300	N/A	7.6[3]/6.3[4]	1,000	Yes
Copper, Total Recoverable	µg/L	8.0	4.1	5.7[3]/4.7[4]	[5]	5.7[3]/4.7[4]	1,300	N/A	7.9[3]/6.5[4]	1,000	Yes
Diazinon	µg/L	NA	NA	0.10	--	--	--	--	0.10	--	Inconclusive
Dichlorobromomethane	µg/L	3.6	1	0.56	--	--	0.56	46	--	80[6]	Yes
Electrical Conductivity @ 25°C	µmhos/cm	418[7]	178[7]	900	--	--	--	--	--	900	No
Heptachlor Epoxide	µg/L	0.005 DNQ	<0.002	ND	0.52	0.0038	0.0001	0.00011	ND	0.01	No
Iron, Total Recoverable	µg/L	42[7]	NA	300	--	1,000	--	--	--	300	No
Lead, Dissolved	µg/L	0.2 DNQ	NA	1.1[3]/1.0[4]	30[3]/27[4]	1.1[3]/1.0[4]	--	--	--	15	No
Lead, Total Recoverable	µg/L	0.3 DNQ	4	1.2	30	1.2	--	--	--	15	No[8]
Manganese, Total Recoverable	µg/L	12.9[7]	<0.1	50	--	--	--	100	--	50	No
Nickel, Total Recoverable	µg/L	5.5	0.9 DNQ	32[3]/27[4]	287[3]/239[4]	32[3]/27[4]	610	4,600	--	100	No
Nitrate Nitrogen, Total (as N)	mg/L	16	1.2	10	--	--	10	N/A	--	10	Yes
Silver, Total Recoverable	µg/L	0.12	<0.12	0.64[3]/1.0[4]	0.64[3]/1.0[4]	--	--	--	--	100	No
Sulfate	mg/L	31.6[7]	NA	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	280[7]	NA	500	--	--	--	--	--	500	No

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Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Zinc, Dissolved	µg/L	30.4	NA	21[3]/18[4]	[5]	72[3]/60[4]	--	--	21[3]/18[4]	5,000	Yes
Zinc, Total Recoverable	µg/L	37.6	24.2	22[3]/18[4]	[5]	73[3]/61[4]	--	--	22[3]/18[4]	5,000	Yes

General Note: All inorganic concentrations are given as a total recoverable.
Data set from March 2008 – February 2013)
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect
DNQ = Detectable but not quantifiable

Footnotes:

(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour Average.
(2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day Average.
(3) Criterion to be compared to the MEC.
(4) Criterion to be compared to the maximum upstream receiving water concentration.
(5) Footnote x for the acute criterion in the CTR at 40 CFR 131.38(b)(1) states, "*The State of California has adopted and EPA has approved site specific criteria for the Sacramento River (and tributaries) above Hamilton City; therefore, these criteria do not apply to these waters*." Thus, the acute CTR criterion is not applicable.
(6) Represents the Primary MCL for total trihalomethanes, which include bromoform, chlorodibromomethane, chloroform, and dichlorobromomethane.
(7) Represents the maximum observed annual average concentration for comparison with the Secondary MCL.
(8) See section IV.C.3.b.iv of Attachment F for rationale.

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Table G-2. Summary of Reasonable Potential Analysis for Constituents of Concern – Discharge Point 002

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
alpha-BHC	µg/L	<0.005	<0.005	ND	--	--	0.0039	0.013	ND	--	No
Ammonia Nitrogen, Total (as N)	mg/L	5.9	NA	2.14	2.14[1]	5.22[2]	--	--	--	--	Yes
Bis (2-Ethylhexyl) Phthalate	µg/L	7.0	1.0	1.8	--	--	1.8	5.9	--	4	Inconclusive
Cadmium, Dissolved	µg/L	0.16 DNQ	<1	0.33[3]/0.26[4]	[5]	1.5[3]/1.2[4]	--	--	0.33[3]/0.26[4]	5	No
Cadmium, Total Recoverable	µg/L	0.24 DNQ	0.05 DNQ	0.34[3]/0.26[4]	[5]	1.6[3]/1.3[4]	--	--	0.34[3]/0.26[4]	5	No
Carbon tetrachloride	µg/L	<0.1	<0.1	0.25	--	--	0.25	4.4	--	0.5	Inconclusive
Chloride	mg/L	82.3	NA	230	860	230	--	--	--	250	No
Chlorodibromomethane	µg/L	<0.06	<0.060	0.41	--	--	0.41	34	--	80[6]	No
Chlorpyrifos	µg/L	NA	NA	0.015	--	--	--	--	0.015	--	Inconclusive
Chromium III	µg/L	NA	NA	129[3]/108[4]	1,080[3]/903[4]	129[3]/108[4]	--	--	--	--	Inconclusive
Copper, Dissolved	µg/L	5.7	<0.1	5.5[3]/4.5[4]	[5]	5.5[3]/4.5[4]	1,300	N/A	7.6[3]/6.3[4]	1,000	Yes
Copper, Total Recoverable	µg/L	8.5	4.1	5.7[3]/4.7[4]	[5]	5.7[3]/4.7[4]	1,300	N/A	7.9[3]/6.5[4]	1,000	Yes
Diazinon	µg/L	NA	NA	0.10	--	--	--	--	0.10	--	Inconclusive
Dichlorobromomethane	µg/L	0.8	1	0.56	--	--	0.56	46	--	80[6]	Yes
Electrical Conductivity @ 25°C	µmhos/cm	408[7]	178[7]	900	--	--	--	--	--	900	No
Heptachlor Epoxide	µg/L	<0.002	<0.002	ND	0.52	0.0038	0.0001	0.00011	ND	0.01	No
Iron, Total Recoverable	µg/L	537[7]	NA	300	--	1,000	--	--	--	300	Inconclusive
Lead, Dissolved	µg/L	0.1 DNQ	NA	1.1[3]/1.0[4]	30[3]/27[4]	1.1[3]/1.0[4]	--	--	--	15	No
Lead, Total Recoverable	µg/L	0.2 DNQ	4	1.2	30	1.2	--	--	--	15	No[8]
Manganese, Total Recoverable	µg/L	129[7]	<0.1	50	--	--	--	100	--	50	Inconclusive
Nickel, Total Recoverable	µg/L	6.4	0.9 DNQ	32[3]/27[4]	287[3]/239[4]	32[3]/27[4]	610	4,600	--	100	No
Nitrate Nitrogen, Total (as N)	mg/L	7.32	1.2	10	--	--	10	N/A	--	10	Yes
Silver, Total Recoverable	µg/L	<0.12	<0.12	0.64[3]/1.0[4]	0.64[3]/1.0[4]	--	--	--	--	100	No
Sulfate	mg/L	23[7]	NA	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	246[7]	NA	500	--	--	--	--	--	500	No
Zinc, Dissolved	µg/L	25	NA	21[3]/18[4]	[5]	72[3]/60[4]	--	--	21[3]/18[4]	5,000	Yes
Zinc, Total Recoverable	µg/L	37	24.2	22[3]/18[4]	[5]	73[3]/61[4]	--	--	22[3]/18[4]	5,000	Yes

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Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential

General Note: All inorganic concentrations are given as a total recoverable.
Data set from March 2008 – February 2013)
MEC = Maximum Effluent Concentration
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C = Criterion used for Reasonable Potential Analysis
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Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect
DNQ = Detectable but not quantifiable

Footnotes:

(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour Average.
(2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day Average.
(3) Criterion to be compared to the MEC.
(4) Criterion to be compared to the maximum upstream receiving water concentration.
(5) Footnote x for the acute criterion in the CTR at 40 CFR 131.38(b)(1) states, "*The State of California has adopted and EPA has approved site specific criteria for the Sacramento River (and tributaries) above Hamilton City; therefore, these criteria do not apply to these waters*." Thus, the acute CTR criterion is not applicable.
(6) Represents the Primary MCL for total trihalomethanes, which include bromoform, chlorodibromomethane, chloroform, and dichlorobromomethane.
(7) Represents the maximum observed annual average concentration for comparison with the Secondary MCL.
(8) See section IV.C.3.b.iv of Attachment F for rationale.

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ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			HH Calculations[1]			Aquatic Life Calculations[1]											Final Effluent Limitations	
		HH	CMC	CCC	ECA_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA_{acute}	ECA $Multiplier_{acute}$	LTA_{acute}	$ECA_{chronic}$	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Ammonia Nitrogen, Total (as N)	mg/L	--	2.14	5.22	--	--	--	2.14	0.15	0.32	5.22	0.57	2.98	0.32	2.32	0.74	6.59	2.1	0.74	2.1
Copper, Total Recoverable	µg/L	1,000	7.9[2]	5.7	1,000	1.54	1,540	7.9	0.51	4.0	5.7	0.70	4.0	4.0	1.29	5.1	1.98	7.9	5.1	7.9
Dichlorobromomethane	µg/L	0.56	--	--	0.56	2.47	1.4	--	--	--	--	--	--	--	--	--	--	--	0.56	1.4
Zinc, Total Recoverable	µg/L	5,000	22[2]	73	5,000	1.77	8,836	22	0.40	8.7	73	0.61	45	8.7	1.41	12	2.5	22	12	22

1 As described in section IV.C.2.c of the Fact Sheet (Attachment F), calculation of effluent limitations for the protection of human health and aquatic life are determined without the allowance of dilution credits.

2 Based on Basin Plan objective.

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