

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

364 Knollcrest Drive, Suite 205, Redding, California 96002
Phone (530) 224-4845 • Fax (530) 224-4857
<http://www.waterboards.ca.gov/centralvalley>

ORDER R5-2017-0117

NPDES NO. CA0078051

**WASTE DISCHARGE REQUIREMENTS
FOR THE CITY OF MT. SHASTA AND U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE,
CITY OF MT. SHASTA WASTEWATER TREATMENT PLANT, SISKIYOU COUNTY**

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

Table 1. Discharger Information

Discharger	City of Mt. Shasta
Name of Facility	City of Mt. Shasta Wastewater Treatment Plant
Facility Address	2500 Grant Road
	Mt. Shasta, CA 96067
	Siskiyou County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Treated Effluent	41.2764°	-122.3186°	Sacramento River
002	Treated Effluent	41.2856°	-122.2735°	Leachfield
003	Treated Effluent	41.2831°	-122.3188°	Mt. Shasta Resort Golf Course

Table 3. Administrative Information

This Order was adopted on:	8 December 2017
This Order shall become effective on:	1 February 2018
This Order shall expire on:	31 January 2023
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, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	31 January 2022
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:	Minor discharge

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 **8 December 2017**.

Original Signed By

PAMELA C. CREEDON, Executive Officer

CONTENTS

I.	Facility Information	3
II.	Findings	3
III.	Discharge Prohibitions	4
IV.	Effluent Limitations and Discharge Specifications	4
	A. Effluent Limitations – Discharge Point 001.....	4
	1. Final Effluent Limitations – Discharge Point 001	4
	2. Interim Effluent Limitations	6
	B. Land Discharge Specifications – Discharge Point 002	6
	C. Recycling Specifications – Discharge Point 003.....	7
V.	Receiving Water Limitations.....	8
	A. Surface Water Limitations.....	8
	B. Groundwater Limitations	10
VI.	Provisions	10
	A. Standard Provisions.....	10
	B. Monitoring and Reporting Program (MRP) Requirements	14
	C. Special Provisions.....	14
	1. Reopener Provisions	14
	2. Special Studies, Technical Reports and Additional Monitoring Requirements.....	15
	3. Best Management Practices and Pollution Prevention.....	17
	4. Construction, Operation and Maintenance Specifications	17
	5. Special Provisions for Publicly-Owned Treatment Works (POTWs)	19
	6. Other Special Provisions	20
	7. Compliance Schedules	20
VII.	Compliance Determination	23

TABLES

Table 1.	Discharger Information.....	1
Table 2.	Discharge Location	1
Table 3.	Administrative Information.....	1
Table 4.	Effluent Limitations.....	5
Table 5.	Interim Effluent Limitations	6
Table 6.	Land Discharge Specifications	6
Table 7.	Interim Land Discharge Specifications	7
Table 8.	Recycled Water Discharge Specifications	7

ATTACHMENTS

Attachment A – Definitions.....	A-1
Attachment B – Map	B-1
Attachment C – Flow Schematic	C-1
Attachment D – Standard Provisions	D-1
Attachment E – Monitoring and Reporting Program	E-1
Attachment F – Fact Sheet	F-1
Attachment G – Summary Of Reasonable Potential Analysis	G-1
Attachment H – Calculation of WQBEL'S.....	H-1

I. FACILITY INFORMATION

Information describing the Mt. Shasta Wastewater Treatment Plant (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 waste discharge requirements (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 U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as a National Pollutant Discharge Elimination System (NPDES) permit authorizing the Discharger to discharge into waters of the United States at the discharge location described in Table 2 subject to the WDR's in this Order.
- 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 the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G through 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 C.F.R. section 122.48 requires that all NPDES permits specify 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 domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports."*

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

- 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 this Order supersedes Order R5-2012-0086 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.B, 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 waste classified as 'hazardous', as defined in the California Code of Regulations, title 22, section 66261.1 et seq., is prohibited.
- F.** The discharge of wastewater to the Sacramento River during the recreation season (15 June through 14 September) is prohibited.
- G. Peak Wet Weather Flow.** Average daily discharge flow exceeding a peak wet weather flow of 2.1 million gallons per day (MGD) is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 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)	mg/L	10	15	--	--	--
	lbs/day ¹	175	262	--	--	--
Total Suspended Solids	mg/L	10	15	--	--	--
	lbs/day ¹	175	262	--	--	--
pH	SU	--	--	--	6.5	8.5
Priority Pollutants						
Bis(2-Ethylhexyl) phthalate	µg/L	3.8	--	6.1	--	--
Copper, Total Recoverable	µg/L	10.0	--	18.5	--	--
Zinc, Total Recoverable	µg/L	26.4	--	51.4	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	5.7	7.8	--	--	--
	lbs/day ¹	99	136	--	--	--
Nitrate Plus Nitrite (as N)	mg/L	10	21	--	--	--
Settleable Solids	mL/L-hr	0.1	--	0.2	--	--

¹ Mass loadings calculated based on a PWWF of 2.1 MGD.

- b. **Percent Removal:** The average monthly percent removal of 5-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) shall not be less than 85 percent.
- c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
 - i. 70%, minimum for any one bioassay; and
 - ii. 90%, median for any three consecutive bioassays.
- d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:
 - i. 0.011 mg/L, as a 4-day average; and.
 - ii. 0.019 mg/L, as a 1-hour average.
- e. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed (except as specified in section "f" below):
 - i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median.
 - ii. 23 most probable number (MPN) per 100 mL, more than once in any 30-day period; and.
 - iii. 240 MPN/100 mL, at any time.
- f. **Total Coliform Organisms.** From 16 November through 14 April, during periods of discharge when a receiving water to effluent flow ratio of ≥20:1 exists and the receiving water is <400 cfs, effluent total coliform organisms shall not exceed:
 - i. 23 MPN/100 mL, as a 7-day median; and.
 - ii. 240 MPN/100 mL, at any time.

2. Interim Effluent Limitations

- a. During the period beginning **23 November 2012** and ending on **22 November 2022**, the Discharger shall maintain compliance with the following limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the time period indicated in this provision.

Table 5. Interim Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum
Biochemical Oxygen Demand (5-day @ 20°C) ¹	mg/L	30	45	60	--
	lbs/day ²	525	788	1050	--
Total Suspended Solids ¹	mg/L	30	45	60	--
	lbs/day ²	525	788	1050	--
pH	Standard Units	--	--	--	6.0

¹ Interim effluent limitations only apply to the 16 November to 14 April discharge period.

² Mass loadings calculated based on a PWWF of 2.1 MGD.

- b. **Total Coliform Organisms. Effective 23 November 2012 and until 22 November 2022**, from 16 November through 14 April, during periods of discharge when a receiving water to effluent flow ratio of <20:1 exists or the receiving water is ≥400 cfs, effluent total coliform organisms shall not exceed:
- 23 most probable number (MPN) per 100 mL, as a 7-day median; and
 - 240 MPN/100 mL, at any time.

B. Land Discharge Specifications – Discharge Point 002

1. Final Land Discharge Specifications – Discharge Point 002

Beginning upon the effective date of this Order, the Discharger shall maintain compliance with the following limitations at Discharge Point 002, with compliance measured at Monitoring Location LND-001 as described in the attached MRP.

Table 6. Land Discharge Specifications

Parameter	Units	Discharge Specifications		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	--
	lbs/day ¹	58	--	--
Total Suspended Solids	mg/L	10	15	--
	lbs/day ¹	58	--	--

¹ Mass loading calculated based on an average daily discharge flow of 0.70 mgd.

- a. **Average Daily Discharge Flow.** The average daily discharge flow for discharges to the leachfield, as determined by dividing the total monthly flow to the leachfield by the number of days discharge to the leachfield occurred, shall not exceed 0.70 mgd.

b. Total Coliform Organisms. Leachfield effluent total coliform organisms shall not exceed:

- i. 2.2 most probably 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.

2. Interim Land Discharge Specifications – Discharge Point 002

- a. Beginning upon the effective date of this Order until **31 January 2023**, the Discharger shall maintain compliance with the following discharge specifications at Discharge Point 002, with compliance measured at Monitoring Location LND-001 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the time period indicated in this provision.

Table 7. Interim Land Discharge Specifications

Parameter	Units	Discharge Specifications		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	30	45	60
	lbs/day ¹	175	--	--
Total Suspended Solids	mg/L	30	45	60
	lbs/day ¹	175	--	--

¹ Mass loading calculated based on an average daily discharge flow of 0.70 mgd.

C. Recycling Specifications – Discharge Point 003

1. Beginning upon the effective date of this Order, the Discharger shall maintain compliance with the following limitation at Discharge Point 003, with compliance measured at Monitoring Location REC-001 as described in the attached MRP.

Table 8. Recycled Water Discharge Specifications

Parameter	Units	Discharge Specifications				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10	15	--	--	--
	lbs/day ¹	67	100	--	--	--
Total Suspended Solids	mg/L	10	15	--	--	--
	lbs/day ¹	67	100	--	--	--
pH	SU	--	--	--	6.0	9.0
Turbidity	NTU	--	5	10	--	--

¹ Mass loading calculated based on an average daily discharge flow of 0.80 mgd.

- a. **Average Daily Discharge Flow.** The average daily discharge flow for discharges to Mt. Shasta Golf Resort, as determined by dividing the total monthly flow to the golf course by the number of days discharge to the golf course occurred, shall not exceed 0.80 mgd.
- b. **Percent Removal.** The average monthly percent removal of 5-day biochemical oxygen demand (BOD₅) and total suspended solids (TSS) shall not be less than 85 percent.

- c. **Total Coliform Organisms.** Recycled effluent total coliform organisms shall not exceed:
 - i. 2.2 most probably 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.
2. The Discharger shall recycle its treated wastewater to the maximum extent practicable, as discussed in Section III.E.2 of the Fact Sheet.
3. The discharge shall be adequately dechlorinated.
4. The land application of recycled water to the Mt. Shasta Golf Course shall be in accordance with the buffer zone requirements and specifications found in WDRs Order No. 5-01-083 or subsequent orders.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

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

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, and not more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.
2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
5. **Dissolved Oxygen:**
 - a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
 - b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
 - c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5

9. **Pesticides:**

- a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
- b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
- c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;
- d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);
- e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
- f. Pesticides to be present in concentration in excess of the maximum contaminant levels (MCL's) 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 MCL's 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. The temperature changes due to controllable factors shall be limited as described below. To the extent of any conflict with the above temperature objective, the more stringent objective applies.

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

16. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
17. **Turbidity.**
 - 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. Release of waste constituents from any portion of the Facility shall not cause groundwater to:
 - a. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in the Title 22 of the California Code of Regulations, or natural background water quality, whichever is greater;
 - b. Contain total coliform organisms over any 7-day period equaling or exceeding 2.2 MPN/100 mL; or
 - c. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

VI. PROVISIONS

A. Standard Provisions

2. The Discharger shall comply with all Standard Provisions included in Attachment D.
3. 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:
 - d. 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.
 - e. 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:

- i. *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.
- ii. *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.
- iii. *Change in sludge use or disposal practice.* Under 40 CFR section 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.

- f. 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.

- g. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
 - i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or
 - ii. Controls any pollutant limited in the Order.

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

- h. 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.
- i. 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.
- j. 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.

- k. 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.
- l. 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 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.
- m. 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.

- n. 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.
- o. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- p. 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. In lieu of assessing all or a portion of a mandatory minimum penalty, section 13385 of the Water Code allows the regional board to instead require a publicly owned treatment works serving a small community to spend an equivalent amount towards the completion of a compliance project if the regional board finds that 1) the compliance project is designed to correct the violations within five years, 2) the compliance project is in accordance with the State Board enforcement policy, and 3) the publicly owned treatment works has prepared a financing plan to complete the compliance project.
- q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

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

- r. 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.
- s. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, 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. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

- a. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including, 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 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 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) or Toxicity Evaluation Study (TES), this Order may be reopened to include a new chronic toxicity numeric monitoring trigger, chronic toxicity effluent limitation, a revised acute toxicity effluent limitation, and/or an effluent limitation for a specific

toxicant identified in a TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions, this Order may be reopened to implement 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 when developing effluent limitations for metals. 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.
- 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 approved the Drinking Water Policy on 3 December 2013. 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. **Groundwater Monitoring Well Replacement Technical Report.** Based on a review of the Groundwater Monitoring Well Replacement Technical Report, this Order may be reopened for the addition and/or modification of land discharge specifications, groundwater limitations, and/or water quality monitoring requirements.
- i. **Mixing Improvements.** This Order may be reopened to increase dilution credits and/or modify final effluent limitations, if appropriate, based on implementation of measures that improve mixing dynamics. These improvements may include modifications to the diffuser.
- j. **Flow Control.** This Order may be reopened for the addition and/or modification of effluent limitations, mixing zones, and/or dilution credits, if appropriate, based on implementation of operational measures that ensure a higher minimum river to effluent flow ratio.
- k. **Minimum Whitewater Recreation Flow Rate.** This Order may be reopened to allow for an adjustment to the minimum whitewater recreation flow rate, if appropriate, as a result of the establishment of an upstream receiving water flow measurement station (located downstream of Box Canyon Dam) and the submittal of information that would justify a modification to the minimum whitewater recreation flow rate.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

- a. **Toxicity Reduction Evaluation Requirements.** This Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the chronic toxicity thresholds defined in this Provision, 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 effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. Alternatively, under certain conditions as described in this provision below, the Discharger may participate in an approved Toxicity Evaluation Study (TES) in lieu of conducting a site-specific TRE.

- i. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is > 1 TUC (where $TUC = 100/NOEC$). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate additional actions to evaluate effluent toxicity as specified in subsection ii, below.
- ii. **Chronic Toxicity Monitoring Trigger Exceeded.** When a chronic whole effluent toxicity result during routine monitoring exceeds the chronic toxicity monitoring trigger, the Discharger shall proceed as follows:
 - (a) **Initial Toxicity Check.** If the result is less than or equal to 1.3 TUC (as $100/EC_{25}$) AND the percent effect is less than 25 percent, check for any operation or sample collection issues and return to routine chronic toxicity monitoring.¹ Otherwise, proceed to step (b).
 - (b) **Evaluate 6-week Median.** The Discharger may take two additional samples within 6 weeks of the initial routine sampling event exceeding the chronic toxicity monitoring trigger to evaluate compliance using a 6-week median. If the 6-week median is greater than 1.3 TUC (as $100/EC_{25}$) and the percent effect is greater than 25 percent, proceed with subsection (c). Otherwise, the Discharger shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring.
 - (c) **Toxicity Source Easily Identified.** 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 resume routine chronic toxicity monitoring; If the source of toxicity is not easily identified the Discharger shall conduct a site-specific TRE or participate in an approved TES as described in the following subsections.
 - (d) **Toxicity Evaluation Study.** If the percent effect is ≤ 50 percent at 100 percent effluent, as the median of up to three consecutive chronic toxicity tests within a 6 week period, the Discharger may participate in an approved TES in lieu of a site-specific TRE. The TES may be conducted individually or as part of a coordinated group effort with other similar dischargers. If the Discharger chooses not to participate in an approved TES, a site-specific TRE shall be initiated in accordance with subsection (e) below. Nevertheless, the Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a site-specific TRE within the past 12 months and has been unsuccessful in identifying the toxicant.
 - (e) **Toxicity Reduction Evaluation.** If the percent effect is > 50 percent at 100 percent effluent, as the median of three consecutive chronic toxicity tests within a 6 week period, the Discharger shall initiate a site-specific TRE as follows:

¹ The Discharger shall participate in an approved Toxicity Evaluation Study if the chronic toxicity monitoring trigger is exceeded twice or more in the past 12 month period and the cause is not identified and/or addressed.

(1) **Within thirty (30) days** of exceeding the chronic toxicity monitoring trigger, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

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

- b. **Groundwater Monitoring Well Replacement.** To determine compliance with Groundwater Limitations V.B., this provision requires the Discharger to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells upgradient of the Highway 89 leachfield that allow for the measurement of groundwater depth and provide reliable groundwater quality data. The Discharger can ensure this by the installation of a new background well, or locating a suitable, existing well. **Within 6 months following the effective date of this Order**, the Discharger shall submit a Groundwater Monitoring Well Replacement Work Plan for approval by the Executive Officer detailing a plan to either locate an existing well, or construct a new monitoring well, and justification regarding the appropriateness of the well for background comparison purposes, including appropriate geologic material and depth to represent groundwater before it passes under the leachfield. **Within 12 months following Executive Officer approval of the Work Plan**, a technical report must be submitted containing details on well construction of the new or existing well (i.e. lithographic log, total depth, screened intervals), the location of the well, permission from land owner to conduct quarterly groundwater sampling if applicable, and statement of ability to conduct groundwater level measurements. **Monitoring of the groundwater in the replacement background monitoring well shall begin in the first quarter following the submission of the technical report.**
- c. **Outfall Line and Diffuser Repair.** Order R5-2012-0087 identified that the Facility's outfall line and diffuser must be repaired to eliminate leaks in the pipeline and to ensure effluent is discharged below the receiving water surface in a manner that optimizes the available mixing of the effluent with the receiving water. In October 2013, the Discharger submitted a work plan to address the outfall pipeline and diffuser deficiencies. The outfall line and diffuser deficiencies must be remedied **within 5 years of the effective date of this Order.**

3. Best Management Practices and Pollution Prevention

- a. **Salinity Evaluation and Minimization Plan.** The Discharger shall continue to implement a salinity evaluation and minimization plan to identify and address sources of salinity discharged from the Facility. The Discharger shall evaluate the effectiveness of the salinity evaluation and minimization plan and provide a summary with the Report of Waste Discharge, due 1-year prior to the permit expiration date.

4. Construction, Operation and Maintenance Specifications

- a. **Turbidity.** Effective immediately or upon compliance with Special Provision VI.C.6.a, whichever is sooner, effluent turbidity shall not exceed:

- 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.

The effluent turbidity specification shall not apply from 16 November through 14 April when a receiving water to effluent ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs.

Prior to compliance with Special Provision VI.C.6.a., effluent turbidity shall not exceed 5.0 NTU and 10 NTU, as a weekly average and a daily maximum, respectively, from 15 April through 14 June and 16 September through 15 November. This interim specification is consistent with the turbidity effluent limitations contained in previous Orders.

- b. **Treatment Pond Operating Requirements.**

- i. The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
- ii. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.
- iii. Ponds shall be managed to prevent breeding of mosquitos. In particular,
 - (b) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
 - (c) Weeds shall be minimized.
 - (d) 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).
- vi. Prior to the onset of the rainy season of each year, available pond storage capacity shall at least equal the volume necessary to comply with the Land Discharge Specification at section VI.C.4.b.v, above.
- vii. The discharge of waste classified as "hazardous" as defined in section 2521(a) of Title 23, California Code of Regulations (CCR), or "designated", as defined in section 13173 of the Water Code, to the treatment ponds is prohibited.
- viii. Objectionable odors originated at the Facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas (or property owned by the Discharger).

- c. **Average Dry Weather Flow.** The permitted design average dry weather flow for the Facility is 0.8 MGD. 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 influent average daily flow over three consecutive dry weather months. The inflow and infiltration in the Mt. Shasta area is high due to the presence of springs and high groundwater which persist late into the summer. For this reason, the dry weather flow period may be considered to be 1 August through 31 October.

5. Special Provisions for Publicly-Owned Treatment Works (POTWs)

- a. **Pretreatment Requirements.** The average dry weather design flow for the Facility is less than 5 mgd and the Facility does not receive discharges from Significant Industrial Users. Under these conditions, the Discharger is not required to develop a pretreatment program pursuant to USEPA regulations set forth in 40 CFR Part 403.
- b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 C.F.R. 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 C.F.R. part 503. If the State Water Board and the Central Valley Water Board are given the authority to implement regulations contained in 40 C.F.R. 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 C.F.R. part 503 whether or not they have been incorporated into this Order.

- iii. The Discharger shall comply with Section IX.A. Biosolids of the Monitoring and Reporting Program, Attachment E.
 - iv. The onsite sludge/biosolids treatment, processing, and storage for the Facility are described in the Fact Sheet (Attachment F, Section II.A). Any proposed change in the onsite treatment, processing or storage of sludge/biosolids shall be reported to the Executive Officer at least **90 days** in advance of the change, and shall not be implemented until written approval by the Executive Officer is received.
- c. **Collection System.** The Discharger is subject to the requirements of, and must comply with, State Water Resources Control Board (State Water Board) Order 2006-0003-DWQ, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems as amended by State Water Board Order WQ 2013-0058-EXEC and any subsequent order.

6. Other Special Provisions

- a. **Title 22, or Equivalent, Disinfection Requirements.** During periods of effluent discharge to surface water, with the exception of effluent discharges from 16 November through 14 April where a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs, all wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the State Water Board, Division of Drinking Water (DDW) reclamation criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent, in accordance with the compliance schedule in Section VI.C.7.a, below.

7. Compliance Schedules

- a. **Title 22, or Equivalent, Disinfection Requirements.** By **22 November 2022**, wastewater discharged to the Sacramento River (with the exception of effluent discharges from 16 November through 14 April when a receiving water to effluent flow ratio of $\geq 20:1$ exists and the receiving water flow is < 400 cfs) shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DDW reclamation criteria, Title 22 CCR, Division 4, Chapter 3, (Title 22), or equivalent. The effluent shall be disinfected in accordance with the total coliform organisms effluent limitations set forth in this Order, which are equivalent to "disinfected tertiary recycled water" disinfection requirements; however, wastewater treated for discharge need not comply with the CT requirement (total chlorine residual multiplied by the modal contact time measured at the same point) specified in Title 22 Section 60301.230(a) or the disinfection process outline in Section 60301.230 (b). Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, section X.D.1).

The Discharger shall comply with the following time schedule to ensure compliance with the Title 22 (or equivalent) Disinfection Requirements:

<u>Task</u>	<u>Date Due</u>
i. Submit Method of Compliance Workplan/Schedule	Submitted May 2013
ii. Submit Method of Compliance Project Report (Preliminary Engineering Report)	Submitted December 2016
iii. Submit Finalized Financing Plan and Begin Final Design of Compliance Project	Within 6 months of the effective date of this Order.
iv. Complete Design of Compliance Project and Award Bid For Construction of Compliance Project	Within 1 year of the effective date of this Order
v. Begin Construction of Compliance Project	Within 18 months of the effective date of this Order.
vi. Complete Concrete Infrastructure and Building Construction	Within 2 years of the effective date of this Order
vii. Complete Construction of Compliance Project	Within 3 years of the effective date of this Order
viii. Facility Start-Up Completed	Within 42 months of the effective date of this Order
ix. Progress Reports ¹	1 June, annually until final compliance
x. Full Compliance	22 November 2022

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

b. **Compliance Schedule for Final Effluent Limitations for BOD₅, TSS, and pH.**

The previous Order R5-2012-0086 contained a compliance schedule for final effluent limitations that extended into the term of this Order. This Order continues the compliance schedule adopted in the previous Order, and requires compliance with the final effluent limitations for BOD₅, TSS, and pH by **22 November 2022**.

The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations for BOD, TSS, and pH:

<u>Task</u>	<u>Date Due</u>
i. Submit Method of Compliance Workplan/Schedule	Submitted March 2013
ii. Submit and Implement Pollution Prevention Plan (PPP) ¹ for pH	Submitted April 201
iii. Submit Method of Compliance Project Report (Preliminary Engineering Report)	Submitted December 2016

<u>Task</u>	<u>Date Due</u>
iv. Submit Finalized Financing Plan for and Begin Final Design of Compliance Project	Within 6 months of the effective date of this Order.
v. Complete Design of Compliance Project and Award Bid For Construction of Compliance Project	Within 1 year of the effective date of this Order
vi. Begin Construction of Compliance Project	Within 18 months of the effective date of this Order.
vii. Complete Concrete Infrastructure and Building Construction	Within 2 years of the effective date of this Order
viii. Complete Construction of Compliance Project	Within 3 years of the effective date of this Order
ix. Facility Start-Up Completed	Within 42 months of the effective date of this Order
x. Progress Reports ¹	1 June, annually until final compliance
xi. Full Compliance	22 November 2022

¹ The PPP for pH was prepared and is implemented in accordance with Water Code section 13263.3(d)(3).

² The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final compliance date.

- c. **Compliance Schedule for Land Discharge Specifications for BOD₅ and TSS.**
This Order requires compliance with land discharge specifications for BOD₅ and TSS by **31 January 2023 (within 5 years of the effective date of this Order.)**
Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, section X.D.1).
Although the more stringent land discharge specifications are new to this Order, the Preliminary Engineering Report already submitted by the Discharger contains plans for Facility modifications that will allow the Discharger to be in compliance with the final land discharge specifications contained in this Order. Therefore, it is not necessary for the Discharger to resubmit a method of compliance workplan, method of compliance project report, or financing plan.
- The Discharger shall comply with the following time schedule to ensure compliance with the final land discharge specifications:

<u>Task</u>	<u>Date Due</u>
i. Submit Finalized Financing Plan for and Begin Final Design of Compliance Project	Within 6 months of the effective date of this Order.
ii. Complete Design of Compliance Project and Award Bid For Construction of Compliance Project	Within 1 year of the effective date of this Order

<u>Task</u>	<u>Date Due</u>
iii. Begin Construction of Compliance Project	Within 18 months of the effective date of this Order.
iv. Complete Concrete Infrastructure and Building Construction	Within 2 years of the effective date of this Order
v. Complete Construction of Compliance Project	Within 3 years of the effective date of this Order
vi. Facility Start-Up Completed	Within 42 months of the effective date of this Order
vii. Progress Reports ¹	1 June, annually until final compliance
viii. Full Compliance	31 January 2023

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

VII. COMPLIANCE DETERMINATION

- A. BOD₅ and TSS Effluent Limitations (Section IV.A.1.a & c).** Compliance with the final effluent limitations for BOD₅ 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.c for percent removal shall be calculated using the arithmetic mean of BOD₅ 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. Peak Wet Weather Flow Prohibition (Section III.G).** Compliance with the peak wet weather flow prohibition will be determined based on the average daily flow when discharging to the Sacramento River. The average daily flow is determined by dividing the total volume of flow discharged by the number of days discharge to the Sacramento River occurred during the month.
- C. Total Coliform Organisms Effluent Limitations (Section IV.A.1.f & g).** 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 or 23 per 100 milliliters, depending on flow conditions, the Discharger will be considered out of compliance.

Because total coliform organism limitations vary based on effluent and receiving water flows and dilution ratios, determination of compliance with the limitations requires the Discharger to report effluent and receiving water flows and dilution ratios for the appropriate time period. If

the Discharger is unable to adequately demonstrate compliance with the “flow-dependent” limitations for total coliform organisms, as a result of real-time access to receiving water flow conditions, then the more stringent of the total coliform organism limitations (Section IV.A.1.f) will apply for the purpose of compliance determination.

- D. Instantaneous Minimum/Maximum Effluent Limitation for pH (Section IV.A.1.a).** If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation). If pH is monitored continuously, the Discharger shall be in compliance with pH limitations provided that the total excursion time does not exceed 20 minutes within a calendar day. For the purpose of establishing a pH excursion, a 20-minute running average may be used (measured continuously at no greater than 5 second intervals).
- E. 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 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).

- F. Mass Effluent Limitations.** The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a and Interim Effluent Limitations IV.A.2.a are based on the permitted average dry weather flow or peak wet weather flow, as appropriate, and calculated as follows:

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

- 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:
 - 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.
- H. Dissolved Oxygen Receiving Water Limitation (Section V.A.5.a-c).** Weekly dissolved oxygen receiving water monitoring is required in the Monitoring and Reporting Program (Attachment E) and is sufficient to evaluate the impacts of the discharge and compliance with this Order. Weekly receiving water monitoring data, measured at monitoring locations RSW-001 and RSW-002, will be used to determine compliance with part "c" of the dissolved oxygen receiving water limitation to ensure the discharge does not cause the dissolved oxygen concentrations in the Sacramento River to be reduced below 7.0 mg/L at any time. However, should more frequent dissolved oxygen and temperature receiving water monitoring be conducted, Central Valley Water Board staff may evaluate compliance with parts "a" and "b".
- I. Average Dry Weather Flow Provision (Section VI.C.4.c).** 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 provision will be determined annually based on the influent average daily flow over three consecutive dry weather months. The inflow and infiltration in the Mt. Shasta area is high due to the presence of springs and high groundwater which persist late into the summer. For this reason, the dry weather flow period may be considered to be 1 August through 31 October.

ATTACHMENT A – DEFINITIONS

Acutely Toxic Conditions

As used in the context of mixing zones, refers to lethality that occurs to mobile aquatic organisms that move or drift through the mixing zone.

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.

Completely-Mixed Discharge

A condition that means not more than a 5 percent difference, accounting for analytical variability, in the concentration of a pollutant exists across a transect of the water body at a point within two stream/river widths from the discharge point.

Daily Discharge

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

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

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

Detected, but Not Quantified (DNQ)

DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL. 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.

Dilution Ratio

Dilution ratio is the critical low flow of the upstream receiving water divided by the flow of the effluent discharged.

Effect Concentration (EC)

A point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapacitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC₂₅ is a point estimate of the toxicant concentration that would cause an observable adverse effect in 25 percent of the test organisms.

Effluent Concentration Allowance (ECA)

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

Enclosed Bays

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

Endpoint

An effect that is measured in a toxicity study. Endpoints in toxicity tests may include, but are not limited to survival, reproduction, and growth.

Estimated Chemical Concentration

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

Estuaries

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters

shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters 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.

Four-Day Average of Daily Maximum Flows

The average of daily maximums taken from the data set in four-day intervals.

Incompletely-Mixed Discharge

A discharge that contributes to a condition that does not meet the meaning of a completely-mixed discharge condition.

Inland Surface Waters

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

Instantaneous Maximum Effluent Limitation

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

Instantaneous Minimum Effluent Limitation

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

Maximum Daily Effluent Limitation (MDEL)

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

Median

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

Method Detection Limit (MDL)

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 C.F.R. part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)

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

Mixing Zone

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

No-Observed-Effect-Concentration (NOEC)

The highest concentration of toxicant to which organisms are exposed in a full life-cycle or partial life-cycle (short-term) test, that causes no observable adverse effects on the test organisms (i.e., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls).

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.

Percent Effect

The percent effect at the instream waste concentration (IWC) shall be calculated using untransformed data and the following equation:

$$\text{Percent Effect at the IWC} = \frac{\text{Mean Control Response} - \text{Mean IWC Response}}{\text{Mean Control Response}} \cdot 100$$

Persistent Pollutants

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

Pollutant Minimization Program (PMP)

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

Reporting Level (RL)

RL is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Central Valley Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the

SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of then. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System

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

Source of Drinking Water

Any water designated as municipal or domestic supply (MUN) in a 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 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.)

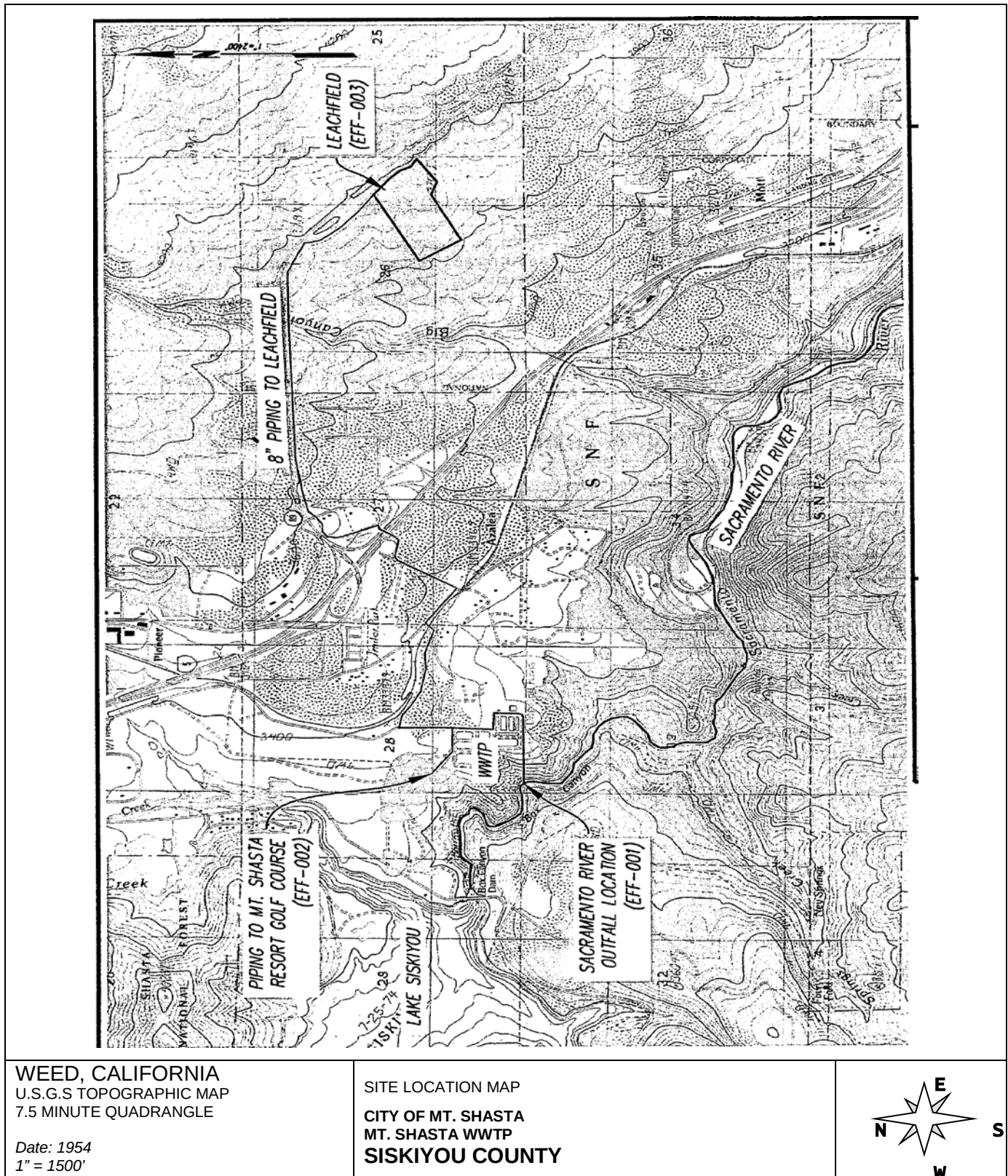
1Q10

1Q10 is the lowest flow that occurs for one day with a statistical frequency of once every 10 years.

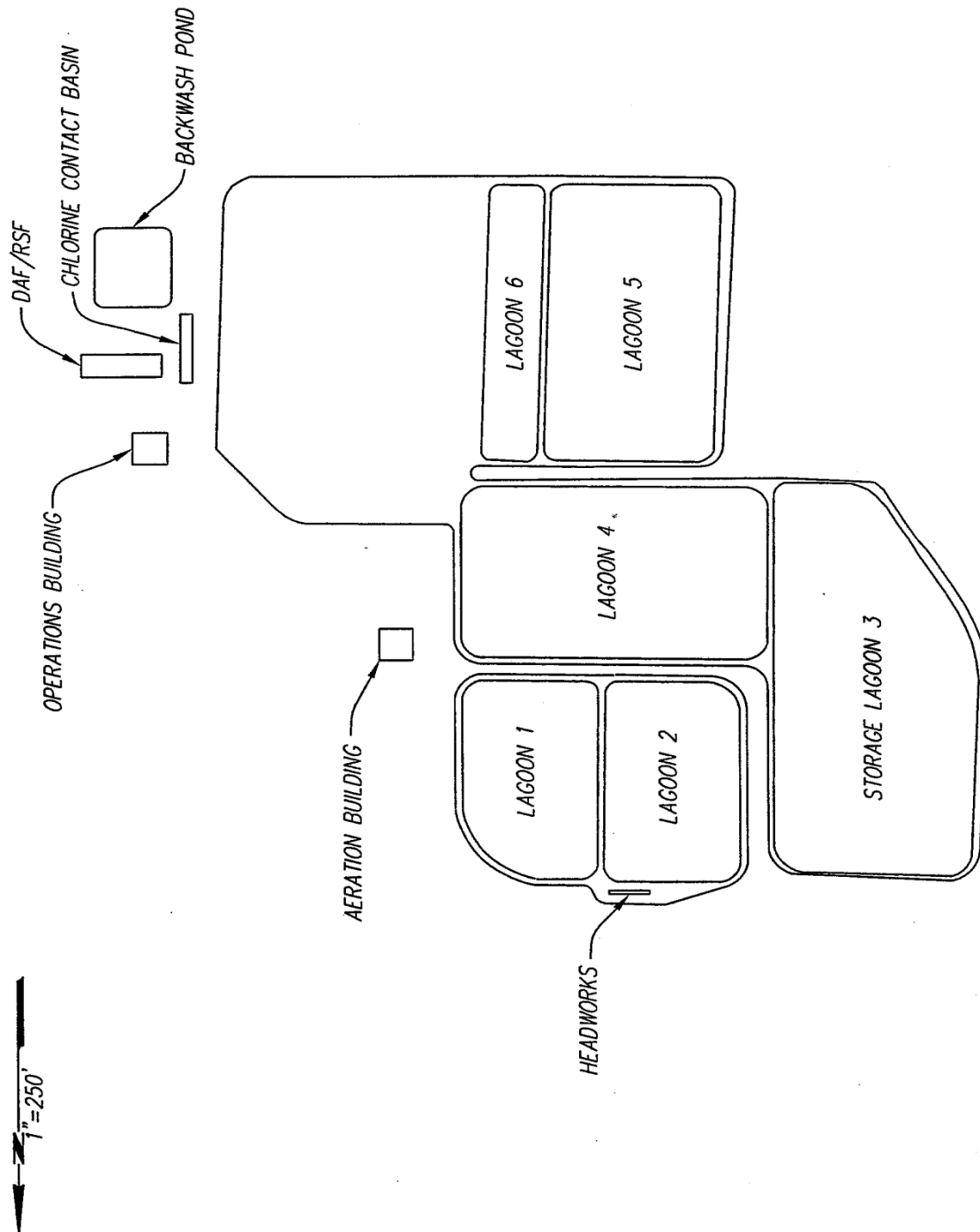
7Q10

7Q10 is the average low flow that occurs for seven consecutive days with a statistical frequency of once every 10 years.

ATTACHMENT B – MAP



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 terms, requirements, and conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385.)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

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 C.F.R. § 122.41(c).)

C. Duty to Mitigate

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

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 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 122.41(g).)
2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Central Valley Water Board, State Water Board, U.S. EPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (33 U.S.C. § 1318(a)(4)(B); 40 C.F.R. § 122.41(i); Wat. Code, § 13267, 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(1); Wat. Code, §§ 13267, 13383);
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (33 U.S.C. § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(2); Wat. Code, §§ 13267, 13383);
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (33 U.S.C § 1318(a)(4)(B)(ii); 40 C.F.R. § 122.41(i)(3); Wat. Code, § 13267, 13383); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (33 U.S.C § 1318(a)(4)(B); 40 C.F.R. § 122.41(i)(4); Wat. Code, §§ 13267, 13383.)

G. Bypass

1. Definitions
 - a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(m)(2).)
3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 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 C.F.R. § 122.41(m)(4)(i)(B)); and
 - c. The Discharger submitted notice to the Central Valley Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)

4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 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 prior notice, if possible at least 10 days before the date of the bypass. The notice shall be sent to the Central Valley Water Board. As of 21 December 2020, all notices shall be submitted electronically to the initial recipient (State Water Board), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(i).)
 - b. Unanticipated bypass. The Discharger shall submit a notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). The notice shall be sent to the Central Valley Water Board. As of 21 December 2020, all notices shall be submitted electronically to the initial recipient (State Water Board), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(n)(2).)
2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):
 - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 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 C.F.R. § 122.41(n)(3)(iii)); and
 - d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley 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 C.F.R. § 122.41(l)(3); 122.61.)

III. STANDARD PROVISIONS – MONITORING

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

B. Monitoring must be conducted according to test procedures approved under 40 C.F.R. part 136 for the analyses of pollutants unless another method is required under 40 C.F.R. subchapters N or O. Monitoring must be conducted according to sufficiently sensitive test methods approved under 40 C.F.R. part 136 for the analysis of pollutants or pollutant parameters or as required under 40 C.F.R. chapter 1, subchapter N or O. For the purposes of this paragraph, a method is sufficiently sensitive when the method has the lowest ML of the analytical methods approved under 40 C.F.R. part 136 or required under 40 C.F.R. chapter 1, subchapter N or O for the measured pollutant or pollutant parameter, or when:

1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, and:
 - a. The method ML is at or below the level of the most stringent applicable water quality criterion for the measured pollutant or pollutant parameter, or;
 - b. The method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge;

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

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. 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 Central Valley Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)

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

1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Central Valley Water Board, State Water Board, or U.S. EPA within a reasonable time, any information which the Central Valley Water Board, State Water Board, or U.S. EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Central Valley Water Board, State Water Board, or U.S. EPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, §§ 13267, 13383.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, V.B.5, and V.B.6 below. (40 C.F.R. § 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 U.S. EPA). (40 C.F.R. § 122.22(a)(3).)
3. All reports required by this Order and other information requested by the Central Valley Water Board, State Water Board, or U.S. EPA 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 C.F.R. § 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 C.F.R. § 122.22(b)(2)); and
 - c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. § 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 Central Valley Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.” (40 C.F.R. § 122.22(d).)
6. Any person providing the electronic signature for such documents described in Standard Provision – V.B.1, V.B.2, or V.B.3 that are submitted electronically shall meet all relevant requirements of Standard Provisions – Reporting V.B, and shall ensure that all of the relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R. § 122.22(e).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4).)
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for reporting the results of monitoring, sludge use, or disposal practices. As of 21 December 2016 all reports and forms must be submitted electronically to the initial recipient, defined in Standard Provisions – Reporting V.J, and comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 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 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in

the DMR or sludge reporting form specified by the Central Valley Water Board. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

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

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

As of 21 December 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events must be submitted electronically to the initial recipient (State Water Board) defined in Standard Provisions – Reporting V.J. The reports shall comply with 40 C.F.R. part 3. The may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(6)(i).)

F. Planned Changes

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

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 C.F.R. § 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 C.F.R. § 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 section

122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order's requirements. (40 C.F.R. § 122.41(l)(2).)

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. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in Standard Provision – Reporting V.E and the applicable required data in appendix A to 40 C.F.R. part 127. The Central Valley Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(7).)

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 Central Valley Water Board, State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

J. Initial Recipient for Electronic Reporting Data

The owner, operator, or the duly authorized representative is required to electronically submit NPDES information specified in appendix A to 40 C.F.R. part 127 to the appropriate initial recipient, as determined by U.S. EPA, and as defined in 40 C.F.R. section 127.2(b). U.S. EPA will identify and publish the list of initial recipients on its website and in the Federal Register, by state and by NPDES data group [see 40 C.F.R. section 127.2(c)]. U.S. EPA will update and maintain this listing. (40 C.F.R. § 122.41(l)(9).)

VI. STANDARD PROVISIONS – ENFORCEMENT

- A.** 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.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTW's)

All POTW's shall provide adequate notice to the Central Valley Water Board of the following (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Contents

I.	General Monitoring Provisions	E-2
II.	Monitoring Locations	E-3
III.	Influent Monitoring Requirements.....	E-4
	A. Monitoring Location INF-001.....	E-4
IV.	Effluent Monitoring Requirements	E-4
	A. Monitoring Location EFF-001.....	E-4
V.	Whole Effluent Toxicity Testing Requirements	E-5
VI.	Land Discharge Monitoring Requirements	E-8
	A. Monitoring Location LND-001	E-8
VII.	Recycling Monitoring Requirements.....	E-8
	A. Monitoring Location REC-001	E-8
	B. Monitoring Location REC-002	E-8
VIII.	Receiving Water Monitoring Requirements	E-9
	A. Monitoring Location RSW-001	E-9
	B. Monitoring Location RSW-002	E-9
	C. Monitoring Location RGW-001, RGW-002, RGW-003, RGW-004, RGW-00X	E-10
IX.	Other Monitoring Requirements	E-11
	A. Biosolids Monitoring – Not Applicable	E-11
	B. Municipal Water Supply	E-11
	C. Effluent and Receiving Water Characterization	E-11
X.	Reporting Requirements	E-15
	A. General Monitoring and Reporting Requirements	E-15
	B. Self-Monitoring Reports (SMRs)	E-15
	C. Discharge Monitoring Reports (DMR's).....	E-18
	D. Other Reports	E-18

Tables

Table E-1.	Monitoring Station Locations	E-3
Table E-2.	Influent Monitoring	E-4
Table E-3.	Effluent Monitoring.....	E-4
Table E-4.	Chronic Toxicity Testing Dilution Series.....	E-7
Table E-5.	Land Discharge Monitoring Requirements	E-8
Table E-6.	Recycled Water Monitoring Requirements (REC-001)	E-8
Table E-7.	Recycled Water Monitoring Requirements (REC-002)	E-9
Table E-8.	Receiving Water Monitoring Requirements.....	E-9
Table E-9.	Receiving Water Monitoring Requirements.....	E-9
Table E-10.	Groundwater Monitoring Requirements	E-10
Table E-11.	Municipal Water Supply Monitoring Requirements.....	E-11
Table E-12.	Effluent and Receiving Water Characterization Monitoring	E-11
Table E-13.	Monitoring Periods and Reporting Schedule.....	E-16
Table E-14.	Reporting Requirements for Special Provisions Reports.....	E-19

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 C.F.R. § 122.48) requires that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement 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 accredited for such analyses by the State Water Resources Control Board (State Water Board), Division of Drinking Water (DDW; formerly the Department of Public Health). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event an accredited laboratory is not available to the Discharger for any onsite field measurements such as pH, dissolved oxygen (DO), turbidity, temperature, and residual chlorine, such analyses performed by a non-accredited laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by 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.
- 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 DDW, 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 ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation

Study are submitted annually to the State Water Resources Control Board at the following address:

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

- 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.

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	Immediately upstream of influent Parshall Flume. Latitude: 41.28020° Longitude: -122.31474°
001	EFF-001	Sampled at effluent discharge from dechlorination chamber (to river). Latitude: 41.27644° Longitude: -122.31861°
002	LND-001	Sampled at effluent discharge from dechlorination chamber (to Hwy 89 leachfield). Latitude: 41.27644° Longitude: -122.31861°
003	REC-001	Sampled at effluent discharge from dechlorination chamber (to Mt. Shasta Golf Resort). Latitude: 41.27644° Longitude: -122.31861°
--	REC-002	Effluent prior to dechlorination chamber.
--	RSW-001	Lake Siskiyou immediately upstream of lake discharge to Sacramento River at Box Canyon Dam or Sacramento River immediately downstream of Box Canyon Dam Latitude: 41.27921° Longitude: -122.32796°
--	RSW-002	Sacramento River 1.15 miles downstream of Facility outfall, upstream of Ney Springs fishing access. Latitude: 41.27162° Longitude: -122.31397°
--	RGW-001	Upgradient monitoring well (Tillman Well) Latitude: 41.27833° Longitude: -122.24300°
--	RGW-00X	Upgradient monitoring well (Location yet to be determined.) Required pursuant to section VI.C.2.b of this Order.
--	RGW-002	Downgradient monitoring well (Needland Well) Latitude: 41.26458° Longitude: -122.27417°
--	RGW-003	Legacy Downgradient monitoring well (Southwest Corner of Hwy 89 Leachfield) Latitude: 41.28019° Longitude: -122.27542°
--	RGW-004	Downgradient monitoring well (New Hwy 89 Leachfield Well) Latitude: 41.28115° Longitude: -122.27613°

--	SPL-001	Municipal Water Supply
----	----------------	------------------------

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

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

- The Discharger shall monitor influent to the Facility at INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
pH	standard units	Grab ²	1/Week	1
Biochemical Oxygen Demand(5-day @ 20°C)	mg/L	24-hr Composite ³	1/Week	1
Total Suspended Solids	mg/L	24-hr Composite ³	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 Grab samples shall not be collected at the same time each day to get a complete representation of variations in the influent.

³ 24-hour flow proportional composite.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

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

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	1
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20° C)	mg/L	24-hr Composite ²	1/Week	1
	lbs/day	Calculate	1/Week	--
Total Suspended Solids	mg/L	24-hr Composite ²	1/Week	1
	lbs/day	Calculate	1/Week	--
pH	standard units	Meter	Continuous ^{3,4}	1
Priority Pollutants				
Bis (2-ethylhexyl) phthalate	µg/L	Grab	1/Month	1, 5, 6, 13
Copper, Total Recoverable	µg/L	24-hr Composite ²	1/Month	1, 6
Zinc, Total Recoverable	µg/L	24-hr Composite ²	1/Month	1, 6
Priority Pollutants and Other Constituents of Concern	See Section IX.C	See Section IX.C	See Section IX.C	1, 6
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month ^{3,7}	1
Chlorine, Total Residual	mg/L	Meter	Continuous	1, 8

Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	¹
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Month ⁹	¹
Iron, Total Recoverable	µg/L	Grab	1/Month	¹
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Month ¹⁰	¹
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Month ¹⁰	¹
Settleable Solids	ml/L	Grab	1/Week	¹
Standard Minerals ¹¹	mg/L	Grab	1/Year	¹
Temperature	°C	Grab	1/Day ^{3,4}	¹
Total Coliform Organisms	MPN/100 mL	Grab	2/Week ¹²	¹
Total Dissolved Solids	mg/L	Grab	1/Month	¹
Turbidity	NTU	Meter	1/Day	
Whole Effluent Toxicity	See Section V	See Section V	See Section V	

- ¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.
- ² 24-hour flow proportional or time composite.
- ³ pH and temperature shall be recorded at the time of ammonia sample collection.
- ⁴ A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
- ⁵ 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.
- ⁶ 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 Attachment E, Table E-12).
- 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 Hardness samples shall be collected concurrently with metals samples.
- ¹⁰ Monitoring for nitrite and nitrate shall be conducted concurrently.
- ¹¹ 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).
- ¹² Samples for total coliform organisms may be collected at any point following disinfection.
- ¹³ Sampling and analysis of Bis (2-ethylhexyl) phthalate shall be conducted using ultra-clean techniques that eliminate the possibility of sample contamination.

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 quarterly acute toxicity testing, concurrent with effluent ammonia sampling.
 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 Location EFF-001.
 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 meet the following chronic toxicity testing requirements:

1. Monitoring Frequency – The Discharger shall perform routine annual chronic toxicity testing. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by a result greater than 1.3 TUC (as 100/EC₂₅) AND a percent effect greater than 25 percent at 100 percent effluent, the Discharger has the option of conducting two additional compliance monitoring events and performing chronic toxicity testing using the species that exhibited toxicity in order to calculate a median. The optional compliance monitoring events shall occur at least one week apart, and the final monitoring event shall be collected no later than 6 weeks from the routine monitoring event that exhibited toxicity.
2. Sample Types – Effluent 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 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 – Annual testing shall be conducted using the following three species: the water flea (*Ceriodaphnia dubia*), the fathead minnow (*Pimephales promelas*), and green algae (*Pseudokirchneriella subcapitata*, formerly *Selenastrum capricornutum*), unless otherwise specified in writing by the Executive Officer.
5. Methods – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002.
6. Reference Toxicant – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.
7. Dilutions – For routine and compliance chronic toxicity monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. 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 water control may be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions ^a (%)					Control
	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 the Method Manual.
9. **Ammonia Toxicity** – The chronic toxicity testing may be modified to eliminate ammonia-related toxicity until 27 May 2020, at which time the Discharger shall be required to implement the test without modifications to eliminate ammonia toxicity.
- 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.** Routine and compliance chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the annual self-monitoring report, and shall contain, at minimum:
 - 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 annual 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 type, i.e., routine, compliance, TES, or TRE monitoring.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location LND-001

- The Discharger shall monitor treated wastewater discharge at LND-001 as follows:

Table E-5. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	¹
Monthly Discharge Volume	MG	Calculated	1/Month	--
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	24-hr Composite ²	1/Week	¹
	lbs/day	Calculated	1/Week	--
Total Suspended Solids	mg/L	24-hr Composite ²	1/Week	¹
	lbs/day	Calculated	1/Week	--
pH	SU	Meter	Continuous	¹
Chlorine, Total Residual	mg/L	Meter	Continuous	¹
Total Coliform Organisms	MPN/100 mL	Grab	2/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 24-hour flow proportional composite.

VII. RECYCLING MONITORING REQUIREMENTS

A. Monitoring Location REC-001

- The Discharger shall monitor treated wastewater for the discharge to Mt. Shasta Golf Course at REC-001 as follows:

Table E-6. Recycled Water Monitoring Requirements (REC-001)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	¹
Monthly Discharge Volume	MG	Calculated	1/Month	--
Biochemical Oxygen Demand 5-day @ 20° C	mg/L	24-hr Composite ²	1/Week	¹
	lbs/day	Calculated	1/Week	--
Total Suspended Solids	mg/L	24-hr Composite ²	1/Week	¹
	lbs/day	Calculated	1/Week	--
pH	SU	Meter	Continuous	¹
Chlorine, Total Residual	mg/L	Meter	Continuous	¹
Total Coliform Organisms	MPN/100 mL	Grab	1/Day	¹
Turbidity	NTU	Meter	1/Day	¹

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

² 24-hour flow proportional composite.

B. Monitoring Location REC-002

- The Discharger shall monitor treated wastewater prior to dechlorination at REC-002 as follows:

Table E-7. Recycled Water Monitoring Requirements (REC-002)

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chlorine, Total Residual	mg/L	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.

VIII. RECEIVING WATER MONITORING REQUIREMENTS

A. Monitoring Location RSW-001

- The Discharger shall monitor the Sacramento River upstream of the discharge at RSW-001 as follows:

Table E-8. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow ³	cfs	Meter	Daily	--
pH	SU	Grab	1/Week	¹
Temperature	°F	Grab	1/Week	¹
Dissolved Oxygen	mg/L	Grab	1/Week	¹
Turbidity	NTU	Grab	1/Week	¹
Total Coliform Organisms	MPN/100 mL	Grab	1/Week	¹
Hardness (as CaCO ₃)	mg/L	Grab	1/Month	¹
Bis (2-ethylhexyl) phthalate	µg/L	Grab	2/Year	¹
Copper, Total Recoverable	µg/L	Grab	2/Year	¹
Zinc, Total Recoverable	µg/L	Grab	2/Year	¹
Standard Minerals ²	mg/L	Grab	1/Year	¹
Priority Pollutants and Other Constituents of Concern	See Section IX.C	See Section IX.C	See Section IX.C	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 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).

³ Flow to be measured at discharge from Box Canyon Dam from Lake Siskiyou.

B. Monitoring Location RSW-002

- The Discharger shall monitor the Sacramento River downstream of the discharge at RSW-002 as follows:

Table E-9. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dilution Ratio	--	Calculated ³	Daily ⁴	--
pH	SU	Grab	1/Week	¹
Temperature	°F	Grab	1/Week	¹
Dissolved Oxygen	mg/L	Grab	1/Week	¹
Turbidity	NTU	Grab	1/Week	¹

Total Coliform Organisms	MPN/100 mL	Grab	1/Week	1
Hardness (as CaCO ₃) ²	mg/L	Grab	2/Year	1
Bis (2-ethylhexyl) phthalate	µg/L	Grab	2/Year	1
Copper, Total Recoverable	µg/L	Grab	2/Year	1
Zinc, Total Recoverable	µg/L	Grab	2/Year	1

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

² Concurrent with semiannual receiving water metals sampling.

³ Calculated using Box canyon Dam flow measurement data and plant effluent flow data. If real-time dilution cannot be monitored, the more stringent of dilution based total coliform limitations shall apply.

⁴ Monitoring only required between 16 November and 14 April.

C. Monitoring Location RGW-001, RGW-002, RGW-003, RGW-004, RGW-00X

1. Prior to construction and/or beginning a sampling program of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Well Nos. RGW-001, RGW-002 and RGW-004) and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.
2. Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at RGW-001, RGW-002, RGW-004, legacy downgradient RGW-003 if required, and any new groundwater monitoring wells shall include, at a minimum, the following:

Table E-10. Groundwater Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	±0.01 feet	Measurement	1/Quarter	--
Groundwater Elevation ¹	±0.01 feet	Calculated	1/Quarter	--
Gradient	feet/feet	Calculated	1/Quarter	--
Gradient Direction	degrees	Calculated	1/Quarter	--
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Quarter	²
Total Dissolved Solids	mg/L	Grab	1/Quarter	²
Fixed Dissolved Solids	mg/L	Grab	1/Quarter	²
pH	SU	Grab	1/Quarter	²
Total Coliform Organisms	MPN/100 mL	Grab	1/Quarter	²
Total Nitrogen	mg/L	Grab	1/Quarter	²
Nitrate Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	²
Ammonia (as N)	mg/L	Grab	1/Quarter	²
Total Kjeldahl Nitrogen	mg/L	Grab	1/Quarter	²
Standard Minerals ³	µg/L	Grab	1/Quarter	²

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

- ² Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
- ³ Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids Monitoring – Not Applicable

B. Municipal Water Supply

1. Monitoring Location SPL-001

- a. The Discharger shall monitor the municipal water supply at SPL-001 as follows:

Table E-11. Municipal Water Supply Monitoring Requirements

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

- 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 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.
- ³ Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

C. Effluent and Receiving Water Characterization

- Quarterly Monitoring.** Quarterly samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table E-12, below. Quarterly monitoring shall be conducted during the third year of the permit term (**2020**) (4 consecutive samples, evenly distributed throughout the year) and the results of such monitoring be submitted to the Central Valley Water Board with the priority pollutant self-monitoring reports. If the Discharger does not discharge treated effluent to surface water during the second and third quarter of 2020, then quarterly monitoring shall continue into 2021 until 4 sets of sampling data have been collected. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.
- Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.
- Sample Type.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-12, below.

Table E-12. Effluent and Receiving Water Characterization Monitoring

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level ¹
	VOLATILE ORGANICS			
25	2-Chloroethyl vinyl ether	µg/L	Grab	1

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level ¹
17	Acrolein	µg/L	Grab	2
18	Acrylonitrile	µg/L	Grab	2
19	Benzene	µg/L	Grab	0.5
20	Bromoform	µg/L	Grab	0.5
21	Carbon Tetrachloride	µg/L	Grab	0.5
22	Chlorobenzene	µg/L	Grab	0.5
24	Chloroethane	µg/L	Grab	0.5
26	Chloroform	µg/L	Grab	2
35	Chloromethane (aka Methyl Chloride)	µg/L	Grab	2
23	Dibromochloromethane	µg/L	Grab	0.5
27	Dichlorobromomethane	µg/L	Grab	0.5
36	Dichloromethane (aka Methylene Chloride)	µg/L	Grab	2
33	Ethylbenzene	µg/L	Grab	2
88	Hexachlorobenzene	µg/L	Grab	1
89	Hexachlorobutadiene	µg/L	Grab	1
91	Hexachloroethane	µg/L	Grab	1
34	Methyl bromide (Bromomethane)	µg/L	Grab	1
94	Naphthalene	µg/L	Grab	10
38	Tetrachloroethene (PCE)	µg/L	Grab	0.5
39	Toluene	µg/L	Grab	2
40	trans-1,2-Dichloroethylene	µg/L	Grab	1
43	Trichloroethene (TCE)	µg/L	Grab	2
44	Vinyl chloride	µg/L	Grab	0.5
	Methyl-tert-butyl ether (MTBE)	µg/L	Grab	--
	Trichlorofluoromethane (Freon 11)	µg/L	Grab	--
41	1,1,1-Trichloroethane	µg/L	Grab	0.5
42	1,1,2-Trichloroethane	µg/L	Grab	0.5
28	1,1-dichloroethane	µg/L	Grab	0.5
30	1,1-dichloroethylene	µg/L	Grab	0.5
31	1,2-dichloropropane	µg/L	Grab	0.5
32	1,3-dichloropropylene	µg/L	Grab	0.5
37	1,1,2,2-tetrachloroethane	µg/L	Grab	0.5
	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 13)	µg/L	Grab	0.5
101	1,2,4-trichlorobenzene	µg/L	Grab	1
29	1,2-dichloroethane	µg/L	Grab	0.5
75	1,2-dichlorobenzene	µg/L	Grab	0.5
76	1,3-dichlorobenzene	µg/L	Grab	0.5
77	1,4-dichlorobenzene	µg/L	Grab	0.5
	Styrene	µg/L	Grab	--
	Xylenes	µg/L	Grab	--
SEMI-VOLATILE ORGANICS				
60	1,2-Benzanthracene (a.k.a. Benzo(a)anthracene)	µg/L	Grab	5
85	1,2-Diphenylhydrazine	µg/L	Grab	1
45	2-Chlorophenol	µg/L	Grab	5
46	2,4-Dichlorophenol	µg/L	Grab	5
47	2,4-Dimethylphenol	µg/L	Grab	2
49	2,4-Dinitrophenol	µg/L	Grab	5
82	2,4-Dinitrotoluene	µg/L	Grab	5
55	2,4,6-Trichlorophenol	µg/L	Grab	10
83	2,6-Dinitrotoluene	µg/L	Grab	5
50	2-Nitrophenol	µg/L	Grab	10
71	2-Chloronaphthalene	µg/L	Grab	10

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level ¹
78	3,3'-Dichlorobenzidine	µg/L	Grab	5
62	3,4-Benzofluoranthene (a.k.a. Benzo(b)fluoranthene)	µg/L	Grab	10
52	4-Chloro-3-methylphenol	µg/L	Grab	5
48	4,6-Dinitro-2-methylphenol	µg/L	Grab	10
51	4-Nitrophenol	µg/L	Grab	10
69	4-Bromophenyl phenyl ether	µg/L	Grab	10
72	4-Chlorophenyl phenyl ether	µg/L	Grab	5
56	Acenaphthene	µg/L	Grab	1
57	Acenaphthylene	µg/L	Grab	10
58	Anthracene	µg/L	Grab	10
59	Benzidine	µg/L	Grab	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
63	Benzo(g,h,i)perylene	µg/L	Grab	5
64	Benzo(k)fluoranthene	µg/L	Grab	2
65	Bis(2-chloroethoxy) methane	µg/L	Grab	5
66	Bis(2-chloroethyl) ether	µg/L	Grab	1
67	Bis(2-chloroisopropyl) ether	µg/L	Grab	10
68	Bis(2-ethylhexyl) phthalate ²	µg/L	Grab	5
70	Butyl benzyl phthalate	µg/L	Grab	10
73	Chrysene	µg/L	Grab	5
81	Di-n-butylphthalate	µg/L	Grab	10
84	Di-n-octylphthalate	µg/L	Grab	10
74	Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
79	Diethyl phthalate	µg/L	Grab	10
80	Dimethyl phthalate	µg/L	Grab	10
86	Fluoranthene	µg/L	Grab	10
87	Fluorene	µg/L	Grab	10
90	Hexachlorocyclopentadiene	µg/L	Grab	5
92	Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
93	Isophorone	µg/L	Grab	1
98	N-Nitrosodiphenylamine	µg/L	Grab	1
96	N-Nitrosodimethylamine	µg/L	Grab	5
97	N-Nitrosodi-n-propylamine	µg/L	Grab	5
95	Nitrobenzene	µg/L	Grab	10
53	Pentachlorophenol	µg/L	Grab	1
99	Phenanthrene	µg/L	Grab	5
54	Phenol	µg/L	Grab	1
100	Pyrene	µg/L	Grab	10
INORGANICS				
	Aluminum	µg/L	24-hr Composite ³	--
1	Antimony	µg/L	24-hr Composite ³	5
2	Arsenic	µg/L	24-hr Composite ³	2
15	Asbestos	MFL	24-hr Composite ³	--
	Barium	µg/L	24-hr Composite ³	--
3	Beryllium	µg/L	24-hr Composite ³	2
4	Cadmium	µg/L	24-hr Composite ³	0.25
5a (Cr III)	Chromium (Total)	µg/L	24-hr Composite ³	10
5b	Chromium (VI)	µg/L	24-hr Composite ³	10
7	Lead	µg/L	24-hr Composite ³	0.5
8	Mercury	µg/L	24-hr Composite ³	0.2
	Manganese	µg/L	24-hr Composite ³	--
	Molybdenum	µg/L	24-hr Composite ³	--
9	Nickel	µg/L	24-hr Composite ³	20
10	Selenium	µg/L	24-hr Composite ³	2

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level ¹
11	Silver	µg/L	24-hr Composite ³	0.25
12	Thallium	µg/L	24-hr Composite ³	1
NON-METALS/MINERALS				
	Boron	µg/L	24-hr Composite ³	--
	Chloride	mg/L	24-hr Composite ³	--
14	Cyanide	µg/L	24-hr Composite ³	5
	Fluoride	µg/L	24-hr Composite ³	--
	Phosphorus, Total (as P)	mg/L	24-hr Composite ³	--
	Sulfate	mg/L	24-hr Composite ³	--
	Sulfide (as S)	mg/L	24-hr Composite ³	--
	Sulfite (as SO ₃)	mg/L	24-hr Composite ³	--
PESTICIDES/PCBs/DIOXINS				
110	4,4'-DDD	µg/L	24-hr Composite ³	0.05
109	4,4'-DDE	µg/L	24-hr Composite ³	0.05
108	4,4'-DDT	µg/L	24-hr Composite ³	0.01
112	alpha-Endosulfan	µg/L	24-hr Composite ³	0.02
103	alpha-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite ³	0.01
	Alachlor	µg/L	24-hr Composite ³	--
102	Aldrin	µg/L	24-hr Composite ³	0.005
113	beta-Endosulfan	µg/L	24-hr Composite ³	0.01
104	beta-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite ³	0.005
107	Chlordane	µg/L	24-hr Composite ³	0.1
	Chlorpyrifos	µg/L	24-hr Composite ³	1
106	delta-Hexachlorocyclohexane (BHC)	µg/L	24-hr Composite ³	0.005
111	Dieldrin	µg/L	24-hr Composite ³	0.01
114	Endosulfan sulfate	µg/L	24-hr Composite ³	0.01
	Endothal	µg/L	24-hr Composite ³	45
115	Endrin	µg/L	24-hr Composite ³	0.01
116	Endrin Aldehyde	µg/L	24-hr Composite ³	0.01
117	Heptachlor	µg/L	24-hr Composite ³	0.01
118	Heptachlor Epoxide	µg/L	24-hr Composite ³	0.02
105	Lindane (gamma-Hexachlorocyclohexane)	µg/L	24-hr Composite ³	0.5
119	PCB-1016	µg/L	24-hr Composite ³	0.5
120	PCB-1221	µg/L	24-hr Composite ³	0.5
121	PCB-1232	µg/L	24-hr Composite ³	0.5
122	PCB-1242	µg/L	24-hr Composite ³	0.5
123	PCB-1248	µg/L	24-hr Composite ³	0.5
124	PCB-1254	µg/L	24-hr Composite ³	0.5
125	PCB-1260	µg/L	24-hr Composite ³	0.5
126	Toxaphene	µg/L	24-hr Composite ³	--
	Atrazine	µg/L	24-hr Composite ³	--
	2,4-D (2,4-Dichlorophenoxyacetic acid)	µg/L	24-hr Composite ³	--
	Carbofuran	µg/L	24-hr Composite ³	--
	Carbaryl	µg/L	24-hr Composite ³	--
	Glyphosate	µg/L	24-hr Composite ³	--
	Oxamyl	µg/L	24-hr Composite ³	--
	Simazine (Princep)	µg/L	24-hr Composite ³	--
	Thiobencarb	µg/L	24-hr Composite ³	--
16	2,3,7,8-TCDD (Dioxin)	µg/L	24-hr Composite ³	--
CONVENTIONAL PARAMETERS				
	pH	SU	Grab	--
	Temperature	°C	Grab	--
NONCONVENTIONAL PARAMETERS				
	Hardness (as CaCO ₃)	mg/L	Grab	--
	Foaming Agents (methylene blue active)	µg/L	24-hr Composite ³	--

CTR No.	Parameter	Units	Effluent Sample Type	Maximum Reporting Level ¹
	substances)			
	Tributyltin	µg/L	24-hr Composite ³	0.002

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 In order to verify if bis (2-ethylhexyl) phthalate is truly present, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

³ 24-hour flow proportional composite.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.
2. Upon written request of the 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).
3. **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.
4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self-Monitoring Reports (SMRs)

1. The Discharger shall electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program website http://www.waterboards.ca.gov/water_issues/programs/ciwqs/. The CIWQS website will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.
2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly, quarterly, semiannual, and annual SMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMRs are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. Monthly SMRs are required even if there is no discharge. If no discharge occurs during the month, the monitoring report must be submitted stating that there has been no discharge.
3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-13. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	1 February 2018	Continuous	Submit with monthly SMR
1/Hour	1 February 2018	Hourly	Submit with monthly SMR
1/Day	1 February 2018	(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	1 February 2018	Sunday through Saturday	Submit with monthly SMR
1/Month	1 February 2018	1 st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	1 February 2018	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
2/Year	1 February 2018	1 January through 30 June 1 July through 31 December	1 August 1 February of following year
1/Year	1 February 2018	1 January through 31 December	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 C.F.R. part 136.

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

- 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).
- 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 ($\pm$ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- 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. **Reporting Requirements.** The Discharger shall submit SMRs in accordance with the following requirements:
 - a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the waste discharge requirements; 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. The Discharger shall attach all laboratory analysis sheets, including quality assurance/quality control information, with all its SMRs for which sample analyses were performed.
7. **Calculation Requirements.** The Discharger shall submit in the SMRs calculations and reports in accordance with the following requirements:
 - a. **Mass Loading Limitations.** For BOD₅, 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:
$$\text{Mass Loading (lbs/day)} = \text{Flow (MGD)} \times \text{Concentration (mg/L)} \times 8.34$$
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.

- b. **Removal Efficiency (BOD₅ and TSS).** The Discharger shall calculate and report the percent removal of BOD₅ and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.
- c. **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.
- d. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall report monthly in the self-monitoring report the dissolved oxygen concentrations in the effluent (EFF-001) and the receiving water (RSW-001 and RSW-002).
- e. **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.
- f. **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 RSW-001 and RSW-002.
- g. **Average Dry Weather Flow.** 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 provision (Section VI.C.4.c) will be determined annually based on the influent average daily flow over three consecutive dry weather months. The inflow and infiltration in the Mt. Shasta area is high due to the presence of springs and high groundwater which persist late into the summer. For this reason, the dry weather flow period may be considered to be 1 August through 31 October. The Discharger shall calculate the influent average dry weather flow annually and report in the annual SMR.

C. Discharge Monitoring Reports (DMR's)

DMRs are U.S. EPA reporting requirements. The Discharger shall electronically certify and submit DMR's together with SMR's using Electronic Self-Monitoring Reports module eSMR 2.5 or any upgraded version. Electronic DMR submittal will be in addition to electronic SMR submittal. Information about electronic DMR submittal is available at the DMR website at:
(http://www.waterboards.ca.gov/water_issues/programs/discharge_monitoring/).

D. Other Reports

- 1. **Special Study Technical Reports and Progress Reports.** Special Provisions contained in section VI of the Waste Discharge Requirements include requirements to submit, special study technical reports and progress reports. Table E-14 summarizes the technical reports required by the Special Provisions and due date for report submittal. All special study technical reports and progress reports shall be submitted electronically via CIWQS submittal. Reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment. If there are any discrepancies between the information presented in Table E-14 and the Special Provisions (Section VI of the Waste Discharge Requirements), the information in the Special Provisions shall supersede the information in Table E-14.

Table E-14. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Groundwater Monitoring Well Replacement Work Plan	1 August 2018 (6 months following the effective date of this Order)
Groundwater Monitoring Well Replacement Technical Report	12 months following approval of Work Plan
Title 22 Disinfection Requirements – Progress Report (Section VI.C.7.a)	1 June , annually, until final compliance
Compliance Schedule for Final Effluent Limitations for BOD ₅ , TSS and pH, Progress Reports for Compliance with Final Effluent Limits. (Section VI.C.7.b)	1 June , annually, until final compliance
Compliance Schedules for Final Land Disposal Specifications for BOD ₅ and TSS, Progress Reports for Compliance with Final Land Disposal Specifications. (Section VI.C.7.c)	1 June , annually, until final compliance

2. Within 60 days of permit adoption, the Discharger shall submit a report electronically via CIWQS submittal outlining reporting levels (RLs), method detection limits (MDLs), and analytical methods for the constituents listed in tables E-2, E-3, and E-5 through 12. 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-12 provides required maximum reporting levels in accordance with the SIP.
3. **Annual Operations Report.** By 30 January of each year, the Discharger shall submit a written report to the Central Valley Water Board electronically via CIWQS submittal 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 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.

ATTACHMENT F – FACT SHEET

Contents

I.	Permit Information.....	F-3
II.	Facility Description	F-4
	A. Description of Wastewater and Biosolids Treatment and Controls	F-6
	B. Discharge Points and Receiving Waters	F-7
	C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data	F-7
	D. Compliance Summary.....	F-9
	E. Planned Changes	F-9
III.	Applicable Plans, Policies, and Regulations	F-10
	A. Legal Authorities	F-10
	B. California Environmental Quality Act (CEQA).....	F-10
	C. State and Federal Laws, Regulations, Policies, and Plans	F-10
	D. Impaired Water Bodies on CWA 303(d) List.....	F-13
	E. Other Plans, Policies and Regulations	F-13
IV.	Rationale For Effluent Limitations and Discharge Specifications	F-14
	A. Discharge Prohibitions	F-15
	B. Technology-Based Effluent Limitations	F-15
	1. Scope and Authority	F-15
	2. Applicable Technology-Based Effluent Limitations.....	F-16
	C. Water Quality-Based Effluent Limitations (WQBEL's)	F-17
	1. Scope and Authority	F-17
	2. Applicable Beneficial Uses and Water Quality Criteria and Objectives.....	F-17
	3. Determining the Need for WQBEL's	F-30
	4. WQBEL Calculations	F-54
	5. Whole Effluent Toxicity (WET)	F-56
	D. Final Effluent Limitation Considerations	F-58
	1. Mass-based Effluent Limitations	F-58
	2. Averaging Periods for Effluent Limitations	F-58
	3. Satisfaction of Anti-Backsliding Requirements.....	F-58
	4. Antidegradation Policies	F-60
	5. Stringency of Requirements for Individual Pollutants	F-61
	E. Interim Effluent Limitations.....	F-63
	F. Land Discharge Specifications.....	F-65
	G. Interim Land Discharge Specifications	F-66
	H. Recycling Specifications	F-66
V.	Rationale for Receiving Water Limitations.....	F-66
	A. Surface Water.....	F-66
	B. Groundwater	F-67
VI.	Rationale for Provisions	F-67
	A. Standard Provisions.....	F-67
	B. Special Provisions.....	F-68
	1. Reopener Provisions	F-68
	2. Special Studies and Additional Monitoring Requirements	F-69
	3. Best Management Practices and Pollution Prevention.....	F-71
	4. Construction, Operation, and Maintenance Specifications	F-71
	5. Special Provisions for Publicly-Owned Treatment Works (POTWs).....	F-72
	6. Other Special Provisions	F-72

7. Compliance Schedules	F-73
VII. Rationale for Monitoring and Reporting Requirements	F-74
A. Influent Monitoring	F-74
B. Effluent Monitoring	F-74
C. Whole Effluent Toxicity Testing Requirements	F-75
D. Receiving Water Monitoring	F-75
1. Surface Water	F-75
2. Groundwater	F-76
E. Other Monitoring Requirements	F-77
VIII. Public Participation	F-78
A. Notification of Interested Parties	F-78
B. Written Comments	F-78
C. Public Hearing	F-78
D. Reconsideration of Waste Discharge Requirements	F-79
E. Information and Copying	F-79
F. Register of Interested Persons	F-79
G. Additional Information	F-79

Tables

Table F-1. Facility Information	F-3
Table F-2. Historic Effluent (EFF-001) Limitations and Monitoring Data	F-7
Table F-3. Historic Land Discharge (LND-001) Specifications and Monitoring Data	F-8
Table F-4. Historic Recycling Discharge (REC-001) Specifications and Monitoring Data	F-9
Table F-5. Basin Plan Beneficial Uses	F-11
Table F-6. Summary of Technology-based Effluent Limitations	F-17
Table F-7. Dilution Credits (as Justified in Order R5-2012-0086)	F-20
Table F-8. Summary of CTR Criteria for Hardness-dependent Metals	F-24
Table F-9. Verification of CTR Compliance for Copper	F-29
Table F-10. Verification of CTR Compliance for Silver	F-29
Table F-11. Salinity Water Quality Criteria/Objectives	F-35
Table F-12. Nickel Receiving Water CTR Criteria Comparison	F-38
Table F-13. Summary of Water Quality-Based Effluent Limitations	F-55
Table F-14. Whole Effluent Chronic Toxicity Testing Results	F-57
Table F-15. Summary of Final Effluent Limitations	F-62
Table F-16. Interim Effluent Limits Summary	F-65

ATTACHMENT F – FACT SHEET

As described in section II.B of this Order, 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 discusses the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

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

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	5A470105001
CIWQS Facility Place ID	241800
Discharger	City of Mt. Shasta
Name of Facility	City of Mt. Shasta Wastewater Treatment Plant
Facility Address	2500 Grant Road
	Mt. Shasta, CA 96067
	Siskiyou County
Facility Contact, Title and Phone	Rodney Bryan, Public Works Director, (530) 926-7510 Brooke Boyer, Lead Plant Operator, (530) 926-7535
Authorized Person to Sign and Submit Reports	Rodney Bryan, Public Works Director, (530) 926-7510 Brooke Boyer, Lead Plant Operator, (530) 926-7535
Mailing Address	305 North Mt. Shasta Boulevard, Mt. Shasta, CA 96067
Billing Address	305 North Mt. Shasta Boulevard, Mt. Shasta, CA 96067
Type of Facility	POTW
Major or Minor Facility	Minor
Threat to Water Quality	1
Complexity	B
Pretreatment Program	N
Recycling Requirements	Producer
Facility Permitted Flow	0.8 million gallons per day (mgd) (ADWF)
	0.7 mgd (Leachfield)
	0.8 mgd (Mt. Shasta Resort Golf Course)
Facility Design Flow	0.8 mgd (ADWF)
	2.1 mgd (PWWF)
Watershed	Upper Sacramento Hydrologic Unit (525.00)
	Mount Shasta Hydrologic Area (525.20)
	Box Canyon Hydrologic Subarea (525.22)
Receiving Water	Sacramento River
Receiving Water Type	Inland Surface Water

- A.** The City of Mt. Shasta (hereinafter Discharger) is the owner and operator of the City of Mt. Shasta Wastewater Treatment Plant (hereinafter Facility), a Publicly-Owned Treatment Works

(POTW). The U.S. Department of Agriculture, Forest Service (hereinafter USFS) owns the land property associated with the Facility's leachfield land disposal operation.

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

- B.** The Facility discharges wastewater to the Sacramento River, a water of the United States, within the Upper Sacramento Hydrologic Unit, Mount Shasta Hydrologic Area, Box Canyon Hydrologic Subarea. The Discharger was previously regulated by Order R5-2012-0086 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0078051, which was effective 23 November 2012 and expired on 1 November 2017. Order R5-2012-0086 was administratively continued pursuant to 40 C.F.R. section 122.6(d) and California Code of Regulations, title 23, section 2235.4. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.
- C.** When applicable, state law requires dischargers to file a petition with the State Water Board, Division of Water Rights and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce any applicable requirements under Water Code section 1211. This is not an NPDES permit requirement.
- D.** The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its waste discharge requirements (WDR's) and NPDES permit on 19 May 2017. Supplemental information was requested on 16 June 2017 and received on 26 June 2017. The application was deemed complete on 10 July 2017.
- E.** Regulations at 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed five years. Accordingly, Table 3 of this Order limits the duration of the discharge authorization. Under 40 C.F.R. section 122.6(d), States authorized to administer the NPDES program may administratively continue State-issued permits beyond their expiration dates until the effective date of the new permits, if State law allows it. Pursuant to California Code of Regulations, title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all federal NPDES requirements for continuation of expired permits.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of Mt. Shasta and serves a population of approximately 3,595. Wastewater influent is primarily domestic. The design daily average dry weather flow capacity of the Facility is 0.8 million gallons per day (MGD). The peak wet weather flow capacity of the Facility is 2.1 MGD.

The Facility is located approximately 2 miles south of the City of Mt. Shasta on the west side of Interstate 5 and adjacent to the Sacramento River immediately downstream of Box Canyon Dam and Lake Siskiyou.

The Discharger is the owner and operator of the collection system, which is regulated under the State Water Board General Order No. 2006-0003-DWQ effective 3 November 2006.

Order R5-2012-0086 contained effluent limitations on the discharge to the Sacramento River which required advanced-secondary treatment throughout the spring, fall, and winter discharge periods; however interim effluent limits and accompanying compliance schedules were provided in the permit

that allowed for effluent to be discharged during the winter period which only required secondary treatment. Surface water discharge during the summer period is prohibited.

The Discharger has an agreement with Siskiyou Golf Resort, Inc, owner and operator of Mt. Shasta Resort Golf Course (Resort), to provide treated wastewater from the Facility to the Resort for golf course irrigation. The Resort is regulated under Water Recycling Requirements Order No. 5-01-083, which provides effluent limits, prohibitions, and specifications that require the Discharger to treat the recycled water to a standard that is higher than that for “disinfected-secondary-23 recycled water” as defined in Chapter 3, Division 4, Title 22, CCR, Section 60301 et seq (Title 22). These more stringent limits, which essentially meet “disinfected secondary-2.2 recycled water” (as defined in Title 22) requirements are justified based on the Discharger’s proven ability to treat to a higher level, and the practices of the Resort which may include washing of equipment and hand irrigation at times when golfers are present.

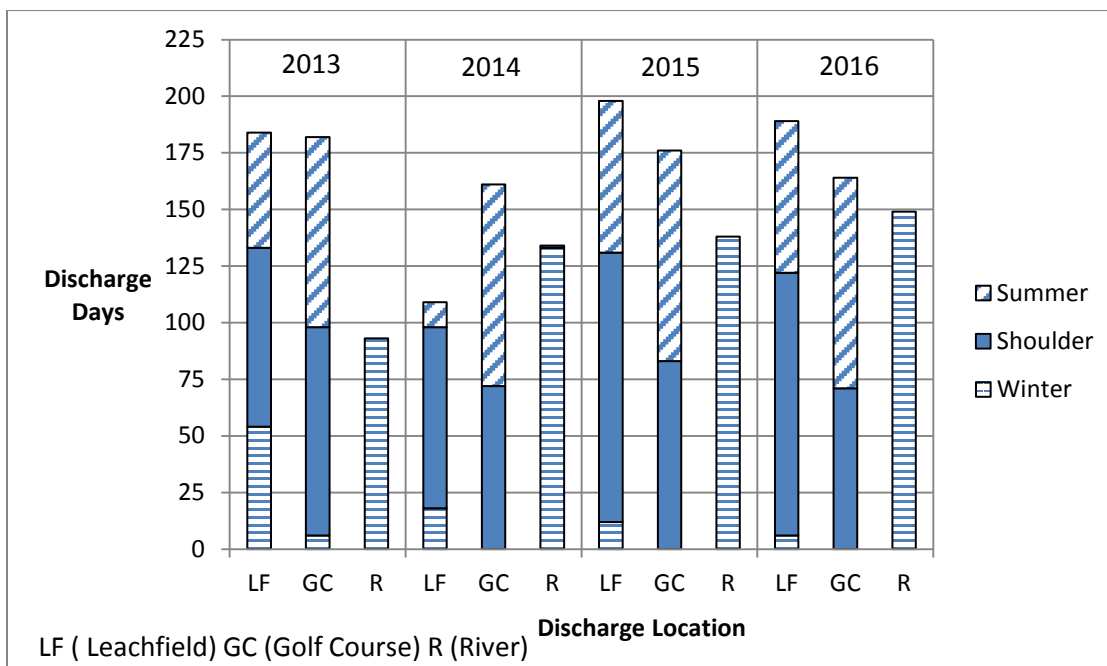
The Resort is required to apply recycled water in a manner to meet requirements for a “Restricted Access” golf course. The recycled water is filtered, but due to the current Facility design (lagoon treatment) being conducive to the growth of algae, the effluent cannot consistently meet Title 22 filtered wastewater criteria for an “Unrestricted Access” golf course.

The Discharger provides as much recycled water to the Resort as possible during the irrigation season, which is typically between April and October. The Discharger may also dispose of treated wastewater to a leachfield on property owned by USFS.

In this or previous Orders, the Discharger has not been limited in the period of time or the number of days in which discharges to the leachfield has been allowed. In the early 2000s, Facility improvements significantly improved the discharge quality and allowed for a new effluent disposal option: discharging reclaimed water to the Mt. Shasta Resort for recycled use. Because effluent quality was significantly improved, and based upon the Discharger’s request, Order 5-01-218 also established the “shoulder period”, thus shortening the length of time where discharge to the river was prohibited. The “shoulder period”, as originally defined in Order 5-01-218, allows for surface water discharge from 1 May to 14 June and from 15 September to 14 November. Originally, separate effluent limitations were in effect during the “shoulder period” requiring a higher level of treatment for BOD, TSS, and total coliform because the treatment technology was capable of meeting these limits and to protect the beneficial use of contact recreation. It is anticipated that after treatment plant upgrades are completed during the term of this Order, the Discharger will be able to reliably meet the more stringent BOD, TSS, and total coliform effluent limits year-round and thus it is likely that the “shoulder period” and associated limits will not be required in future permits.

Order R5-2007-0056 described the annual average number of days that treated effluent was pumped to the leachfield as less than 20. Following the adoption of Order R5-2007-0056, use of the leachfield again increased, and has continued to be used consistently as a source for regular effluent disposal. During the entire R5-2012-0086 permit term, the Discharger did not utilize the option to discharge to surface water during the shoulder periods, instead relying on the leachfield disposal option, and the recycled water needs of the Mt Shasta Golf Course.

The graphic below shows the discharge days to each location from 1 January 2013 through 31 December 2016.



A. Description of Wastewater and Biosolids Treatment and Controls

The Facility design average dry weather flow (ADWF) capacity is 0.8 million gallons per day (mgd). The peak wet weather capacity is 2.1 mgd, based on secondary treatment only. The Facility's current ADWF is 0.57 mgd and the average peak wet weather flow (PWWF) is 1.91 mgd. The highest PWWF was recorded on 9 February 2017 at 2.61 mgd.

The treatment system consists of headworks (Parshall flume, mechanical shredder, and bypass bar screen), oxidation lagoons, dissolved air floatation thickener and rapid sand filtration, chlorine contact chamber, dechlorination system, and a discharge line. The dissolved air floatation thickener and sand filtration unit have a hydraulic capacity of 0.8 mgd, and are not utilized in the winter due to freezing conditions. The winter period is considered to be 16 November through 14 April.

The outfall to the Sacramento River is located at the base of a steep canyon wall located approximately 200 feet below the elevation of the Facility. Treated effluent is discharged from the Facility through a combination 15-inch and 10-inch diameter gravity outfall pipeline to an energy dissipater. The pipeline from the dissipater to the outfall is a 12-inch diameter pipe. The angle of entry to the river is approximately 30 degrees. Effluent is discharged to the river through a multiport diffuser. Order R5-2012-0087 required the Discharger to submit a work plan and repair the outfall and diffuser deficiencies by November 2017. Although the work plan for the repairs was submitted, to date the repairs to the outfall pipeline and diffuser have not been completed. The Discharger does not expect these repairs to be completed until approximately 2021 due to the funding timeframes associated with the other WWTP upgrade projects.

Land disposal is to a 42-acre leachfield with a design ADWF of 0.7 mgd. The disposal area consists of two intermittent leachfields with a total of 20,000 lineal feet of percolation trench. The trenches vary from 8 to 12 feet in depth, with perforated leachpipe generally installed at a depth of 5 feet. A series of splitter boxes allow the Discharger to distribute flow evenly through the field and to alternate loading and rest periods. As required by Order R5-2012-0087, the Discharger conducted a Leachfield Design Evaluation that was completed in

February 2014. This evaluation concluded that the soils and geologic materials underlying the leachfield site would not provide any further treatment to the effluent beyond that which it receives at the Facility.

Aside from sludge buildup over time in the lagoons and the material skimmed from the dissolved air floatation thickener unit, the Facility does not generate or handle solids other than what is removed manually from the headworks. An estimated 15 cubic yards of debris is removed from the headworks annually. Solids are hauled to a disposal site in Oregon. In 2016, the Discharger hauled approximately 90 tons of material pulled from the algae ponds to Heard Farms in Roseburg, Oregon.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 28, T40N, R04W, MDB&M, as shown in Attachment B, a part of this Order.
2. The Facility discharges wastewater to the Sacramento River, a water of the United States, within the Upper Sacramento Hydrologic Unit, Mount Shasta Hydrologic Area, Box Canyon Hydrologic Subarea.
3. Treated municipal wastewater is discharged at Discharge Point No. 001 to the Sacramento River, a water of the United States at a point latitude 41° 16' 35.18" N and longitude 122° 19' 6.98" W. The discharge point is approximately 0.6 miles downstream of Box Canyon Dam.
4. Treated municipal wastewater is discharged at Discharge Point No. 002, a land discharge to the leachfield south of Highway 89 at latitude 41° 17' 8.34" N and longitude 122° 16' 24.65" W. The leachfield is on USFS property and located approximately 3 miles east of the Facility and the Sacramento River.
5. Treated municipal wastewater is discharged at Discharge Point No. 003, a recycled water discharge to the Mt. Shasta Golf Course at latitude 41° 16' 59.16" N and longitude 122° 19' 7.80" W.
6. Separate effluent limitations apply to discharges at each of the three discharge points.

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

Effluent limitations and Discharge Specifications contained in Order R5-2012-0086 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001), Discharge Point No. 002 (Monitoring Location LND-001) and Discharge Point No. 003 (Monitoring Location REC-001), and representative monitoring data from the term of Order R5-2012-0086 are as follows:

Table F-2. Historic Effluent (EFF-001) Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (23 Nov 2012 – 31 Jan 2017)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Daily
BOD ₅ (Shoulder ¹)	mg/L	10	15	30	n/a	n/a	n/a
BOD ₅ (Winter ²)	mg/L	30	45	60	21.25	38.3	38.3
TSS (Shoulder ¹)	mg/L	10	15	30	n/a	n/a	n/a
TSS (Winter ²)	mg/L	30	45	60	26.2	39.5	39.5
pH	SU	--	--	6.0 – 8.5 ³	--	--	6.1 – 7.5 ³

Parameter	Units	Effluent Limitation			Monitoring Data (23 Nov 2012 – 31 Jan 2017)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Daily
Bis(2-Ethylhexyl) phthalate	µg/L	3.0	--	5.6	2.6	--	2.6
Copper, Total Recoverable	µg/L	32.0	--	32.0	27.3	--	27.3
Dichlorobromomethane	µg/L	1.5	--	3.6	0.51	--	0.51
Zinc, Total Recoverable	µg/L	47.6	--	47.6	24.4	--	24.4
Ammonia, Total (as N)	mg/L	27.7	--	27.7	16.6	--	21
Nitrate + Nitrite (as N)	mg/L	10	--	--	4.61	--	--
Settleable Solids	mL/L-hr	0.1	--	0.2	0.3	--	0.8
Chlorine Residual	mg/L	--	0.011 ⁴	0.019 ⁵	--	0.01	0.39
Total Coliform (Shoulder ¹)	MPN/100 mL	23 ⁶	2.2 ⁷	240	n/a	n/a	n/a
Total Coliform (Winter ²)	MPN/100 mL	--	23 ^{7,8}	240	--	2	4
Flow	mgd	--	--	0.8	1.15 ⁹	--	1.9 ⁹

¹ Shoulder periods are 15 April through 14 June and 16 September through 15 November.

² Winter periods are 16 November through 14 April.

³ Instantaneous minimum and maximum values.

⁴ 4-day average.

⁵ 1-hour average.

⁶ No more than once in a 30-day period.

⁷ 7-day median.

⁸ When receiving water to effluent ratio of ≥20:1 exists and receiving water flow is <400 cfs.

⁹ Wet weather flows.

Table F-3. Historic Land Discharge (LND-001) Specifications and Monitoring Data

Parameter	Units	Discharge Specifications			Monitoring Data (23 Nov 2012 – 31 Jan 2017)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Daily
BOD ₅ (Summer ¹)	mg/L	30	45	60	13	16.6	20.4
BOD ₅ (Shoulder ²)	mg/L	30	45	60	21	34.4	34.4
BOD ₅ (Winter ³)	mg/L	30	45	60	14.9	25.6	30
TSS (Summer ¹)	mg/L	30	45	60	5.9	8	8
TSS (Shoulder ²)	mg/L	30	45	60	21.8	36	36
TSS (Winter ³)	mg/L	30	45	60	26.2	34.5	34.5
Settleable Solids	mL/L-hr	0.1	--	0.2	0.025	--	0.1
Total Coliform (Summer ¹)	MPN/100 mL	--	23 ⁴	240	--	2	7
Total Coliform (Shoulder ²)	MPN/100 mL	--	23 ⁴	240	--	2	11
Total Coliform (Winter ³)	MPN/100 mL	--	23 ⁴	240	--	2	2
Flow	mgd	--	--	0.7	0.59	--	0.83

¹ Summer periods are 15 June through 15 September.

² Shoulder periods are 15 April through 14 June and 16 September through 15 November.

³ Winter periods are 16 November through 14 April.

⁴ 7-day median.

Table F-4. Historic Recycling Discharge (REC-001) Specifications and Monitoring Data

Parameter	Units	Discharge Specifications			Monitoring Data (23 Nov 2012 – 31 Jan 2017)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Daily
BOD ₅ (Summer ¹)	mg/L	10	15	30	13	16.6	20.4
BOD ₅ (Shoulder ²)	mg/L	10	15	30	9.9	11.3	11.3
TSS (Summer ¹)	mg/L	10	15	30	8	10.5	10.5
TSS (Shoulder ²)	mg/L	10	15	30	6.9	10	10
pH	SU	--	--	9.0 – 6.0 ³	--	--	7.5 – 6.0 ³
Total Coliform	MPN/ 100 mL	23 ⁴	2.2 ⁵	240	--	2	30
Turbidity	NTU	--	5	10	--	5.4	12.7
Flow	mgd	--	--	0.8	0.52	--	0.78

¹ Summer periods are 15 June through 15 September.

² Shoulder periods are 15 April through 14 June and 16 September through 15 November.

³ Instantaneous maximum and minimum.

⁴ No more than one in a 30-day period.

⁵ 7-day median.

D. Compliance Summary

The Discharger has been protected from mandatory minimum penalties (MMPs) for violations of ammonia, copper, and zinc final effluent limits under Time Schedule Order (TSO) R5-2012-0087. MMP protection for copper and zinc effluent limit violations expired in October 2017 and no additional MMP protection for these constituents can be provided to the Discharger pursuant to the California Water Code.

In April 2017, TSO R5-2012-0087 was amended by order R5-2017-0042 to extend protections from MMPs for violations of final effluent limits for ammonia until 27 May 2020, at which time no further protection can be granted.

The Discharger has had effluent and discharge specification violations at all three discharge locations (Sacramento River, Mt. Shasta Resort Golf Course, and the leachfield).

Effluent limit violations for total chlorine residual occurred twice in December 2012. In accordance with Special Provisions, section VI.C.2.e in WDRs Order R5-2012-0086, the Discharger installed an electronic, real-time residual chlorine analyzer for the effluent following the dechlorination process in March 2013. In March 2016, the Discharger violated the maximum daily and average monthly final effluent limits for settleable solids.

The Discharger exceeded the land discharge specification for flow on one day in November 2016.

Effluent discharged for recycled use at the Mt. Shasta Resort Golf Course violated the average monthly and average weekly BOD₅ discharge specifications in August 2016. The Discharger exceeded the daily maximum turbidity discharge specification in June 2013.

E. Planned Changes

The Discharger has submitted a Preliminary Engineering Report (PER) for an upgrade to the Facility. The improvements to the Facility are necessary for the Discharger to comply with

effluent limits contained in this Order. The currently proposed Facility improvements (as described in the PER) include: headworks modifications and self-cleaning screens, an AeroMod activated sludge system (aeration basins, secondary clarifiers, and digesters), traveling bridge filters, and an ultraviolet disinfection system. Additional modifications to the Facility include enclosures for the filter and disinfection systems, sludge dewatering equipment and buildings, installation of a new generator, a control and blower building, and repairs to the outfall and diffuser.

Construction of the proposed improvements is scheduled to begin in August 2019, with final construction expected to be completed and operational levels attained in late November 2021.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

A. Legal Authorities

This Order serves as 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 U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this Facility to surface waters.

B. California Environmental Quality Act (CEQA)

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

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

1. **Water Quality Control Plan.** 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 for the *Water Quality Control Plan, Fourth Edition (Revised July 2016)*, for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan. 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 Sacramento River (Box Canyon Dam to Shasta Lake) are as follows:

Table F-5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Sacramento River (Box Canyon Dam to Shasta Lake)	<u>Existing:</u> Agricultural supply, including irrigation and stock watering (AGR); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Cold freshwater habitat (COLD); Spawning, reproduction, and/or early development, cold (SPWN); and Wildlife habitat (WILD) <u>Potential:</u> Municipal and domestic water supply (MUN).
002 003	Underlying Groundwater	<u>Potential:</u> Municipal and domestic water supply (MUN); Industrial service supply (IND); Industrial process supply (PRO); and Agricultural supply (ARG)

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA 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, U.S. EPA 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.** 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 U.S. EPA 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 U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California") (State Anti-Degradation Policy). The State Anti-Degradation Policy is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. The State Anti-Degradation Policy 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 C.F.R. section 131.12 and the State Anti-Degradation Policy. The Board finds this Order is consistent with the Federal and State Water Board antidegradation regulations and policy.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Some effluent limitations in this Order are less stringent than those in Order R5-2012-0086. As discussed in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements.
6. **Domestic Water Quality.** 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”*.

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 C.F.R. 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 State Water Board does not require wastewater treatment facilities with design flows less than 1 MGD to obtain coverage under the Industrial Storm water General Order. Therefore, this Order does not regulate storm water.

D. 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 C.F.R. 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." The Sacramento River (Box Canyon to Shasta Lake) is not listed as a WQLS in the 303(d) list of impaired water bodies.
2. **Total Maximum Daily Loads (TMDL's).** At the time of this permit renewal, there are no approved TMDL's with wasteload allocations that apply to this Facility.

E. 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.
2. The State Water Resources Control Board adopted Resolution 2009-0011, "Policy for Water Quality Control for Recycled Water," (Recycled Water Policy) on 3 February 2009. Section 4 of the Recycled Water Policy, Mandate for the Use of Recycled Water, paragraph a (2) states, "Agencies producing recycled water that is available for reuse and not being put to beneficial use shall make that recycled water available to water purveyors for reuse on reasonable terms and conditions. Such terms and conditions may include payment by the water purveyor of a fair and reasonable share of the cost of the recycled water supply and facilities." The Central Valley Water Board adopted a similar resolution, Resolution No. R5-2009-0028, "Resolution in Support of Regionalization, Reclamation, Recycling and Conservation for Wastewater Treatment Plants," on 23 April 2009.

This Order requires the Discharger to recycle its treated wastewater to the maximum extent practicable. The Discharger is not expected to shoulder the entire cost of providing recycled wastewater, however some incremental cost to the City is warranted if a recycled water project is practicable, and the user is willing to pay its fair share of the incremental costs associated with producing, transporting and using the recycled water.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the 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 C.F.R. § 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 C.F.R. section 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” Federal regulations, 40 C.F.R. section 122.44(d)(1)(vi), further provide that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”

The CWA requires point source 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 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include WQBEL's 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 C.F.R. section 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 C.F.R. § 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."

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge or application of waste other than that described in this Order).** This prohibition is based on Water Code section 13260 that requires filing of a ROWD before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.
2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR section 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 C.F.R. section 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 C.F.R. section 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 C.F.R. section 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 40 C.F.R. section 122.41 et seq. that requires the proper design and operation of treatment facilities
5. **Prohibition III.E (No discharge of hazardous waste).** This prohibition is based on California Code of Regulations, title 22, section 66261.1 et seq, that prohibits discharge of hazardous waste.
6. **Prohibition III.F (The discharge of wastewater to the Sacramento River during 15 June through 14 September is prohibited.)** Order No. R5-2012-0086 included the discharge prohibition of no discharge during the recreation season (15 June through 14 September).
7. **Prohibition III.G (Peak wet weather flow prohibition).** Because discharge to the Sacramento River occurs during wet weather, this prohibition is based upon the fact that the Facility is designed to provide a secondary level of treatment for up to a design peak wet weather flow of 2.1 MGD.

B. Technology-Based Effluent Limitations

1. Scope and Authority

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

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

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTW's [defined in CWA 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 U.S. EPA Administrator.

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 C.F.R. part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

- a. **BOD₅ and TSS.** Federal regulations at 40 C.F.R. part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD₅ and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD₅ and TSS are based on the technical capability of the tertiary process. BOD₅ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD₅ and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD₅ and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD₅ and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD₅ and TSS than the secondary standards currently prescribed; the 30-day average BOD₅ and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition, 40 C.F.R. section 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD₅ and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD₅ and TSS over each calendar month. This Order requires Water Quality Based Effluent Limitations (WQBEL's) that are equal to or more stringent than the secondary technology-based treatment described in 40 CFR Part 133 (See section IV.C.3.c of the Fact Sheet for a discussion on Pathogens which includes WQBEL's for BOD₅ and TSS.)
- b. **pH.** The secondary treatment regulations at 40 C.F.R. part 133 also require that pH be maintained between 6.0 and 9.0 standard units. This Order, however, requires more stringent WQBEL's for pH to comply with the Basin Plan's water quality objectives for pH.

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

Table F-6. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD ₅	mg/L	10	15	--	--	--
	lbs/day ¹	175	262	--	--	--
TSS	mg/L	10	15	--	--	--
	lbs/day ¹	175	262	--	--	--
pH	Standard Units	--	--	--	6.0	9.0

¹ Based on a peak wet weather flow of 2.1 MGD.

C. Water Quality-Based Effluent Limitations (WQBEL's)

1. Scope and Authority

CWA Section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. 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 tertiary treatment or equivalent requirements or other provisions, is discussed in section IV.C.3 in the Fact Sheet.

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

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

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

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

The federal CWA section 101(a)(2), states: *“it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.”* Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. 40 C.F.R. section 131.3(e) 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 C.F.R. 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 III.C.1. above for a complete description of the receiving water and beneficial uses.
- 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 January 2014 through December 2016, which includes effluent and ambient background data submitted in SMRs and the Report of Waste Discharge (ROWD).

Assimilative Capacity/Mixing Zone. In the ROWD, the Discharger requested a dilution credit of 2 for human health constituents, a dilution credit of 4 for chronic aquatic life constituents, and a dilution credit of 3 for acute aquatic life constituents, as shown in Table F-7 below. The effluent limitation in this Order based on human health criteria is bis(2-ethylhexyl) phthalate. The constituents with effluent limitations in this Order that are based on aquatic life criteria include ammonia, copper, and zinc. The dilution credits requested by the Discharger in the ROWD are consistent with those granted and justified in Order R5-2012-0086.

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

For non-Priority Pollutant constituents the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, *“In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not*

adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge."

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

For incompletely-mixed discharges, the Discharger must complete an independent mixing zone study to demonstrate to the Central Valley Water Board that a dilution credit is appropriate. In granting a mixing zone, Section 1.4.2.2 of the SIP requires the following to be met:

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

A: A mixing zone shall not:

1. *compromise the integrity of the entire water body;*
2. *cause acutely toxic conditions to aquatic life passing through the mixing zone;*
3. *restrict the passage of aquatic life;*
4. *adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;*
5. *produce undesirable or nuisance aquatic life;*
6. *result in floating debris, oil, or scum;*
7. *produce objectionable color, odor, taste, or turbidity;*
8. *cause objectionable bottom deposits;*
9. *cause nuisance;*
10. *dominate the receiving water body or overlap a mixing zone from different outfalls; or*
11. *be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the*

Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy.”

Section 1.4.2.1 of the SIP establishes the authority for the Central Valley Water Board to consider dilution credits based on the mixing zone conditions in a receiving water. Section 1.4.2.1 in part states:

*“The dilution credit, D, is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations (described in Section 1.4). **Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge.**”*

Dilution credits permitted in this Order were previously granted and justified in the previous Order R5-2012-0086. The dilution credits allowed, as summarized below in Table F-7, are based on a 2009 Mixing Zone and Dilution Study conducted by the Discharger. The study and the subsequent evaluation concluded that based on existing flow and mixing dynamics observed at the discharge location, a mixing zone of 75 feet long by 24 feet wide for acute and chronic constituents and 17 feet long by 10 feet wide for human health constituents are appropriate and meet the applicable SIP mixing zone conditions. The Discharger has not made improvements to the outfall or diffuser to improve mixing dynamics, and flow conditions in the Sacramento River are controlled at Box Canyon Dam and are therefore consistent. As mixing dynamics have not been improved at the discharge location, additional dilution beyond that outlined in Table F-7 has not been granted. Although the dilution credits granted in this Order are not sufficient to ensure compliance with some of the final effluent limits, the Discharger is currently in the process of completing major Facility upgrades that will likely result in compliance with final effluent limits.

Dilution credits granted in this Order are in accordance with Section 1.4.2.2 of the SIP. The allowance of a mixing zone and dilution credits are a discretionary act by the Central Valley Water Board. The Central Valley Water Board has determined that the maximum dilution credits on a constituent-by-constituent basis allowed for this discharge are shown in the following table (also discussed further in section IV.C.3.c). These dilution credits are consistent with those granted in Order R5-2012-0086.

Table F-7. Dilution Credits (as Justified in Order R5-2012-0086)

	Critical Receiving Water Flow	Effluent Flow	Maximum Dilution Available⁷	Dilution Credit Granted
Human Health Constituents	45 cfs ¹	0.98 mgd ⁴	30:1	2:1
Acute Aquatic Life Constituents	41 cfs ²	2.3 mgd ⁵	11:1	3:1
Chronic Aquatic Life Constituents	41 cfs ³	2.2 mgd ⁶	12:1	4:1

¹ Harmonic Mean – Found using Box Canyon Dam flow data from August 1998 – September 2009.

² 1Q10 – Lowest daily average flow with a return frequency of 10 years.

³ 7Q10 – Lowest 7-day average flow with a return frequency of 10 years.

⁴ Long-term average during period of discharge.

⁵ Maximum daily flow during period of discharge.

⁶ 4-day average of daily maximum flows during period of discharge.

⁷ Maximum dilution as allowed pursuant to the SIP for full discharge period (winter and shoulder periods).

To fully comply with all applicable laws, regulations and policies of the State, the Central Valley Water Board approved a mixing zone and the associated dilution credits shown in Table F-7 based on the following:

- i. Mixing zones are allowed under the SIP provided all elements contained in Section 1.4.2.2 are met. Based on the mixing zone study conducted by the Discharger the Central Valley Water Board has determined that these factors are met.
- ii. Section 1.4.2.2 of the SIP requires mixing zones to be as small as practicable. Based on the mixing zone study conducted by the Discharger, the Central Valley Water Board has determined the mixing zone is as small as practicable.
- iii. In accordance with Section 1.4.2.2 of the SIP, the Board has determined the mixing zone is as small as practicable and will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body or overlap existing mixing zones from different outfalls. The mixing zone is small (approximately 75 feet downstream of the discharge for aquatic life criteria and 17 feet downstream of the discharge for human health criteria) relative to the large size of the receiving water (approximately 40 river miles to Shasta Lake), is not at or near a drinking water intake, and does not overlap a mixing zone from a different outfall. The Central Valley Water Board is allowing a mixing zone for human health constituents and acute aquatic life constituents and has determined allowing such mixing zone will not cause acutely toxic conditions to aquatic life passing through the mixing zone.
- iv. The Central Valley Water Board has determined the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or State endangered species laws, because the mixing zone is relatively small, and acutely toxic conditions will not occur in the mixing zone. The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because the proposed Order establishes end-of-pipe effluent limitations (e.g., for BOD₅ and TSS) and discharge prohibitions to prevent these conditions from occurring.
- v. As required by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Central Valley Water Board has considered the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded that the allowance of the mixing zone and dilution credit is adequately protective of the beneficial uses of the receiving water.
- vi. The Central Valley Water Board has determined the mixing zone complies with the SIP for priority pollutants.
- vii. The maximum allowed dilution ratios for the human health, chronic, and acute criteria flow conditions per the SIP are 30:1, 12:1, and 11:1 as shown in Table F-7. Section 1.4.2.2B of the SIP, in part states, *"The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements."* Therefore, the Central Valley Water Board has determined that limiting dilution credits to 2, 4, and 3 are appropriate for the effluent limits based on human health, chronic, and acute criteria, respectively,

so that the mixing zone and dilution credits protect beneficial uses and meet the conditions of the SIP.

- viii. The Central Valley Water Board has determined the mixing zone complies with the Basin Plan for non-priority pollutants. The Basin Plan requires a mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board has considered the procedures and guidelines in Section 5.1 of USEPA's *Water Quality Standards Handbook*, 2nd Edition (updated July 2007) and Section 2.2.2 of the TSD. The SIP incorporates the same guidelines.
- ix. The Central Valley Water Board has determined that allowing dilution factors that exceed those proposed by this Order would not comply with the State Anti-degradation Policy for receiving waters outside the allowable mixing zone for bis(2-ethylhexyl) phthalate, ammonia, copper, and zinc. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16 (State Anti-Degradation Policy). The State Anti-Degradation Policy incorporates the federal antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of the State Anti-Degradation Policy states:

"Any activity which produces or may produce a waste or increased volume or concentration of waste and which dischargers or proposed to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained."

The effluent limitations established in the Order for bis(2-ethylhexyl) phthalate, ammonia, copper, and zinc that have been adjusted for dilution credits provided in Table F-7 were developed based on the 2009 Mixing Zone and Dilution Study conducted by the Discharger. Therefore, the Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing best practicable treatment or control of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained. The Central Valley Water Board also determined the Discharger will be in immediate compliance with the effluent limitations for bis(2-ethylhexyl) phthalate and zinc; however, the Discharger will not be able to immediately comply with final effluent limits for ammonia and copper. The Discharger is planning to make Facility improvements to comply with the final effluent limits for ammonia and copper during the term of this Order.

The Central Valley Water Board also determined establishing effluent limitations for bis(2-ethylhexyl) phthalate, ammonia, copper, zinc that have been adjusted for dilution credits provided in Table F-7 is consistent with Section 1.4.2.2B of the SIP that requires the Central Valley Water Board to deny or significantly limit a mixing zone and dilution credits as necessary to comply with other regulatory requirements.

- x. Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for bis(2-ethylhexyl) phthalate, ammonia, copper and zinc that have been adjusted for dilution credits provided in Table F-7 are appropriate and necessary to comply with the Basin Plan, SIP, Federal anti-degradation regulations and the State Anti-Degradation Policy.
- c. **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.
- d. **Hardness-Dependent CTR Metals Criteria.** The CTR and the NTR contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness, the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the hardness of the receiving water (actual ambient hardness) as required by the SIP¹ and the CTR². The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones³. Where design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10).⁴ This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a three year period on average.⁵ The CTR requires that when mixing zones are allowed, the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge.⁶ The CTR does not define the term “ambient” as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully complies with the CTR and SIP.

Summary findings

The ambient hardness for the Sacramento River is represented by the data in Figure F-1, below, which shows ambient hardness ranging from 40 mg/L to 63 mg/L based on collected ambient data from January 2014 through December 2016. Given the high variability in ambient hardness values, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum). Because of this variability, staff has determined that based on the ambient hardness concentrations measured in the receiving water, the Central

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 CaCO₃), or less, the actual ambient hardness of the surface water must be used (40 C.F.R. § 131.38(c)(4)).

³ 40 C.F.R. §131.3(c)(4)(ii)

⁴ 40 C.F.R. §131.38(c)(2)(iii) Table 4

⁵ 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

⁶ 40 C.F.R. §131.38(c)(2)(i)

Valley Water Board has discretion to select ambient hardness values within the range of 40 mg/L (minimum) up to 63 mg/L (maximum). Staff recommends that the Board use the ambient hardness values shown in Table F-8 for the following reasons.

- i. Using the ambient receiving water hardness values shown in Table F-8 will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.
- ii. The Water Code mandates that the Central Valley Water Board establish permit terms that will ensure the reasonable protection of beneficial uses. In this case, using the lowest measured ambient hardness to calculate effluent limitations is required to protect beneficial uses. In compliance with applicable state and federal regulatory requirements, after considering the entire range of ambient hardness values, Board staff has used the ambient hardness values shown in Table F-8 to calculate the proposed effluent limitations for hardness-dependent metals. The proposed effluent limitations are protective of beneficial uses under all flow conditions.
- iii. Using the ambient hardness values shown in Table F-8 is consistent with the CTR and SIP's requirements for developing metals criteria.

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

CTR Metals	Ambient Hardness (mg/L) ^{2,3}	CTR Criteria (µg/L, total recoverable) ¹		Basin Plan Criteria (µg/L, total recoverable)
		acute	chronic	
Copper	40	5.9	4.3	5.6
Chromium III	40	820	98	--
Cadmium	40 (acute) 40(chronic)	1.6	1.2	0.22
Lead	40	25	0.99	--
Nickel	40	220	24	--
Silver	40	0.84	--	10
Zinc	40	55	55	16

¹ Metal criteria rounded to two significant figures in accordance with the CTR (40 C.F.R. §131.38(b)(2)).

² The ambient hardness values in this table represent actual observed receiving water hardness measurements from the dataset shown in Figure F-1.

³ The CTR's hardness dependent metals criteria equations vary differently depending on the metal, which results in differences in the range of ambient hardness values that may be used to develop effluent limitations that are protective of beneficial uses and comply with CTR criteria for all ambient flow conditions.

Background

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant (Davis Order) and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant (Yuba City Order). The State Water Board recognized that the SIP and the CTR do not discuss the manner in which hardness is to be ascertained, thus regional water boards have considerable discretion in determining ambient hardness so long as the selected value is protective of water quality criteria under

the given flow conditions. (Davis Order, p.10). The State Water Board explained that it is necessary that, "The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions." (Yuba City Order, p. 8). The Davis Order also provides that, "Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions." (Davis Order, p. 11)

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

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

Where:

H = ambient hardness (as CaCO_3)¹

WER = water-effect ratio

m, b = metal- and criterion-specific constants

The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected "design" hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a three year period.² Where design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10). The 1Q10 and 7Q10 Sacramento River flows are 41 cfs and 41 cfs, respectively.

Ambient conditions

The ambient receiving water hardness varied from 40 mg/L to 63 mg/L, based on 78 samples from January 2014 through December 2016 (see Figure F-1).

¹ For this discussion, all hardness values are expressed in mg/L as CaCO_3 .

² 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

The scatter plot displays hardness data points over a three-year period. The y-axis, labeled 'Hardness, mg/L', ranges from 0 to 70 in increments of 10. The x-axis shows the years 2014, 2015, 2016, and 2017. The data points are represented by blue diamonds. The hardness starts around 53 mg/L in early 2014, fluctuates between 48 and 63 mg/L through 2015, and then shows a significant peak of approximately 63 mg/L in early 2016. This is followed by a sharp decline to around 44 mg/L in mid-2016, after which it fluctuates between 48 and 59 mg/L through 2017.

Date (Approximate)	Hardness (mg/L)
2014-01-01	53
2014-02-01	54
2014-03-01	56
2014-04-01	50
2014-05-01	49
2014-06-01	51
2014-07-01	58
2014-08-01	52
2014-09-01	54
2014-10-01	55
2014-11-01	53
2014-12-01	62
2015-01-01	50
2015-02-01	53
2015-03-01	40
2015-04-01	46
2015-05-01	50
2015-06-01	52
2015-07-01	54
2015-08-01	56
2015-09-01	58
2015-10-01	63
2015-11-01	59
2015-12-01	62
2016-01-01	57
2016-02-01	59
2016-03-01	55
2016-04-01	53
2016-05-01	47
2016-06-01	44
2016-07-01	46
2016-08-01	48
2016-09-01	53
2016-10-01	48
2016-11-01	51
2016-12-01	58
2017-01-01	59
2017-02-01	56
2017-03-01	50
2017-04-01	54
2017-05-01	53
2017-06-01	49
2017-07-01	52
2017-08-01	51

Approach to derivation of criteria

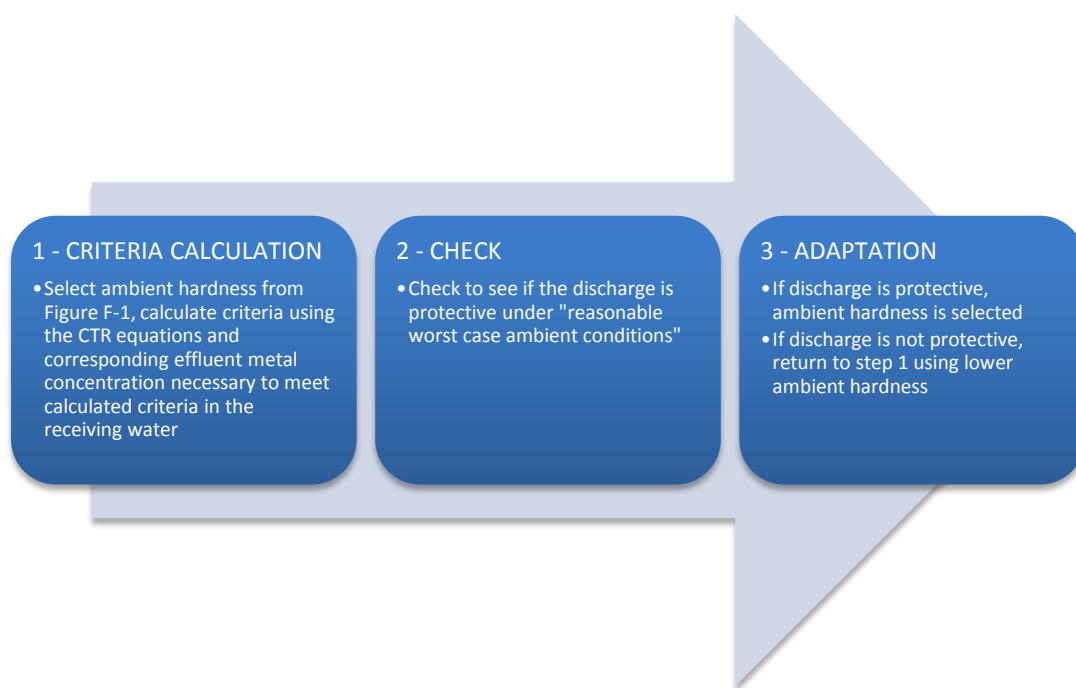
Reasonable worst-case ambient conditions. To determine whether a selected ambient hardness value results in effluent limitations that are fully protective while complying with federal regulations and state policy, staff have conducted an analysis considering varying ambient hardness and flow conditions. To do this, the Central Valley Water Board has ensured that the receiving water hardness and criteria selected for effluent limitations are protective under “reasonable-worst case ambient conditions.” These conditions represent the receiving water conditions under which derived effluent limitations would ensure protection of beneficial uses under all ambient flow and hardness conditions.

- “Low receiving water flow.” CTR design discharge conditions (1Q10 and 7Q10) have been selected to represent reasonable worst case receiving water flow conditions.

- “High receiving water flow (maximum receiving water flow).” This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.
- “Low receiving water hardness.” The minimum receiving water hardness condition of 40 mg/L was selected to represent the reasonable worst case receiving water hardness.
- “Background ambient metal concentration at criteria.” This condition assumes that the metal concentration in the background receiving water is equal to CTR criteria (upstream of the facility’s discharge). Based on data in the record, this is a design condition that has not occurred in the receiving water and is used in this analysis to ensure that limits are protective of beneficial uses even in the situation where there is no assimilative capacity.

Iterative approach. An iterative analysis has been used to select the ambient hardness to calculate the criteria that will result in effluent limitations that protect beneficial uses under all flow conditions.

The iterative approach is summarized in the following algorithm and described below in more detail.



1. **CRITERIA CALCULATION.** CTR criteria are calculated using the CTR equations based on actual measured ambient hardness sample results, starting with the maximum observed ambient hardness of 63 mg/L. Effluent metal concentrations necessary to meet the above calculated CTR criteria in the receiving water are calculated in accordance with the SIP.¹ This should not be confused with an effluent limit. Rather, it is the Effluent Concentration

¹ SIP Section 1.4.B, Step 2, provides direction for calculating the Effluent Concentration Allowance.

Allowance (ECA), which is synonymous with the wasteload allocation defined by USEPA as “a definition of effluent water quality that is necessary to meet the water quality standards in the receiving water.”¹ If effluent limits are found to be needed, the limits are calculated to enforce the ECA considering effluent variability and the probability basis of the limit.

2. CHECK. USEPA’s simple mass balance equation² is used to evaluate if discharge at the computed ECA is protective. Resultant downstream metal concentrations are compared with downstream calculated CTR criteria under reasonable worst-case ambient conditions.
3. ADAPT. If step 2 results in:
 - (A) receiving water metal concentration that complies with CTR criteria under reasonable worst-case ambient conditions, then the hardness value is selected.
 - (B) receiving water metal concentration greater than CTR criteria, then return to bullet 1, selecting a lower ambient hardness value.

The CTR’s hardness dependent metals criteria equations contain metal-specific constants, so the criteria vary depending on the metal. Therefore, steps 1 through 3 must be repeated separately for each metal until ambient hardness values are determined that will result in criteria and effluent limitations that comply with the CTR and protect beneficial uses for all metals.

Results of iterative analysis

The above iterative analysis for each CTR hardness-dependent metal results in the selected ambient hardness values shown in Table F-8, above. Using these hardness values to calculate criteria, which are actual sample results collected in the receiving water, will result in effluent limitations that are protective under all ambient flow conditions. Copper and silver are used as examples below to illustrate the results of the analysis. Tables F-9 and F-10 below summarize the numeric results of the three step iterative approach for copper and zinc. As shown in the example tables, ambient hardness values of 40 mg/L (copper) and 40 mg/L (silver) are used in the CTR equations to derive criteria and effluent limitations. Then under the “check” step, worst-case ambient receiving water conditions are used to test whether discharge results in compliance with CTR criteria and protection of beneficial uses.

The results of the above analysis, summarized in the tables below, show that the ambient hardness values selected using the three-step iterative process results in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-9 and F-10 below, summarize the critical flow conditions. However, the analysis evaluated all flow conditions to ensure compliance with the CTR criteria at all times.

¹ U.S. EPA Technical Support Document for Water Quality-based Toxics Control (TSD), pg. 96.

² U.S. EPA NPDES Permit Writers’ Handbook (EPA 833-K-10-001 September 2010, pg. 6-24)

Table F-9. Verification of CTR Compliance for Copper

Receiving water hardness used to compute effluent limitations				40.0 mg/L
Effluent Concentration Allowance (ECA) for Copper ²				5.9 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Copper Concentration ¹ (µg/L)	
1Q10	39.9	5.896	5.904	No ³
7Q10	39.9	5.896	5.904	No ³
Max receiving water flow	40	5.904	5.904	Yes

¹ This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

² The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. This Order includes average monthly and maximum daily effluent limits for copper of 10 µg/L and 18.5 µg/L, respectively. The effluent limits were calculated per section 1.4 of the SIP, which ensures compliance with the ECA considering effluent variability and the probability basis of each effluent limit.

³ The minimum effluent hardness is slightly lower than the minimum ambient receiving water hardness (38 mg/L vs. 40 mg/L) and therefore at any mixture of effluent to receiving water will be slightly out of compliance with CTR criteria strictly speaking. However, the receiving water is never effluent dominated and there is a mixing zone for aquatic life criteria; therefore use of the lowest ambient hardness of 40 mg/L is still protective of CTR criteria and the narrative basin plan objective for toxicity.

Table F-10. Verification of CTR Compliance for Silver

Receiving water hardness used to compute effluent limitations				40.0 mg/L
Effluent Concentration Allowance (ECA) for Silver ²				0.84 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Silver Concentration ¹ (µg/L)	
1Q10	39.9	0.837	0.839	No ³
7Q10	39.9	0.837	0.839	No ³
Max receiving water flow	40	0.839	0.839	Yes

¹ This concentration is derived using worst-case ambient conditions. These conservative assumptions will ensure that the receiving water always complies with CTR criteria.

² The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There is no effluent limitation for silver as it demonstrates no reasonable potential.

³ The minimum effluent hardness is slightly lower than the minimum ambient receiving water hardness (38 mg/L vs. 40 mg/L) and therefore at any mixture of effluent to receiving water will be slightly out of compliance with CTR criteria strictly speaking. However, the receiving water is never effluent dominated and there is a mixing zone for aquatic life criteria; therefore use of the lowest ambient hardness of 40 mg/L is still protective of CTR criteria and the narrative basin plan objective for toxicity.

3. Determining the Need for WQBEL's

Federal regulations at 40 C.F.R 122.44(d)(1)(i) state, "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 that 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." The process to determine whether a WQBEL is required is referred to as a *reasonable potential analysis or RPA*. Central Valley Water Board staff conducted RPA's for nearly 200 constituents, including the 126 USEPA priority toxic pollutants. This section includes details of the RPA's for constituents of concern for the Facility. The entire RPA is included in the administrative record and a summary of the constituents of concern is provided in Attachment G. For priority pollutants, the SIP dictates the procedures for conducting the RPA. For non-priority pollutants the Central Valley Water Board is not restricted to one particular RPA method, therefore, the RPA's have been conducted based on EPA guidance considering multiple lines of evidence and the site-specific conditions of the discharge.

- a. **Constituents with No Reasonable Potential.** Central Valley Water Board staff conducted reasonable potential analyses for nearly 200 constituents, including the 126 USEPA priority toxic pollutants. All reasonable potential analyses are included in the administrative record and a summary of the constituents of concern is provided in Attachment G. WQBEL's are not included in this Order for constituents that do not demonstrate reasonable potential to cause or contribute to an instream excursion of an applicable water quality objective; 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. This section only provides the rationale for the reasonable potential analyses for the following constituents of concern that were found to have no reasonable potential after assessment of the data:

i. Aluminum

- (a) **WQO.** The State Water Board Division of Drinking Water (DDW) has established Secondary Maximum Contaminant Levels (MCLs) to assist public drinking water systems in managing their drinking water for public welfare considerations, such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L for protection of the MUN beneficial use. Title 22 requires compliance with Secondary MCLs on an annual average basis.

The Code of Federal Regulations promulgated criteria for priority toxic pollutants for California's surface waters as part of section 131.38 Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule or CTR), including metals criteria. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, WQBEL's in the Central Valley Region's NPDES permits are based on the Basin Plans' narrative toxicity objective. The Basin Plans' *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, "on a

case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective.” Relevant information includes, but is not limited to (1) USEPA Ambient Water Quality Criteria (NAWQC) and subsequent Correction, (2) site-specific conditions of the Sacramento River, the receiving water, and (3) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).)

USEPA NAWQC. USEPA recommended the NAWQC aluminum acute criterion at 750 µg/L based on test waters with a pH of 6.5 to 9.0. USEPA also recommended the NAWQC aluminum chronic criterion at 87 µg/L based upon the following two toxicity tests. All test waters contained hardness at 12 mg/L as CaCO₃.

- (1) Acute toxicity tests at various aluminum doses were conducted in various acidic waters (pH 6.0 – 6.5) on 159- and 160-day old striped bass. The 159-day old striped bass showed no mortality in waters with pH at 6.5 and aluminum doses at 390 µg/L, and the 160-day old striped bass showed 58% mortality at a dose of 174.4 µg/L in same pH waters. However, the 160-day old striped bass showed 98% mortality at aluminum dose of 87.2 µg/L in waters with pH at 6.0, which is USEPA's basis for the 87 µg/L chronic criterion. The varied results draw into question this study and the applicability of the NAWQC chronic criterion of 87 µg/L.
- (2) Chronic toxicity effects on 60-day old brook trout were evaluated in circumneutral pH waters (6.5-6.9 pH) in five cells at various aluminum doses (4, 57, 88, 169, and 350 µg/L). Chronic evaluation started upon hatching of eyed eggs of brook trout, and their weight and length were measure after 45 days and 60 days. The 60-day old brook trout showed 24% weight loss at 169 µg/L of aluminum and 4% weight loss at 88 µg/L of aluminum, which is the basis for USEPA's chronic criteria. Though this test study shows chronic toxic effects of 4% reduction in weight after exposure for 60-days, the chronic criterion is based on 4-day exposure; so again, the applicability of the NAWQC chronic criterion of 87 µg/L is questionable.

Site-specific Conditions. USEPA advises that a water effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms when the pH and hardness conditions of the receiving water are not similar to that of the test conditions.¹ Effluent and Sacramento River monitoring data indicate that the pH and hardness

¹ “The value of 87 micro-g/L is based on a toxicity test with striped bass in water with pH = 6.5-6.6 and hardness < 10 mg/L. Data in [a 1994 Study] indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time.” USEPA 1999 NAWQC Correction, Footnote L

values are not similar to the low pH and hardness conditions under which the chronic criterion for aluminum was developed, as shown in the table below, and therefore, the Central Valley Water Board does not expect aluminum to be as toxic in the Sacramento River as in the previously described toxicity tests. The pH of the Sacramento River, the receiving water upstream of the discharge, ranged from 7.0 to 8.8 standard units with a median of 7.7 standard units based on 159 monitoring results obtained between 1 January 2014 and 31 December 2016. These water conditions typically are circumneutral pH where aluminum is predominately in the form of $Al(OH)_3$ and non-toxic to aquatic life. The hardness of the Sacramento River upstream of the discharge ranged from 40 mg/L to 63 mg/L, based on 43 samples from 1 January 2014 to 31 December 2016, which is above the conditions, and thus less toxic, than the tests used to develop the chronic criterion.

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Receiving Water
pH	standard units	6.0 – 6.5	6.1 – 7.5	7.0 – 8.8
Hardness, Total (as $CaCO_3$)	mg/L	12	38 – 55	40 – 63
Aluminum, Total Recoverable	µg/L	87.2 - 390	15.7 – 437	12.9 – 1240

Local Environmental Conditions and Studies. Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. The pH and hardness of the Sacramento River are similar to the site-specific pH and hardness as shown in the table below, and thus the results of these site-specific aluminum toxicity tests are relevant and appropriate for the Sacramento River. As shown in the following table, all EC_{50}^1 toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Thus, the toxic effects of aluminum in these surface waters and in the Sacramento River, is less toxic (or less reactive) to aquatic species than demonstrated in the toxicity tests that USEPA used for the basis of establishing the chronic criterion of 87 µg/L. This new information, and review of the toxicity tests USEPA used to establish the chronic criterion, indicates that 87 µg/L is overly stringent and not applicable to the Sacramento River.

Central Valley Region Site-Specific Aluminum Toxicity Data

Discharger	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH	WER
<i>Oncorhynchus mykiss</i> (rainbow trout)					
Manteca	Surface Water/Effluent	124	>8600	9.14	N/C
Auburn	Surface Water	16	>16500	7.44	N/C
Modesto	Surface Water/Effluent	120/156	>34250	8.96	>229

¹ The effect concentration is a point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapacitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC_{50} is a point estimate of the toxicant concentration that would cause an observable adverse effect in 50 percent of the test organisms. The EC_{50} is used in toxicity testing to determine the appropriate chronic criterion.

Discharger	Test Waters	Hardness Value	Total Aluminum EC ₅₀ Value	pH	WER
Yuba City	Surface Water/Effluent	114/164 ¹	>8000	7.60/7.46	>53.5
<i>Ceriodaphnia dubia</i> (water flea)					
Auburn	Effluent	99	>5270	7.44	>19.3
	Surface Water	16	>5160	7.44	>12.4
Manteca	Surface Water/Effluent	124	>8800	9.14	N/C
	Effluent	117	>8700	7.21	>27.8
	Surface Water	57	7823	7.58	25.0
	Effluent	139	>9500	7.97	>21.2
	Surface Water	104	>11000	8.28	>24.5
	Effluent	128	>9700	7.78	>25.0
	Surface Water	85	>9450	7.85	>25.7
	Effluent	106	>11900	7.66	>15.3
	Surface Water	146	>10650	7.81	>13.7
Modesto	Surface Water/Effluent	120/156	31604	8.96	211
Yuba City	Surface Water/Effluent	114/164 ¹	>8000	7.60/7.46	>53.5
Placer County (SMD 1)	Effluent	150	>5000	7.4 – 8.7	>13.7
<i>Daphnia magna</i> (water flea)					
Manteca	Surface Water/Effluent	124	>8350	9.14	N/C
Modesto	Surface Water/Effluent	120/156	>11900	8.96	>79.6
Yuba City	Surface Water/Effluent	114/164 ¹	>8000	7.60/7.46	>53.5

The Discharger has not conducted a toxicity test for aluminum; however, the City of Manteca conducted toxicity tests in the San Joaquin River. As shown, the test water quality characteristics of the San Joaquin River near Manteca are most similar for pH and hardness in the Sacramento River, with a surface water hardness of 57 mg/L as CaCO₃ in comparison to the hardness of the Sacramento River near the discharge that averages 52 mg/L as CaCO₃. Thus, results of the site-specific study conducted on the San Joaquin River near Manteca are representative of the Sacramento River near the discharge. Therefore, the City of Manteca aluminum toxicity test study is relevant for use in determining the specific numerical criteria to be used in determining compliance with the Basin Plan's narrative toxicity objective. The City of Manteca aluminum toxicity study resulted in a minimum site-specific aluminum objective of 7,823 µg/L. Thus, these results support the conclusion that the 87 µg/L chronic criterion is overly stringent for the Sacramento River near the discharge.

Applicable WQOs. This Order implements the Secondary MCL of 200 µg/L as an annual average for the protection of MUN and implements the Basin Plan's narrative toxicity objective for the protection of aquatic life using an acute (1-hour) criterion and chronic (4-day) criterion of 750 µg/L based on USEPA's NAWQC and the discussion above.

- (b) **RPA Results.** The maximum annual average effluent concentrations for aluminum was 126 µg/L while the maximum annual average of observed upstream receiving water concentrations was 55.2 µg/L. Therefore, aluminum in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the drinking water secondary MCL of 200 µg/L.

ii. **Cadmium**

- (a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for cadmium. Waste Discharge Requirements Order R5-2012-0087 included a constituent study for cadmium in place of an effluent limitation. Using the default conversion factors and reasonable worst-case measured hardness as described in section IV.C.2.e, the applicable acute (1-hour average) and chronic (4-day average) criteria for the effluent are 1.6 µg/L and 1.2 µg/L, respectively, as total recoverable, and 0.22 µg/L as total recoverable as a Basin Plan criterion.
- (b) **RPA Results.** Following a constituent study required in WDR Order R5-2012-0087 that detailed quarterly monitoring for cadmium in the effluent, it was found that all results for cadmium in the effluent were Non-Detect (less than 0.05 µg/L). Therefore, cadmium in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan criterion of 0.22 µg/L.

iii. **Dichlorobromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of waters from which both water and organisms are consumed. Waste Discharge Requirements Order R5-2012-0086 included effluent limitations for dichlorobromomethane based on the CTR criterion for the protection of human health.
- (b) **RPA Results.** The MEC for dichlorobromomethane was 0.45 µg/L. Background concentrations in the receiving water for dichlorobromomethane were non-detect (less than 0.08 µg/L) for samples collected during the time period encompassing January 2014 through December 2016. Therefore, dichlorobromomethane in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the human health criterion of 0.56 µg/L, and the WQBEL's for dichlorobromomethane have not been retained in this Order.

iv. **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, livestock, 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-11. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective ¹	Secondary MCL ²	USEPA NAWQC	Effluent	
				Average ³	Maximum
EC (µmhos/cm)	Varies	900, 1600, 2200	N/A	333	453
TDS (mg/L)	Varies	500, 1000, 1500	N/A	197	293
Sulfate (mg/L)	Varies	250, 500, 600	N/A	12.6	12.6
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	32.9	45.1

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

² The secondary MCLs are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.

³ Maximum calendar annual average.

- (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.
- (2) **Electrical Conductivity or Total Dissolved Solids.** 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, or when expressed as 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.
- (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.

(b) RPA Results.

- (1) **Chloride.** Chloride concentrations in the effluent ranged from 19.9 mg/L to 45.1 mg/L, with an average of 26.6 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Sacramento River ranged from 1.1 mg/L to 3.8 mg/L, with an average of 2.5 mg/L, for 5 samples collected by the Discharger from January 2014 through December 2016.
- (2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows an average effluent EC of 317.3 µmhos/cm, with a range from 236 µmhos/cm to 453

µmhos/cm. These levels do not exceed the Secondary MCL. The background receiving water EC averaged 101.8 µmhos/cm. The average TDS effluent concentration was 179.5 mg/L with concentrations ranging from 123 mg/L to 293 mg/L. These levels do not exceed the Secondary MCL. The background receiving water TDS ranged from 64 mg/L to 87 mg/L, with an average of 75.5 mg/L.

- (3) **Sulfate.** Sulfate concentrations in the effluent ranged from 8.9 mg/L to 12.6 mg/L, with an average of 10.7 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Sacramento River ranged from 0.51 mg/L to 0.63 mg/L, with an average of 0.57 mg/L.
- (c) **WQBEL's.** Effluent limitations based on the MCL or the Basin Plan would likely require construction and operation of a reverse osmosis treatment plant. The State Water Board, in Water Quality Order 2005-005 (for the City of Manteca), states, "*...the State Board takes official notice [pursuant to Title 23 of California Code of Regulations, Section 648.2] of the fact that operation of a large-scale reverse osmosis treatment plant would result in production of highly saline brine for which an acceptable method of disposal would have to be developed. Consequently, any decision that would require use of reverse osmosis to treat the City's municipal wastewater effluent on a large scale should involve thorough consideration of the expected environmental effects.*" The State Water Board states in that Order, "*Although the ultimate solution to southern Delta salinity problems have not yet been determined, previous actions establish that the State Board intended for permit limitations to play a limited role with respect to achieving compliance with the EC water quality objectives in the southern Delta.*" The State Water Board goes on to say, "*Construction and operation of reverse osmosis facilities to treat discharges...prior to implementation of other measures to reduce the salt load in the southern Delta, would not be a reasonable approach.*"

The Central Valley Water Board, with cooperation of the State Water Board, has begun the process to develop a new policy for the regulation of salinity in the Central Valley. In a statement issued at the 16 March 2006, Central Valley Water Board meeting, Board Member Dr. Karl Longley recommended that the Central Valley Water Board continue to exercise its authority to regulate discharges of salt to minimize salinity increases within the Central Valley. Dr. Longley stated, "*The process of developing new salinity control policies does not, therefore, mean that we should stop regulating salt discharges until a salinity Policy is developed. In the meantime, the Board should consider all possible interim approaches to continue controlling and regulating salts in a reasonable manner, and encourage all stakeholder groups that may be affected by the Regional Board's policy to actively participate in policy development.*"

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 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 contrary

to the Region-wide effort to address salinity in the Central Valley. In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to continue to implement the Facility's existing 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.

- b. **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. **Iron**

- (a) **WQO.** The State Water Board Division of Drinking Water (DDW) has established Secondary Maximum Contaminant Levels (MCLs) to assist public drinking water systems in managing their drinking water for public welfare considerations, such as taste, color, and odor. The Secondary MCL for iron is 300 µg/L for protection of the MUN beneficial use.
- (b) **RPA Results.** Iron is not a priority pollutant, therefore the Central Valley Water Board is not restricted to one particular RPA method such as those dictated in the SIP for priority pollutants. The most stringent objective for iron is the secondary MCL as derived for human health and welfare considerations. Title 22 of the California Code of Regulations requires compliance with Secondary MCLs on an annual average basis.

Sample Date	Iron Effluent Result
17 January 2014	370 µg/L
5 January 2015	430 µg/L
5 October 2015	17 µg/L
12 January 2016	253 µg/L
29 March 2016	358 µg/L

Iron is sampled in the effluent by the Discharger twice a year with standard minerals testing. The Central Valley Water Board finds that the dataset is insufficient to determine if the discharge exhibits reasonable potential to cause or contribute to an exceedance of the Secondary MCL on an annual average basis. Therefore, this Order does not establish WQBEL's for iron. Instead of limitations, monthly effluent monitoring for iron has been established. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of the Secondary MCL, this Order may be reopened and modified by adding appropriate effluent limitations.

ii. **Nickel**

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

(b) **RPA Results.**

Sample Date	Method Detection Level (MDL)	Reporting Level (RL)	Nickel Effluent Result (µg/L)
5 October 2015	0.2	0.5	1.1
29 March 2016	1	2.5	1.1 J ¹

¹ The sample was diluted due to sample matrix resulting in elevated reporting limits.

When conducting the RPA for CTR metals with hardness-dependent criteria, the maximum ambient background concentration is compared with the CTR criteria calculated using the lowest observed upstream receiving water hardness. The lowest observed hardness was 40 mg/L (as CaCO₃), which correlates with a chronic criterion of 24 µg/L and an acute criterion of 220 µg/L (as total recoverable). The maximum observed upstream total recoverable lead was 33.1 µg/L measured on 29 March 2016. Therefore, the maximum ambient receiving water concentration exceeds the applicable chronic criterion for nickel. As shown in Table F-13, an evaluation of the known situation where metals and hardness were measured on the same day indicates that there was an instance where the upstream receiving water exceeded the CTR chronic criterion for nickel.

Table F-12. Nickel Receiving Water CTR Criteria Comparison

Sample Date	RW Hardness (mg/L)	Nickel	
		CTR Chronic Criterion (µg/L)	RW Nickel (µg/L)
29 March 2016	40	24	33.1

SIP Section 2.4.2 states that the Minimum Level (ML) is the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interferences.

- (1) Required ML's are listed in Appendix 4 of the SIP. Where more than one ML is listed in Appendix 4, the discharger may select any one of the cited analytical methods for compliance determination. The selected ML used for compliance determination is referred to as the Reporting Level (RL).
- (2) An RL can be lower than the ML in Appendix 4 only when the discharger agrees to use a RL that is lower than the ML listed in

Appendix 4. The Central Valley Water Board and the Discharger have no agreement to use a RL lower than the listed ML.

- (3) SIP Section 1.2 requires that the Regional Board use all available, valid, relevant, representative data and information, as determined by the Regional Board, to implement the SIP. SIP Section 1.2 further states that the Regional Board has the discretion to consider if any data are inappropriate or insufficient for use in implementing the SIP.
- (4) Data reported below the ML indicates the data may not be valid due to possible matrix interferences during the analytical procedure.
- (5) Further, SIP Section 2.4.5 (Compliance Determination) supports the insufficiency of data reported below the ML or RL. In part it states, *“Dischargers shall be deemed out of compliance with an effluent limitation, for reporting and administrative enforcement purposes, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the RL.”* Thus, if submitted data is below the RL, that data cannot be used to determine compliance with effluent limitations.
- (6) Data reported below the ML is not considered valid data for use in determining Reasonable Potential. Therefore, in accordance with Section 1.2 of the SIP, the Central Valley Water Board has determined that data reported below the ML is inappropriate and insufficient to be used to determine reasonable potential.
- (7) In implementing its discretion, the Central Valley Water Board is not finding that reasonable potential does not exist; rather the Central Valley Water Board cannot make such a determination given the invalid data. Therefore, the Central Valley Water Board will require additional monitoring for such constituents until such time a determination can be made in accordance with the SIP policy.

SIP Appendix 4 cites several ML's for nickel. The lowest applicable ML cited for nickel is 1 µg/L. The Discharger used an analytical method that was more sensitive than the ML required by the SIP, however due to a need to dilute the sample, elevated reporting limits were required.

Section 1.3, Step 6 of the SIP states that if the receiving water concentration exceeds the criteria and the pollutant is detected in the effluent, an effluent limitation is required. However, when the receiving water showed levels of nickel higher than the CTR chronic criterion, the effluent level for nickel was an estimated value (i.e., DNQ). Therefore, the submitted effluent nickel data is inappropriate and insufficient to determine reasonable potential under the SIP.

- c. **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, bis(2-ethylhexyl) phthalate, chlorine residual, copper, nitrate and nitrite, pH, settleable solids, and zinc. WQBEL's 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 1999 USEPA National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia (the “1999 Criteria”), 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.

The USEPA recently published national recommended water quality criteria for the protection of aquatic life from the toxic effects of ammonia in freshwater (the “2013 Criteria”)¹. The 2013 Criteria is an update to USEPA’s 1999 Criteria, and varies based on pH and temperature. Although the 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including new toxicity data on sensitive freshwater mussels in the Family Unionidae, the species tested for development of the 2013 Criteria may not be present in some Central Valley waterways. The 2013 Criteria document therefore states that, “*unionid mussel species are not prevalent in some waters, such as the arid west ...*” and provides that, “*In the case of ammonia, where a state demonstrates that mussels are not present on a site-specific basis, the recalculation procedure may be used to remove the mussel species from the national criteria dataset to better represent the species present at the site.*”

The Central Valley Water Board issued a 3 April 2014 *California Water Code Section 13267 Order for Information: 2013 Final Ammonia Criteria for Protection of Freshwater Aquatic Life* (13267 Order) requiring the Discharger to either participate in an individual or group study to determine the presence of mussels or submit a method of compliance for complying with effluent limitations calculated assuming mussels present using the 2013 Criteria. The Discharger submitted a letter to the Central Valley Water Board indicating their participation in the Central Valley Clean Water Association Freshwater Collaborative Mussel Study. Studies are currently underway to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria can be implemented in the Central Valley Region as part of a Basin Planning effort to adopt nutrient and ammonia objectives. Until the Basin Planning process is completed, the Central Valley Water Board will continue to implement the 1999 Criteria to interpret the Basin Plan’s narrative toxicity objective. The 1999 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

¹ *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater*, published August 2013 [EPA 822-R-13-001]

influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the Sacramento River (Box Canyon to Shasta Lake) has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Sacramento River (Box Canyon to Shasta Lake) is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

The maximum permitted effluent pH is 8.5, 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.

Paired pH and temperature data observed in the Sacramento River downstream of the discharge location between January 2014 and December 2016 was used to determine the 30-day CCC for ammonia. A 30-day CCC was calculated for each paired set of downstream pH and temperature data based on implementation of the 1999 Update of National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life. The 95th percentile of these calculated 30-day CCC values was found to derive the final 30-day CCC of 2.13 mg/L (as N). The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 2.13 mg/L (as N), the 4-day average concentration that should not be exceeded is 5.32 mg/L (as N).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed the Basin Plan narrative toxicity objective.

Federal regulations at 40 C.F.R. §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. Ammonia 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge*

characteristics (e.g., WQBEL's for pathogens in all permits for POTW's 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." With regard to POTW's, USEPA recommends that, "*POTW's should also be characterized for the possibility of chlorine and ammonia problems.*" (TSD, p. 50)

Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia in concentrations that produce detrimental physiological responses to human, plant, animal, or aquatic life would violate the Basin Plan narrative toxicity objective. The potential for ammonia 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. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBEL's are required.

- (c) **WQBEL's.** The Central Valley Water Board calculates WQBEL's 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 average weekly effluent limitation (AWEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. This Order contains a final average monthly effluent limitation (AMEL) and average weekly effluent limitation (AWEL) for ammonia of 5.7 mg/L and 7.8 mg/L, respectively, based on the acute criterion for the protection of aquatic life and the available dilution credits in the receiving water for acute criterion.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data between January 2014 and December 2016 shows that the MEC of 15.6 mg/L is greater than applicable WQBEL's. 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. A time schedule for compliance with the ammonia effluent limitations is established in TSO No. R5-2012-0087-01, as amended by Order R5-2017-0042, in accordance with Water Code section 13300, that requires preparation and implementation of a pollution prevention plan in accordance with Water Code section 13263.3. TSO No. R5-2012-0087-01 provides interim final effluent limits for ammonia until 27 May 2020. Thus, the Discharger will be protected from MMPs for violations of final ammonia limits until 27 May 2020, however, if any MMPs occur after this date in lieu of assessing all or a portion of a mandatory minimum penalty, section 13385 of the Water Code allows the regional board to instead require a publicly owned treatment works serving a small community to spend an equivalent amount towards the completion of a compliance project. The Discharger is currently in the process of upgrading the Facility to achieve compliance with final ammonia effluent limits.

ii. **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.** The maximum effluent concentration (MEC) for bis(2-ethylhexyl) phthalate was 2.6 µg/L while the maximum observed upstream receiving water concentration was less than 0.9 µg/L (Non-Detect). Therefore, bis(2-ethylhexyl) phthalate 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) **WQBEL's.** The receiving water contains assimilative capacity for bis(2-ethylhexyl) phthalate, therefore, a dilution credit of 2:1 was allowed in the development of the WQBEL's for bis(2-ethylhexyl) phthalate. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for bis(2-ethylhexyl) phthalate of 3.8 µg/L and 6.1 µg/L, respectively, based on the CTR criterion for the protection of human health.
- (d) **Plant Performance and Attainability.** Based on 25 data points collected during allowable surface water discharge periods from January 2014 through December 2016, the MEC for bis(2-ethylhexyl) phthalate was 2.6 µg/L, and the maximum expected effluent concentration, with a 98% probability and a 99% confidence level, is 3.8 µg/L. This maximum expected effluent concentration is equal to the average monthly effluent limitation; therefore, the Discharger should be able to maintain compliance with the proposed final MDEL and AMEL effluent limits of 6.1µg/L and 3.8 µg/L, respectively.

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 C.F.R. §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. 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's 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.*" With regard to POTW's, USEPA recommends that, "*POTW's 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 the Sacramento River, 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) **WQBEL's.** 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.** Although the Discharger violated the chlorine residual limitation twice in 2012, the Discharge has been able to maintain consistent compliance with the limitations in Waste Discharge Requirements Order R5-2012-0086. The Central Valley Water Board believes that immediate compliance with these effluent limitations is feasible.

iv. Copper

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used for the receiving water and effluent.
- (b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as copper. The CTR includes hardness-dependent criteria for copper for the receiving water. The maximum observed upstream receiving water copper concentration was 1.7 µg/L, based on 8 samples collected between January 2014 and December 2016. The RPA was conducted using the upstream receiving water hardness to calculate the criteria for comparison to the maximum ambient background concentration, and likewise using the reasonable worst-case downstream hardness to compare the maximum effluent concentration. The table below shows the specific criteria used for the RPA.

	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	4.3 µg/L ¹	1.7 µg/L	No ³
Effluent	4.7 µg/L ²	27.3 µg/L	Yes ⁴

¹ Based on lowest observed upstream hardness of 40 mg/L (as CaCO₃)

² Based on reasonable worst-case downstream hardness of 45 mg/L (as CaCO₃)

³ Per Section 1.3, step 4 of the SIP.

⁴ Per Section 1.3, step 6 of the SIP.

Based on the available data, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.

- (c) **WQBEL's.** The receiving water contains assimilative capacity for copper, therefore, a dilution credit of 3:1 for acute criterion and a dilution credit of 4:1 for chronic criterion were allowed in the development of the WQBEL's for copper. This Order contains a final average monthly effluent limitation

(AMEL) and maximum daily effluent limitation (MDEL) for copper of 10.0 µg/L and 18.5 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.

- (d) **Plant Performance and Attainability.** The MEC for copper in the effluent was 27.3 µg/L. Based on 25 data points collected during allowable surface water discharge periods from January 2014 through December 2016, the maximum expected effluent concentration of copper, with a 98% probability and a 99% confidence level, is 46.6 µg/L. Both the MEC and maximum expected effluent concentration are greater than the final effluent limits and the Discharger is expected to be in immediate non-compliance. However, if violations of the final copper effluent limitations occur during term of this Order and are subject to mandatory minimum penalties, in lieu of assessing all or a portion of a mandatory minimum penalty, section 13385 of the Water Code allows the regional board to instead require a publicly owned treatment works serving a small community to spend an equivalent amount towards the completion of a compliance project. The Discharger has completed a Preliminary Engineering Report and is in the process of securing funding to complete Facility upgrades to become compliant with final effluent limits for copper during the term of this Order.

v. **Nitrate and Nitrite**

- (a) **WQO.** DDW 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. DDW 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).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that are harmful to aquatic life and exceed the Basin Plan's narrative toxicity objective. This Order, therefore, requires removal of ammonia (i.e., nitrification). Nitrification is a biological process that converts ammonia to nitrate and nitrite, and will result in effluent nitrate concentrations above the Primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the Primary MCL threatens the health of human fetuses and newborn babies by reducing the oxygen-carrying capacity of the blood (methemoglobinemia).

Federal regulations at 40 C.F.R. section 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. Nitrate and nitrite 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.

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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's 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." With regard to POTW'S, USEPA recommends that, "POTW's should also be characterized for the possibility of chlorine and ammonia problems." (TSD, p. 50)

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threaten to exceed the Primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the Primary MCL would violate the Basin Plan narrative chemical constituents objective. This provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBEL's are required.

- (c) **WQBEL's.** This Order contains an average monthly effluent limitation (AMEL) and average weekly effluent limitation (AWEL) for nitrate plus nitrite of 10 mg/L and 21 mg/L, respectively, based on the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use. These effluent limitations are 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.
- (d) **Plant Performance and Attainability.** The MEC for nitrate plus nitrite in the discharge, as observed between January 2014 and December 2016, was 4.61 mg/L. The Discharge has been able to maintain consistent

compliance with the limitations in Waste Discharge Requirements Order R5-2012-0086. The Central Valley Water Board believes that immediate compliance with these effluent limitations is feasible.

vi. **Pathogens**

- (a) **WQO.** DDW 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 the DDW'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.

In a letter to the Central Valley Water Board dated 8 April 1999, DDW indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.

- (a) **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 WQBEL's are required.

Federal regulations at 40 C.F.R. §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. 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.

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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's 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 the Sacramento River (Box Canyon to Shasta Lake include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there may be, at times, less than 20:1 dilution. Although less than 20:1 dilution is not common, the flow in the receiving water is dictated by releases from Box Canyon Dam which do not necessarily mimic the natural hydrologic cycle of the watershed. As such, minimum receiving water flows may occur at any time, including at times when high wet weather effluent flows are present. The minimum flow in the receiving water at any time is 42 cfs, therefore any effluent flow greater than 1.29 mgd could result in a river to effluent dilution of less than 20:1 (once the discharge is fully mixed with the receiving water). It is not uncommon for effluent flow to be above 1.29 mgd in the winter and spring, and the minimum Box Canyon Dam flow release of 42 cfs may occur during these periods.

The effluent discharges to a segment of river that is a year-round whitewater recreation (kayaking) area, provided receiving water flows are greater than or equal to 400 cfs (as measured at Box Canyon Dam). The whitewater kayaking segment is known as the Box Canyon Run. The effluent outfall location is in the immediate vicinity of a technical river rapid that whitewater kayakers must navigate, and therefore undoubtedly come in body-contact with the receiving water and effluent. During periods when whitewater recreation is present near the outfall, the river to effluent flows are greater than 20:1 once the discharge has fully mixed with the receiving water. However, because the effluent discharges to the river in an area of slack water immediately above a technical river rapid, boaters may come in direct contact with undiluted effluent or minimally diluted effluent (i.e. <20:1) in either the slack water (where they stop to scout the rapid) or in the rapid itself. Whitewater kayaking is considered contact recreation.

To protect the beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease during periods of less than 20:1 dilution, which includes the period of time in which whitewater recreation is present, in and around the outfall. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DDW.

There are periods of time when wastewater receives dilution of more than 20:1 and the whitewater recreation, as described above, is not present. Therefore, the DDW requirements for effluent coliform concentration not to exceed 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL more than once in any 30 day period are applicable for such flow regimes.

- (b) **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.

In addition to coliform limitations, a turbidity operation and maintenance specifications have been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation 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, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with DDW recommended Title 22 disinfection criteria, weekly average effluent limitations are impracticable for turbidity. This Order includes operation and maintenance specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5% of the time within a 24-hour period; and 10 NTU as an instantaneous maximum.

Final WQBEL's for BOD₅ and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD₅ is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD₅ and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD₅ and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD₅ and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMEL's for BOD₅ and TSS of 10 mg/L, which is technically based on the capability of a tertiary system.

This Order contains effluent limitations for BOD₅, TSS, and total coliform organisms, and operation and maintenance specifications for turbidity, that require a tertiary level of treatment, or equivalent. The treatment is necessary

to protect the beneficial uses of the receiving water. Effluent meeting 10 mg/L BOD₅, 10 mg/L TSS, and a coliform effluent limit of 2.2 MPN/100 mL during the fall and spring discharge period (15 April through 14 June and 15 September through 15 November) was required in the previous permits and the Central Valley Water Board previously considered the factors in Water Code section 13241 is establishing the fall and spring period discharge requirements for BOD₅, TSS, and total coliform. Effluent limitations for BOD₅, TSS, and total coliform in the winter period (16 November through 14 April) were also required in Order R5-2012-0086 and are consistent with this Order.

During periods of discharge when a river to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs and only during the time period from 16 November through 14 April, effluent total coliform organisms shall not to exceed 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL more than once in any 30 day period. As such, the turbidity operation and maintenance specification, as described in this section, does not apply when a river to effluent flow ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs within the 16 November through 14 April time period.

- (c) **Plant Performance and Attainability.** New or modified control measures are necessary in order to comply with the disinfection and filtration requirements, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. As discussed in section IV.E of this Fact Sheet, a compliance schedule has been included in this Order.

vii. **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. Additionally, some wastewater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan’s numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBEL’s are required.

Federal regulations at 40 C.F.R. §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 WQBEL’s are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL’s for pathogens in all permits for POTW’s 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. Although the Discharger has pH controls in place, the pH for the Facility’s influent 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, WQBEL’s for pH are required in this Order.

- (c) **WQBEL’s.** 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.** WDR Order R5-2012-0086 contained a compliance schedule that provided interim final effluent limits for pH of 6.0 – 8.5 standard units. The compliance schedule will remain in effect in this Order until 22 November 2022. The Discharger has been able to maintain consistent compliance with the limitations in Waste Discharge Requirements Order R5-2012-0086. The Central Valley Water Board believes that immediate compliance with these effluent limitations is feasible.

viii. **Settleable Solids**

- (a) **WQO.** For inland surface waters, the Basin Plan states that “[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.”
- (b) **RPA Results.** The discharge of municipal wastewater has a reasonable potential to cause or contribute to an excursion above the Basin Plan’s narrative objective for settleable solids.
- (c) **WQBEL’s.** This Order contains average monthly and maximum daily effluent limitations for settleable solids. Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities.

- (d) **Plant Performance and Attainability.** Although the Discharger violated the settleable solids limitation twice in March 2016 (maximum daily and average monthly final effluent limits), the Discharge has been able to maintain consistent compliance with the limitations in Waste Discharge Requirements Order R5-2012-0086. The Central Valley Water Board believes that immediate compliance with these effluent limitations is feasible.

ix. **Zinc**

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. The Basin Plan also includes a hardness dependent water quality objective for zinc. These criteria for zinc are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA translators for the receiving water and effluent zinc concentrations, and a reasonable worst-case measured hardness as discussed in section IV.C.2.e of this Fact Sheet, were used to establish the criteria in the following section.
- (b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as zinc. The CTR includes hardness-dependent criteria for zinc for the receiving water. The maximum observed upstream receiving water zinc concentration was 4.2 µg/L, based on 8 samples collected between January 2014 and December 2016. The RPA was conducted using the upstream receiving water hardness to calculate the criteria for comparison to the maximum ambient background concentration, and likewise using the reasonable worst-case downstream hardness to compare the maximum effluent concentration. The table below shows the specific criteria used for the RPA.

	Basin Plan Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	16.0 µg/L ¹	4.2 µg/L	No ³
Effluent	17.4 µg/L ²	24.4 µg/L	Yes ⁴

¹ Based on lowest observed upstream hardness of 40 mg/L (as CaCO₃)

² Based on reasonable worst-case downstream hardness of 45 mg/L (as CaCO₃)

³ Per Section 1.3, step 4 of the SIP.

⁴ Per Section 1.3, step 6 of the SIP.

Based on the available data, zinc in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life

- (c) **WQBEL's.** The receiving water contains assimilative capacity for zinc, therefore, an acute aquatic life dilution credit of 3:1 and a chronic aquatic life dilution credit of 4:1 were allowed in the development of the WQBEL's for zinc. This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for zinc of 26.4 µg/L

and 51.4 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.

- (d) **Plant Performance and Attainability.** The MEC for zinc in the effluent was 24.4 µg/L. Based on 25 data points collected during allowable surface water discharge periods from January 2014 through December 2016, the maximum expected effluent concentration of zinc, with a 98% probability and a 99% confidence level, is 43.3 ug/L. Although the maximum expected effluent concentration is greater than the final average monthly effluent limit, based on past sampling data the Discharger is expected to be capable of complying with established final effluent limits. However, if violations of the final zinc effluent limitations occur during term of this Order and are subject to mandatory minimum penalties, in lieu of assessing all or a portion of a mandatory minimum penalty, section 13385 of the Water Code allows the regional board to instead require a publicly owned treatment works serving a small community to spend an equivalent amount towards the completion of a compliance project.

4. WQBEL Calculations

- a. This Order includes WQBEL's for ammonia, bis(2-ethylhexyl) phthalate, chlorine residual, copper, nitrate and nitrite, pH, pathogens, settleable solids, and zinc. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.5.b through e, below. See Attachment H for the WQBEL calculations.
- b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$\begin{array}{ll} ECA = C + D(C - B) & \text{where } C > B, \text{ and} \\ ECA = C & \text{where } C \leq B \end{array}$$

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 background samples.

- c. **Primary and Secondary MCLs.** For non-priority pollutants with primary MCLs to protect human health (e.g., nitrate plus nitrite), the AMEL is set equal to the primary MCL and the AWEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP.

For non-priority pollutants with secondary MCLs that protect public welfare (e.g., taste, odor, and staining), the WQBELs were calculated by setting the LTA equal to

the secondary MCL and using the AMEL multiplier to set the AMEL. The AWEL was calculated using the MDEL/AMEL multiplier from Table 2 of the SIP.

- d. **Aquatic Toxicity Criteria.** For priority pollutants with acute and chronic aquatic toxicity criteria, the WQBELs 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. For non-priority pollutants, WQBELs are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98th percentile occurrence probability.
- e. **Human Health Criteria.** For priority pollutants with human health criteria, the WQBELs are calculated in accordance with Section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP. For non-priority pollutants with human health criteria, WQBELs are calculated using similar procedures, except that an AWEL is established using the MDEL/AMEL multiplier from Table 2 of the SIP.

$$AMEL = mult_{AMEL} \left[\min \left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic} \right) \right]$$

$$MDEL = mult_{MDEL} \left[\min \left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}} \right) \right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}} \right) AMEL_{HH}$$

where:

$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL

$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL

M_A = statistical multiplier converting acute ECA to LTA_{acute}

M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations Discharge Point No. D-001

Table F-13. 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	--	--	--
	lbs/day ¹	183	275	--	--	--
Total Suspended Solids	mg/L	10	15	--	--	--
	lbs/day ¹	183	275	--	--	--
pH	SU	--	--	--	6.5	8.5
Priority Pollutants						

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Bis(2-ethylhexyl) phthalate	µg/L	3.8	--	6.1	--	--
Copper, Total Recoverable	µg/L	10.0	--	18.5	--	--
Zinc, Total Recoverable	µg/L	26.4	--	51.4	--	--
Non-Conventional Pollutants						
Ammonia, Total (as N)	mg/L	5.7	7.8	--	--	--
	lbs/day ¹	99	136	--	--	--
Chlorine Residual	mg/L	--	0.011 ²	0.019 ³	--	--
Nitrate + Nitrite (as N)	mg/L	10	21	--	--	--
Settleable Solids	mL/L-hr	0.1	--	0.2	--	--
Total Coliform Organisms	MPN/100 mL	23 ⁴	2.2 ⁵	240	--	--

¹ Mass loadings calculated using a PWWF of 2.1 mgd.

² 4-day average.

³ 1-hour average.

⁴ No more than once in a 30-day period.

⁵ 7-day median.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's 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."* Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

Minimum for any one bioassay----- 70%
Median for any three 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.)

Table F-14. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
09/09/2013	1	1	1	1	1
06/02/2014	1	1	1	1	1
03/02/2015	1	1	1	1	1
03/28/2016	1	1	1	1	1

- i. **RPA.** No dilution has been granted for chronic whole effluent toxicity. Chronic toxicity testing results exceeding 1.3 chronic toxicity units (TUc) (as 100/NOEC) and a percent effect at 100 percent effluent exceeding 25 percent demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Based on chronic toxicity testing conducted between September 2013 and March 2016 the maximum chronic toxicity result was 1 TUc, therefore, the discharge does not have reasonable potential to cause or contribute to an instream exceedance of the Basin Plan's narrative toxicity objective.

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, during the term of the previous order the Discharger submitted a TRE Workplan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. Provision VI.C.2.a of this Order

also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

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 workplan. 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.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 C.F.R. section 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. section 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 C.F.R. section 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 MCL's) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the design peak wet weather flow as defined in Discharge Prohibitions section III.G of this Order.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45 (d) requires average weekly and average monthly discharge limitations for POTW's unless impracticable. For bis(2-ethylhexyl) phthalate, copper, and zinc, weekly average effluent limitations have been replaced with maximum daily effluent limitations in accordance with Section 1.4 of the SIP. Furthermore, for BOD5, TSS, and settleable solids, 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.

3. Satisfaction of Anti-Backsliding Requirements

The CWA 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 CWA sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. section 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for ammonia, bis(2-ethylhexyl) phthalate, copper, and zinc. The effluent limitations for these pollutants are less stringent than those in Order R5-2012-0086. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

Order R5-2012-0086 established final effluent limitations for dichlorobromomethane. Based on effluent and receiving water data collected by the Discharger from January 2014 through December 2016, the discharge does not have reasonable potential to cause or contribute to an excursion above water quality objectives or criteria for dichlorobromomethane; therefore, final effluent limitations for dichlorobromomethane have been removed in this Order.

- 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 TMDL’s 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.

The Sacramento River is considered an attainment water for ammonia, bis(2-ethylhexyl) phthalate, copper, dichlorobromomethane, and zinc because the receiving water is not listed as impaired on the 303(d) list for these constituents.¹ As discussed in section IV.D.4, below, removal and/or relaxation of the effluent limits complies with federal and state antidegradation requirements. Thus, removal and/or relaxation of the effluent limitations for ammonia, bis(2-ethylhexyl) phthalate, copper, dichlorobromomethane, and zinc from Order R5-2012-0086 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 R5-2012-0086 was issued indicates that dichlorobromomethane does not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Additionally, updated information that was not available at the time Order R5-2012-0086 was issued indicates that less stringent effluent limitations for ammonia, bis(2-ethylhexyl) phthalate, copper, and zinc based on available dilution credits satisfy requirements in CWA section 402(o)(2). The updated information that supports the relaxation and/or removal of effluent limitations for these constituents includes the following:

- i. **Ammonia.** Based on a dilution/mixing zone study conducted in November 2009 and assimilative capacity for ammonia in the Sacramento River, Order R5-2012-0086 granted a mixing zone and dilution credits of 3:1 for the acute

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.

aquatic life criterion and 4:1 for the chronic aquatic life criterion as discussed in section IV.C.2.c of this Fact Sheet. The same dilution credits are being granted in this Order, however, based on statistical analysis of the updated effluent and receiving water ammonia data from January 2014 through December 2016 this Order includes less stringent effluent limitations for ammonia.

- ii. **Bis (2-ethylhexyl) Phthalate.** Based on a dilution/mixing zone study conducted in November 2009 and assimilative capacity for bis (2-ethylhexyl) phthalate in the Sacramento River, Order R5-2012-0086 granted a mixing zone and dilution credits of 2:1 for the human health criterion as discussed in section IV.C.2.c of this Fact Sheet. The same dilution credits are being granted in this Order, however, based on statistical analysis of the updated effluent and receiving water bis (2-ethylhexyl) phthalate data from January 2014 through December 2016 this Order includes less stringent effluent limitations for bis (2-ethylhexyl) phthalate.
- iii. **Copper.** Based on a dilution/mixing zone study conducted in November 2009 and assimilative capacity for copper in the Sacramento River, Order R5-2012-0086 granted a mixing zone and dilution credits of 3:1 for the acute aquatic life criterion and 4:1 for the chronic aquatic life criterion as discussed in section IV.C.2.c of this Fact Sheet. The same dilution credits are being granted in this Order, however, based on statistical analysis of the updated effluent and receiving water copper data from January 2014 through December 2016 this Order includes less stringent effluent limitations for copper.
- iv. **Dichlorobromomethane.** Effluent and receiving water monitoring data collected between January 2014 and December 2016 for dichlorobromomethane indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criterion.
- v. **Zinc.** Based on a dilution/mixing zone study conducted in November 2009 and assimilative capacity for zinc in the Sacramento River, Order R5-2012-0086 granted a mixing zone and dilution credits of 3:1 for the acute aquatic life criterion and 4:1 for the chronic aquatic life criterion as discussed in section IV.C.2.c of this Fact Sheet. The same dilution credits are being granted in this Order, however, based on statistical analysis of the updated effluent and receiving water zinc data from January 2014 through December 2016 this Order includes less stringent effluent limitations for zinc.

Thus, removal or relaxation of the effluent limitations for ammonia, bis(2ethylhexyl) phthalate, copper, dichlorobromomethane, and zinc from Order R5-2012-0086 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.

4. Antidegradation Policies

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 WQBEL's where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State

Water Board Resolution No. 68-16 "Statement of Policy with Respect to Maintaining High Quality Waters in California" (State Anti-Degradation Policy), as applicable. 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 effluent limitations for dichlorobromomethane based on updated monitoring data demonstrating that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. This Order relaxes effluent limitations for ammonia, bis(2-ethylhexyl) phthalate, copper, and zinc based on updated monitoring data collected from the effluent and receiving water. The removal and relaxation of WQBELs for these parameters will not result in an increase in pollutants concentration or loading, a decrease in the level of treatment or control, or a reduction of water quality. Therefore, the Central Valley Water Board finds that the removal and relaxation of the effluent limitations does not result in an increase in pollutants or any additional degradation of the receiving water. Thus, the removal and relaxation of effluent limitations is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16.

- a. **Surface Water.** The permitted surface water discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Anti-Degradation Policy. 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 requires the implementation of additional treatment or control measures to ensure that BPTC is being used at the Facility for BOD₅ and total suspended solids (TSS). Practicable treatment or control technologies are available to reduce the concentrations of BOD₅ and TSS in the discharge. Such reductions will result in lower loading of oxygen demanding substances and suspended solids and result in improved downstream water quality. Technologies such as granular media filtration of secondary-treated wastewater have proven to be capable of meeting the effluent limitations for BOD₅ and TSS contained in this Order. Other similarly-sized, located, and financed dischargers have implemented, or are actively working toward implementing treatment or controls sufficient to achieve the BOD₅ and TSS effluent limitations contained in this Order.

- b. **Groundwater.** The Discharger utilizes a leachfield for effluent disposal. Effluent discharge to the leachfield is not raw wastewater; it has been treated to secondary standards, and disinfected. This Order does not allow for an increase in flow or mass of pollutants to the groundwater. The permitted groundwater water discharge is consistent with the State Anti-degradation Policy. 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.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBEL's for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for BOD₅ and TSS. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. The WQBELs consist of restrictions on acute toxicity, ammonia, bis(2-ethylhexyl) phthalate, chlorine residual, copper, nitrate, nitrite, settleable solids, and zinc. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. For BOD₅, TSS, total coliform organisms and pH, both technology-based

effluent limitations and water quality-based effluent limitations are applicable. The more stringent of these effluent limitations are implemented by this Order.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD₅, TSS, and pH that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet (Attachment F section IV.C.3). In addition, the Central Valley Water Board has considered the factors in Water Code section 13241 in the Fact Sheet (Attachment F section IV.C.3.d).

**Summary of Final Effluent Limitations
Discharge Point D-001**

Table F-15. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis ^a
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	15	--	--	--	TTC
	lbs/day ¹	175	262	--	--	--	--
	% Removal	85	--	--	--	--	CFR
Total Suspended Solids	mg/L	10	15	--	--	--	TCC
	lbs/day ¹	175	262	--	--	--	--
	% Removal	85	--	--	--	--	CFR
pH	SU	--	--	--	6.5	8.5	BP
Bis(2-ethylhexyl) phthalate	µg/L	3.8	--	6.1	--	--	CTR
Copper, Total Recoverable	µg/L	10	--	18.5	--	--	CTR
Zinc, Total Recoverable	µg/L	26.4	--	51.4	--	--	BP
Ammonia, Total (as N)	mg/L	5.7	7.8	--	--	--	NAWQC
	lbs/day ¹	99	136	--	--	--	--
Nitrate Plus Nitrite (as N)	mg/L	10		--	--	--	MCL
Settleable Solids	mL/L-hr	0.1	--	0.2	--	--	BP
Total Coliform Organisms	MPN/100 mL	23 ²	2.2 ³	240	--	--	Title 22
Total Coliform Organisms ⁴	MPN/100 mL	--	23 ³	240	--	--	DDW

Parameter	Units	Effluent Limitations					Basis ^a
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

- ^a 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.
MCL – Based on the Primary Maximum Contaminant Level.
Title 22 – Based on State Water Board Division of Drinking Water Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

¹ Mass loadings calculated based on a PWWF of 2.1 mgd

² No more than once in a 30-day period

³ 7-day median

⁴ From 16 November through 14 April when a receiving water to effluent ratio of $\geq 20:1$ exists and the receiving water is < 400 cfs.

E. Interim Effluent Limitations

The State Water Board's Resolution 2008-0025 "Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits" (Compliance Schedule Policy) requires the Central Valley Water Board to establish interim numeric effluent limitations in this Order for compliance schedules longer than one year. As discussed in section VI.B.7 of this Fact Sheet, the Central Valley Water Board is approving a compliance schedule longer than one year for BOD₅, TSS, pH, and Title 22 (or equivalent) disinfection requirements. The Compliance Schedule Policy requires that interim effluent limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent.

The interim effluent limitations for BOD₅, TSS, pH, and Title 22 (or equivalent) disinfection requirements are based on permit limitations contained in Order R5-2012-0086.

- 1. Compliance Schedule for BOD₅, TSS, pH and Title 22 (or equivalent) disinfection requirements.** The permit limitations for BOD₅, TSS, pH, and total coliform organisms as contained in Order R5-2012-0086 were based on the implementation of new, revised, or newly interpreted water quality objective or criterion in a water quality standard and were more stringent limitations than previously imposed. These limitations were based on the effluent sampling data and State Water Board, Division of Drinking Water recommendations. The Discharger complied with the application requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy, and the Discharger's application demonstrated the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for BOD₅, TSS, pH, and total coliform organisms was established in Order R5-2012-0086 that required compliance with the new limitations within 8 years of the effective date of Order R5-2012-0086 (22 November 2020). On 13 September 2017, the Discharger submitted a request to extend the compliance schedule to 22 November 2022, the full 10 years allowed for a compliance schedule within a permit pursuant to the State Water Board's Compliance Schedule Policy. The request for extension complied with the requirements in paragraph 4 of the State Water Board's Compliance Schedule Policy.

An extension of the compliance schedule is necessary because the Discharger must implement actions, including securing funding, purchasing equipment and necessary materials for Facility upgrades, and constructing facilities, to comply with the more stringent permit limitations specified in this Order.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and has documented the results of those efforts. The Discharger has also made progress in working towards completing Facility upgrades that will bring the Discharger into compliance with limitations set forth in this Order. Efforts to this effect include: completion of a Preliminary Engineering Report, environmental impacts review, and passing necessary rate increases to secure funding for the construction of the compliance projects. The Discharger has also submitted compliance workplans for BOD₅, TSS and total coliform organisms, as well as a Pollution Prevention Plan for pH. The compliance schedule is as short as possible considering the need for the Discharger to finalize funding and begin construction on the project as discussed in the Preliminary Engineering Report. Facility upgrades include the installation of an AeroMod activated sludge treatment system (aeration basins, secondary clarifiers and digesters), travelling bridge filtration systems, and UV disinfection facilities.

Interim limitations based on the compliance schedule and limits in the previous Order have been continued in this Order. The interim limitations were determined as described in section IV.E.2., below and are applicable until the final limitations take effect. As part of the compliance schedule, the previous Order required the Discharger to submit a corrective action plan and implementation schedule to assure compliance with the final effluent limitations for BOD₅, TSS, pH, and total coliform organisms. In addition, the Discharger was to submit an engineering treatment feasibility study and prepare and implement a pollution prevention plan that is in compliance with Water Code section 13263.3(d)(3). The Discharger has complied with these requirements. The interim numeric effluent limitations and source control measures will result in the highest discharge quality that can reasonably be achieved until final compliance is attained.

2. **Interim Limits for BOD₅, TSS, and pH.** The Compliance Schedule Policy requires the Central Valley Water Board to establish interim requirements and dates for their achievement in the NPDES permit. Interim numeric effluent limitations are required for compliance schedules longer than one year. Interim effluent limitations must be based on current treatment plant performance or previous final permit limitations, whichever is more stringent. When feasible, interim limitations must correspond with final permit effluent limitations with respect to averaging bases (e.g., AMEL, MDEL, average monthly, etc.) for effluent limitations for which compliance protection is intended.

The interim limitations for BOD₅, TSS, and pH in this Order are based on federal treatment standards and the limitations contained in the previous Order. The interim AMEL and AWEL for BOD₅ and TSS are based on 40 C.F.R. part 133, which establishes the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD₅ and TSS. The interim MDEL for BOD₅ and TSS in this order is consistent with the previous order and is included because 1) the current treatment system provides secondary level treatment and a maximum daily limit is necessary to insure organic overloading does not occur and the treatment system operates in accordance with design specifications and 2) during the term of the previous order, the Discharger was unable to consistently meet the BOD₅/TSS limits during the "shoulder periods". It is anticipated that the Discharger will complete facility upgrades during the permit term and when final BOD₅/TSS effluent limits take effect on 22

November 2022 will be providing tertiary level treatment; thus final BOD₅/TSS effluent limits do not include a maximum daily limit consistent with 40 C.F.R. part 133.

The Central Valley Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with final effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved. Limited, short-term degradation is consistent with state and federal policies and is specifically authorized by 40 C.F.R. section 122.47 and the EPA-approved Compliance Schedule Policy.

The following table summarizes the interim effluent limitations for BOD₅, TSS, and pH:

Table F-16. Interim Effluent Limits Summary

Parameter	Units	Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C ¹	mg/L	30	45	60	--	--
	lbs/day ²	525	788	1050	--	--
Total Suspended Solids ¹	mg/L	30	45	60	--	--
	lbs/day ²	525	788	1050	--	--
pH	SU	--	--	--	6.0	--

¹ Interim limitation only applies during the period of 15 November through 14 April.

² Mass loading based on a PWWF of 2.1 mgd.

- Title 22 (or equivalent) Disinfection Requirements.** The establishment of Title 22 (or equivalent) disinfection requirements has been previously required for this discharge and a continuation of the existing schedule for compliance with these requirements is included as a Provision in this Order. This Order continues to provide interim effluent limitations for total coliform organisms during periods of discharge from 16 November through 14 April, when a receiving water to effluent flow ratio of <20:1 exists or the receiving water is ≥400 cfs, based on the interim effluent limitations found in Order R5-2012-0086, which the Discharger is currently capable of meeting. Full compliance with the final effluent limitations for total coliform organisms is not required by this Order until 22 November 2022. This has been extended from the 8 year timeframe originally set forth in Order R5-2012-0086 following a request for extension received from the Discharger. The compliance schedule for tertiary treatment has been developed in accordance with the Discharger's implementation schedule.

F. Land Discharge Specifications

- The Land Discharge Specifications are necessary to protect the beneficial uses of the groundwater.
- Daily Average Discharge Specification.** The discharge specification is based on the leachfield design average dry weather flow rate of 0.7 mgd.
- TSS and BOD₅.** The land discharge specifications for TSS and BOD₅ are based on specifications that are achievable by the Discharger with the dissolved air-flotation and continuous sand filter system when the Discharger is sending effluent to the Golf Course for recycled use. The TSS and BOD₅ specifications are more stringent than those found in the previous Order.

4. **Total Coliform Organisms.** The land discharge specifications for total coliform organisms are based on the Facility's proven ability to meet specifications and are established to protect the municipal beneficial use of the underlying groundwater. A leachfield investigation was conducted during the previous Order term that stated the geologic conditions under the site did not provide additional effluent treatment; therefore the total coliform organisms land discharge specifications are more stringent than those found in the previous Order.

G. Interim Land Discharge Specifications

1. **Compliance Schedule for BOD₅ and TSS specifications.** This Order puts the Discharger on a five-year compliance schedule to meet land discharge specifications for BOD₅ and TSS, which are more stringent than the discharge specifications previously imposed.

The compliance schedule requires the Discharger to implement actions, including securing funding, purchasing equipment and necessary materials for Facility upgrades, and constructing facilities to comply with the more stringent permit discharge specifications contained in this Order.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and has documented the results of those efforts. The Discharger has also made progress in working towards completing Facility upgrades that will bring the Discharger in compliance with the specifications set forth in this Order.

H. Recycling Specifications

1. Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements, Water Recycling Requirements Order No. 5-01-083, and must meet the requirements of CCR, Title 22.
2. **TSS and BOD₅.** The reclamation specifications for TSS and BOD₅ are based on limitations that are achievable by the Discharger with the dissolved air-flotation and continuous sand filter system. The TSS and BOD₅ specifications are the same as in the previous Order.
3. **Total Coliform Organisms.** The discharge specifications in this Order are consistent with the recycled water limitations for total coliform organisms in Water Recycling Requirements Order No. 5-01-083, which consists of limits for total coliform organisms of 2.2 MPN per 100 mL as a 7-day median and 23 MPN per 100 mL no more than once in any 30-day period. Additionally, a daily maximum total coliform organism limitation of 240 MPN per 100 mL is included. These specifications are based on the Facility's proven ability to meet the limitations and are retained from the previous Order.
4. **Turbidity.** The turbidity specifications are the same as those in the previous Order. The specifications are based on what can be achieved by the Discharger with the existing filtration system for an effluent containing a high algae content. These specifications are required to enhance the effectiveness of chlorine disinfection.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a)-(c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The 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 bacteria, 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.

B. Groundwater

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.
3. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

- a. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. **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 site-specific Toxicity Reduction Evaluation (TRE) or, under certain circumstances, may be allowed to participate in an approved Toxicity Evaluation Study (TES) in lieu of conducting a site-specific TRE. This Order may be reopened to include a new chronic toxicity numeric monitoring trigger, chronic toxicity effluent limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE and/or TES.
- c. **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.
- d. **Mixing Improvements.** This Order may be reopened to increase dilution credits and/or modify final effluent limitations, if appropriate, based on implementation of measures that improve mixing dynamics. These improvements may include modifications to the diffuser.
- e. **Flow Control.** This Order may be reopened for addition and/or modification of effluent limitations, mixing zones, and/or dilution credits, if appropriate, based on implementation of operational measures that ensure a higher minimum river to effluent flow ratio.
- f. **Minimum Whitewater Recreation Flow Rate.** The minimum flow rate necessary for whitewater recreation is based on the measurement of flow releases at Box Canyon Dam. Box Canyon Dam is located approximately 0.6 miles upstream of the Discharger's outfall and the Central Valley Water Board is not aware of any major tributary between the Dam and the outfall that would significantly change the flow rate at the outfall compared to that at the Dam. The Discharger may not desire to use Box Canyon Dam flow rates and/or may be unable to adequately access the flow rate data from the operator of the Dam; therefore, they may establish an in-stream flow measurement station upstream of their outfall (and below the Dam). This Order may be reopened to allow for an adjustment to the minimum whitewater recreation flow rate, if appropriate, as a result of the establishment of an upstream receiving water flow measurement station (located downstream of Box Canyon Dam) and the submittal of information that would justify a modification to the minimum whitewater recreation flow rate.
- g. **Groundwater Monitoring Well Replacement.** Based on a review of the results of the Groundwater Monitoring Well Replacement Work Plan and/or technical report, this Order may be reopened for addition and/or modification of land discharge

specifications, groundwater limitations, and/or water quality monitoring requirements.

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 September 2013 through March 2016, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

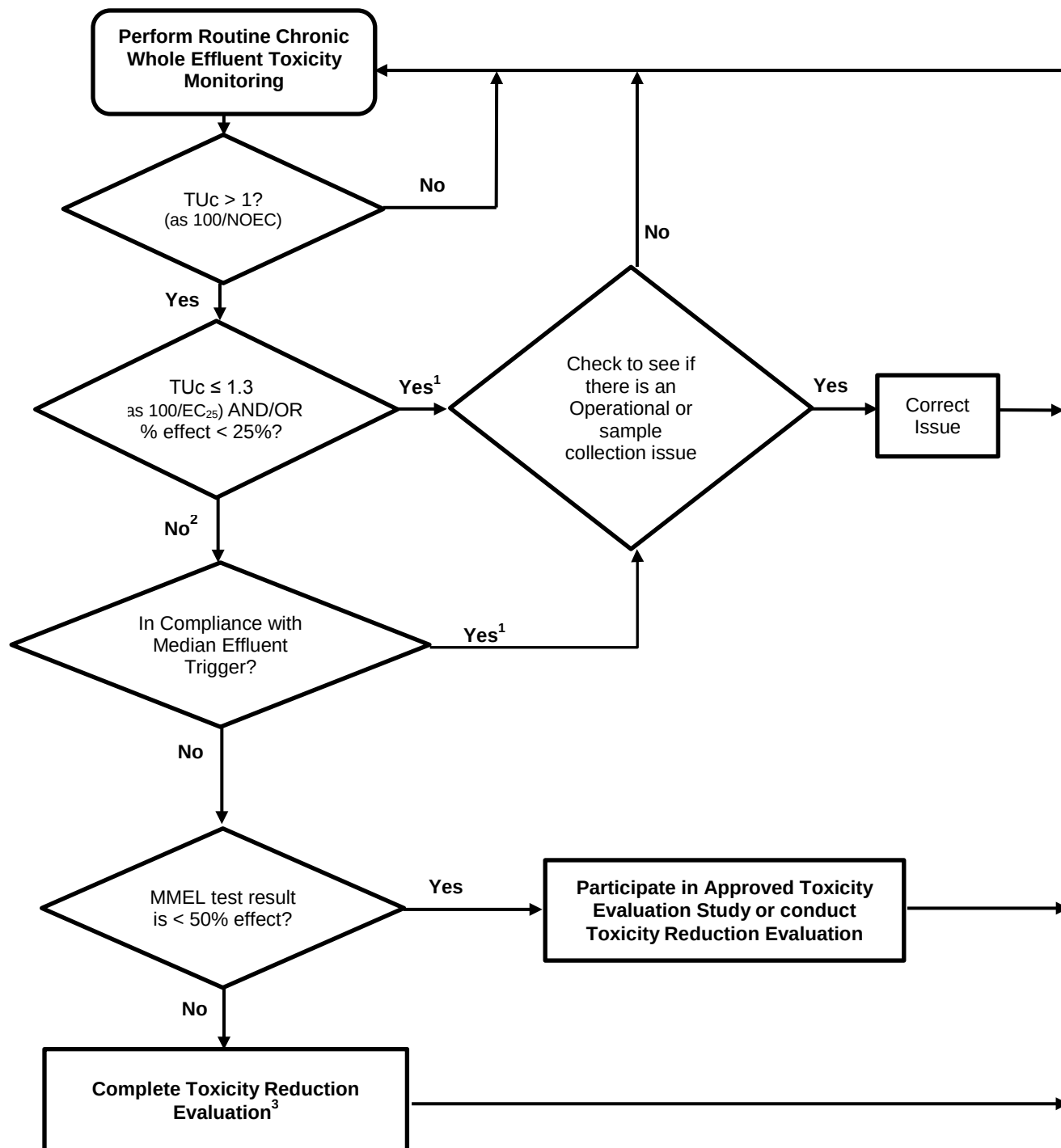
The Monitoring and Reporting Program of this Order requires chronic WET monitoring to demonstrate compliance with the Basin Plan's narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring trigger this provision requires the Discharger either participate in an approved Toxicity Evaluation Study (TES) or conduct a site-specific Toxicity Reduction Evaluation (TRE).

A TES may be conducted in lieu of a TRE if the percent effect is less than 50%. Determining the cause of toxicity can be challenging when the toxicity signal is low. Several Central Valley facilities with similar treatment systems have been experiencing intermittent low level toxicity. The dischargers have not been successful identifying the cause of the toxicity because of the low toxicity signal and the intermittent nature of the toxicity. Due to these challenges, the Central Valley Clean Water Association (CVCWA), in collaboration with staff from the Central Valley Water Board, has initiated a Special Study to Investigate Low Level Toxicity Indications (Group Toxicity Study). This Order allows the Discharger to participate in an approved TES, which may be conducted individually or as part of a coordinated group effort with other similar dischargers that are exhibiting toxicity. Although the current CVCWA Group Toxicity Study is related to low-level toxicity, participation in an approved TES is not limited to only low-level toxicity issues.

If the chronic toxicity is > 1 TUc (as 100/NOEC) **AND** the percent effect is ≤ 50 percent at 100 percent effluent, as the median of three consecutive bioassays within a 6 week period, the Discharger may participate in an approved TES in lieu of a TRE.

See the WET Monitoring Flow Chart (Figure F-2), below, for further clarification of the decision points for determining the need for TES/TRE initiation.

**Figure F-2
WET Monitoring Flow Chart**



¹ The Discharger shall participate in an approved TES if the discharge has exceeded the chronic toxicity monitoring trigger twice or more in the past 12 month period and the cause is not identified and/or addressed.

² The Discharger may elect to take additional samples to determine the 3 sample median. The samples shall be collected at least one week apart and the final sample shall be within 6 weeks of the initial sample exhibiting toxicity.

³ The Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a TRE within the past 12 months and has been unsuccessful in identifying the toxicant.

- b. **Groundwater Monitoring.** To determine compliance with the groundwater limitations contained in section V.B. of this Order, the Discharger is required to evaluate the adequacy of its groundwater monitoring network. This provision requires the Discharger to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells that allow for access to accurately measure depth to groundwater and that can provide consistent and reliable water quality data. The Discharge currently monitors a well on private property that does not allow for measurement of groundwater levels (both due to historically reported depth to groundwater and because of a lack of access port for measurement purposes.) Additionally, the Discharger has indicated that the data obtained from the well is suspect in quality due to a large holding tank and uncertainty over the source of the sampled water (holding tank or well itself). A new background monitoring well, either pre-existing with well construction details, measurement access port, and reliable water quality, or a new well installed by the Discharger, is required to maintain compliance with groundwater elevation, gradient and gradient direction monitoring requirements, as well as to provide reliable background water quality data to insure protection of the beneficial uses of the groundwater underlying the leachfield area and to accurately comply with Anti-Degradation Policy.
- c. **Outfall Line and Diffuser Repair.** The Facility's outfall line and diffuser must be repaired to eliminate leaks in the pipeline and to ensure effluent is discharged below the receiving water surface in a manner that optimizes the available mixing of the effluent with the receiving water.

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

- a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required to be maintained in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Sacramento River (Box Canyon to Shasta Lake).

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

- a. **Turbidity.** 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 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. 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.
- c. **Average Dry Weather Flow.** The previous Order included an average dry weather flow effluent limit which has been changed in this Order to a peak wet weather flow prohibition of 2.1 MGD since the Facility discharges during wet weather periods. The peak wet weather flow prohibition is based on the peak wet weather design capacity of the Facility. Provision VI.C.4.c has been included in this Order to ensure the Facility is not overloaded and to comply with antidegradation policies.

5. Special Provisions for Publicly-Owned Treatment Works (POTWs)

a. Pretreatment Requirements.

- i. The federal CWA section 307(b), and federal regulations, 40 C.F.R. part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 C.F.R. part 403.
- ii. The Discharger shall implement and enforce its approved pretreatment program, which is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water Board, the State Water Board or USEPA may take enforcement actions against the Discharger as authorized by the CWA.

- b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this Order 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 C.F.R. part 503. This Order does not regulate offsite use or disposal of biosolids, which are regulated instead under 40 C.F.R. part 503 and administered by U.S. EPA. The Sludge/Biosolids Treatment or Discharge Specifications in this Order implement the California Water Code to ensure sludge/biosolids are properly handled onsite to prevent nuisance, protect public health, and protect groundwater quality.

- c. **Collection System.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on 2 May 2006. The State Water Board amended the Monitoring and Reporting Program for the General Order through Order WQ 2013-0058-EXEC on 6 August 2013. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

The General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows that are more extensive, and therefore, more stringent than the requirements under federal standard provisions. The Discharger and public agencies that are discharging wastewater into the facility's collection system were required to obtain enrollment for regulation under the General Order by 1 December 2006.

6. Other Special Provisions

- a. Operations specifications for wastewater, during critical flow periods, to be oxidized, coagulated, filtered, and adequately disinfected pursuant to DDW reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), or

equivalent, are necessary in accordance with a 1 July 2003 DDW guidance memo on wastewater treatment levels for potential recreation and reclamation use. The effluent shall be disinfected in accordance with the total coliform organisms effluent limitations set forth in this Order, which are equivalent to “disinfected tertiary recycled water” disinfection requirements; however, wastewater treated for discharge need not comply with the CT requirement (total chlorine residual multiplied by the modal contact time measured at the same point) specified in the Title 22 section 60301.230(a) or the disinfection process outlined in section 60301.230(b).

7. Compliance Schedules

In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 C.F.R. section 122.44(d). There are exceptions to this general rule. The State Water Board’s Resolution 2008-0025 “Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits” (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a Total Maximum Daily Load (TMDL). All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric effluent limitations for that constituent or parameter, interim requirements and dates toward achieving compliance, and compliance reporting within 14 days after each interim date. The Order may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures.

The permit limitations for BOD₅, TSS, pH, and total coliform organisms as contained in Order R5-2012-0086 for discharges to surface waters were based on the implementation of new, revised, or newly interpreted water quality objective or criterion in a water quality standard and more stringent than the limitations previously imposed. These limitations were based on the effluent sampling data and State Water Board Division of Drinking Water recommendations. The Discharger complied with the application requirements in paragraph 4 of the State Water Board’s Compliance Schedule Policy, and the Discharger’s application demonstrated the need for additional time to implement actions to comply with the new limitations, as described below. Therefore, a compliance schedule for compliance with the effluent limitations for BOD₅, TSS, pH, and total coliform organisms was established in Order R5-2012-0086 that required compliance with the new limitations within 8 years of the effective date of Order R5-2012-0086 (22 November 2020). On 13 September 2017, the Discharger submitted a request to extend the compliance schedule to 22 November 2022, the full 10-years allowed for a compliance schedule within a permit pursuant to the State Water Board Compliance Schedule Policy. The request for extension complied with the requirements in paragraph 4 of the State Water Board’s Compliance Schedule Policy.

An extension of the compliance schedule is necessary because the Discharger must implement actions, including securing funding, purchasing equipment and necessary materials for Facility upgrades, and constructing facilities to comply with the more stringent permit limitations specified in this Order.

Additionally, the land discharge specifications for BOD₅ and TSS in this Order are more stringent than the land discharge specifications previously imposed. These new discharge specifications are based on the effluent sampling data and California Division of Drinking Water recommendations.

A five-year compliance schedule is included in this Order for the Discharger to meet the BOD₅ and TSS land discharge specifications. The Discharger is required to implement actions, including securing funding, purchasing equipment and necessary materials for Facility upgrades, and constructing facilities to comply with the more stringent permit discharge specifications contained in this Order.

The Discharger has made diligent efforts to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and has documented the results of those efforts. The Discharger has also made progress in working towards completing Facility upgrades that will bring the Discharger into compliance with limitations set forth in this Order. Efforts to this effect include: completion of a Preliminary Engineering Report, environmental impacts review, and passing necessary rate increases to secure funding for the construction of the compliance projects. The Discharger has also submitted compliance work plans for BOD₅, TSS and total coliform organisms, as well as a Pollution Prevention Plan for pH. The compliance schedule is as short as possible considering the need to the Discharger to finalize funding and begin construction on the project as discussed in the Preliminary Engineering Report. Facility upgrades include the installation of an AeroMod activated sludge treatment system (aeration basins, secondary clarifiers and digesters), travelling bridge filtration systems, and UV disinfection facilities.

The compliance schedules for BOD₅, TSS, pH, and total coliform organisms are included in Special Provisions section VI.C.7.

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

CWA section 308 and 40 C.F.R. sections 122.41(h), (j)-(l), 122.44(i), and 122.48 require that all NPDES permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to establish monitoring, inspection, entry, reporting, and recordkeeping requirements. The Monitoring and Reporting Program (MRP), Attachment E of this Order establishes monitoring, reporting, and recordkeeping requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD₅ and TSS reduction requirements). The monitoring frequencies for BOD₅, TSS, and pH (1/week) and flow (continuous) have been retained from Order No. R5-2012-0086.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 C.F.R. section 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.
2. Effluent monitoring frequencies and sample types for flow (continuous), acute toxicity (1/quarter), chronic toxicity (1/year), BOD₅ (1/week), TSS (1/week), total chlorine residual (continuous), bis(2-ethylhexyl) phthalate (1/month), settleable solids (1/week), copper (1/month), zinc (1/month), nitrate and nitrite (1/month), ammonia (1/month), total coliform organisms (2/week), and pH (continuous) have been retained from Order R5-2012-0086 to determine compliance with effluent limitations for these parameters.

3. Effluent monitoring frequencies and sample types for turbidity (1/day), total dissolved solids (1/month), EC (1/month), standard minerals (2/year), and hardness (1/month), have been retained from Order R5-2012-0086 to assess compliance with water quality objectives, assess the effectiveness of the treatment process, and/or to assess the impacts of the discharge on the receiving stream.
4. Effluent monitoring frequencies and sample types for temperature has increased in this Order from 3/week to 1/day to assess the effectiveness of the treatment process, and/or to assess the impacts of the discharge on the receiving stream.
5. Effluent monitoring for iron (grab sample, 1/month) has been added to this Order to assess compliance with water quality objectives.
6. Monitoring data collected over the previous permit term for aluminum, cadmium, and dichlorobromomethane did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order No. R5-2012-0086.
7. Effluent monitoring for priority pollutants and other constituents of concern at Discharge Point D-001 is required quarterly during the 3rd year of the permit term (with extension into the 4th year as necessary) to collect data necessary to determine reasonable potential, as required in section 1.2 of the SIP.
8. Water Code section 13176, subdivision (a), states: *"The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code."* The DDW 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 CWA. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with CWA requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times. Analyses for these constituents are conducted on site by the Discharger.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Annual chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

- a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.
- b. This Order retains sample types and monitoring frequencies from Order No. R5-2012-0086 for the receiving water at Monitoring Locations RSW-001 and RSW-002 for daily flow monitoring (RSW-001 only), weekly monitoring of temperature, total coliform organisms, pH, dissolved oxygen, and turbidity, hardness monitoring

(1/month at RSW-001 and 2/year at RSW-002), and 2/year monitoring for copper, zinc, and bis(2-ethylhexyl) phthalate.

- c. Surface water monitoring frequency for aluminum, dichlorobromomethane and cadmium have been reduced to be included only in priority pollutant testing, as described in Attachment E of this Order. These constituents no longer exhibit reasonable potential to cause an excursion above water quality objectives in the receiving water.
- d. Surface water monitoring for priority pollutants and other constituents of concern upstream of Discharge Point D-001 at Monitoring Location RSW-001 is required quarterly during the 3rd year of the permit term (with extension into the 4th year as necessary) to collect data necessary to determine reasonable potential, as required in section 1.2 of the SIP.

2. Groundwater

- a. Water Code section 13267 states, in part, “(a) A *Regional Water Board, in establishing...waste discharge requirements... may investigate the quality of any waters of the state within its region*” and “(b) (1) *In conducting an investigation..., the Regional Water Board may require that any person who... discharges... waste...that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.*” The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, a Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program is issued pursuant to Water Code section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.
- i. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with the State Anti-Degradation Policy. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has

been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with the State Anti-Degradation Policy and the Basin Plan.

- ii. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Central Valley Water Board plans and policies, including the State Anti-Degradation Policy. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.
- b. Groundwater monitoring frequency for EC, TDS, nitrate, standard minerals, depth to groundwater, groundwater elevation, gradient, gradient direction, fixed dissolved solids, pH, total coliform organisms, total nitrogen, ammonia, and TKN has remained the same as the previous Order (1/quarter). This is a result of the Discharger's continued use of the leachfield for effluent disposal, and to determine compliance with Anti-Degradation Policy when comparing constituent concentrations with those found in background wells.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring for compliance with 40 C.F.R. part 503 regulations is not included in this Order since it is a program administered by U.S. EPA. The webpage below provides information on compliance with U.S. EPA's part 503 biosolids program:

<https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws>

2. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater.

3. Reclamation Discharge Monitoring

- a. Reclamation discharge monitoring is required to determine compliance with reclamation discharge specifications. Reclamation monitoring for flow (continuous), total residual chlorine (before dechlorination (1/week) and after dechlorination (continuous)), BOD₅ (1/week), and TSS (1/week), total coliform organisms (1/day) and pH (continuous) has been retained from Order No. R5-2012-0086.
- b. Reclamation discharge monitoring frequency for turbidity has decreased from 3/day to 1/day.

4. Land Discharge Monitoring

- a. Land discharge monitoring is required to ensure that the discharge to the land disposal area complies with the land discharge specifications in section IV.B of this Order.
- b. Monitoring frequencies and sample types for flow (continuous), BOD₅ (1/week), TSS (1/week), total residual chlorine (continuous), total coliform organisms (2/week), and pH (1/day) have been retained from Order R5-2012-0086.
- c. Monitoring and final discharge specifications for settleable solids have been removed from this Order.

5. Discharge Monitoring Report-Quality Assurance (DMR-QA) Study Program

Under the authority of section 308 of the CWA (33 U.S.C. § 1318), U.S. EPA requires all dischargers under the NPDES Program to participate in the annual DMR-QA Study Program. The DMR-QA Study evaluates the analytical ability of laboratories that routinely perform or support self-monitoring analyses required by NPDES permits. There are two options to satisfy the requirements of the DMR-QA Study Program: (1) The Discharger can obtain and analyze a DMR-QA sample as part of the DMR-QA Study; or (2) Per the waiver issued by U.S.EPA to the State Water Board, the Discharger can submit the results of the most recent Water Pollution Performance Evaluation Study from their own laboratories or their contract laboratories. A Water Pollution Performance Evaluation Study is similar to the DMR-QA Study. Thus, it also evaluates a laboratory's ability to analyze wastewater samples to produce quality data that ensure the integrity of the NPDES Program. The Discharger shall submit annually the results of the DMR-QA Study or the results of the most recent Water Pollution Performance Evaluation Study to the State Water Board. The State Water Board's Quality Assurance Program Officer will send the DMR-QA Study results or the results of the most recent Water Pollution Performance Evaluation Study to U.S. EPA's DMR-QA Coordinator and Quality Assurance Manager.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for City of Mt. Shasta Wastewater Treatment Plant. 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.

A. 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 an opportunity to submit written comments and recommendations. Notification was provided through the following: physical posting, mailing, and internet posting.

The public had access to the agenda and any changes in dates and locations through the Central Valley Water Board's website at:

http://www.waterboards.ca.gov/centralvalley/board_info/meetings/

B. 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 16 October 2017.

C. 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: 7, 8 December 2017
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.

D. Reconsideration of Waste Discharge Requirements

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., within 30 calendar days of the date of adoption of this Order at the following address, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day:

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

Or by email at waterqualitypetitions@waterboards.ca.gov

For instructions on how to file a petition for review, see
http://www.waterboards.ca.gov/public_notices/petitions/water_quality/wqpetition_instr.shtml

E. 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 (916) 464-3291.

F. 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.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Kaylie Humbert at (530) 224-4851.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum	µg/L	437 126 ¹	1240 ² (97.5)	750 200	750	--	--	--	--	200 ³	No
Ammonia	mg/L	18.6	0.03	2.14	2.14	2.13 ⁴ 5.32 ⁵	--	--	--	--	Yes
Bis(2-Ethyhexyl) Phthalate	µg/L	2.6	ND	1.8	--	--	1.8	5.9	--	4	Yes
Cadmium	µg/L	ND	ND	0.22	1.6	1.2	--	--	0.22	5	No
Chloride	mg/L	45.1	3.8	250	--	--	--	--	--	250	No
Copper	µg/L	27.3	1.7	4.3	5.9	4.3	1300	--	5.62	1000	Yes
Dichlorobromomethane	µg/L	0.45	ND	0.56	--	--	0.56	46	--	80	No
Electrical Conductivity	µmhos/cm	453	143	900	--	--	--	--	--	900	No
Iron	µg/L	430 370 ¹	1450 ² (152)	300 ³	--	1000	--	--	--	300 ³	No ⁶
Nickel	µg/L	1.1	33.1	24	220	24	610	4600	--	100	No ⁶
Nitrate plus Nitrite	mg/L	4.61	0.03	10	--	--	10	--	--	10	No
Sulfate	mg/L	12.6	0.63	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	293	87	500	--	--	--	--	--	500	No
Zinc	µg/L	24.4	4.2	16	55	55	7400	26000	16	5000	Yes

General Note: All inorganic concentrations are given as a total recoverable.

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

Footnotes:

(1) Maximum annual average.

(2) Data outlier. Second maximum background indicated in italics.

(3) Based on an annual average.

(4) 30-day chronic criteria.

(5) 4-day chronic criteria.

(6) Not enough data to determine RP.

ATTACHMENT H – CALCULATION OF WQBEL'S

Human Health WQBEL's Calculations											
Parameter	Units	Criteria	Mean Background Concentration	CV Eff ¹	Dilution Factor	MDEL/AMEL Multiplier	AWEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL
Bis (2-ethylhexyl) phthalate	µg/L	1.8	ND	0.35	2	1.6	--	1.31	3.8	6.1	--
Nitrate plus Nitrite, Total (as N)	mg/L	10	0.025	1.39	--	--	2.1	2.3	10	--	21

¹ Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.

Aquatic Life WQBEL's Calculations																	
Parameter	Units	Criteria		B	CV Eff ⁷	Dilution Factors		Aquatic Life Calculations							Final Effluent Limitations		
		CMC	CCC			CMC	CCC	ECA Multiplier ^{acute}	LTA ^{acute}	ECA Multiplier ^{chronic}	LTA ^{chronic}	AMEL Multiplier ⁹⁵	AWEL Multiplier	MDEL Multiplier ⁹⁹	AMEL ¹	AWEL ²	MDEL ³
Ammonia Nitrogen, Total (as N)	mg/L	2.14	2.13 ⁴ 5.32 ⁵	0.03	0.29	3	4	0.54	4.5	0.885 ⁴ 0.72 ⁵	9.30 ⁴ 19.08 ⁵	1.26	1.73	--	5.7	7.8	--
Copper, Total Recoverable	µg/L	5.9	4.3	1.7	0.52	3	4	0.36	2.1	0.57	2.45	1.48	--	2.77	10.0	--	18.5
Zinc, Total Recoverable	µg/L	16 ⁶	55	4.2	0.56	3	4	0.34	45.4	0.55	34.54	1.52	--	2.95	26.4	--	51.4

¹ Average Monthly Effluent Limitations are calculated according to Section 1.4 of the SIP using a 95th percentile occurrence probability.

² Average Weekly Effluent Limitations are calculated according to Section 1.4 of the SIP using a 98th percentile occurrence probability.

³ Maximum Daily Effluent Limitations are calculated according to Section 1.4 of the SIP using a 99th percentile occurrence probability.

⁴ Chronic 30-day Criterion.

⁵ Chronic 4-day Criterion.

⁶ Criterion superseded by Basin Plan Objective.

⁷ Coefficient on Variation (CV) was established in accordance with section 1.4 of the SIP.