CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2014-XXXX
NPDES NO. CA0081759

WASTE DISCHARGE REQUIREMENTS FOR THE UNITED STATES DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, YOSEMITE NATIONAL PARK EL PORTAL WASTEWATER TREATMENT FACILITY MARIPOSA COUNTY

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

Table 1. Discharger Information

Discharger	U.S. Department of the Interior, National Park Service, Yosemite National Park
Name of Facility	El Portal Wastewater Treatment Facility
Facility Address	5083 Foresta Road
	El Portal, CA 95318
	Mariposa County

Table 2. Discharge Locations

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Tertiary-Treated Domestic Wastewater	37° 40' 04"	119° 48' 45"	Merced River *(via percolation)*
002	Tertiary-Treated Domestic Wastewater	37° 40' 04"	119° 48' 45"	Merced River

Table 3. Administrative Information

This Order was adopted on:	**<Adoption Date>**
This Order shall become effective on:	**<Effective Date>**
This Order shall expire on:	**<Expiration Date>**
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:	**<180 days prior to the Order expiration date>**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	**Major 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 the date indicated above.

_____
PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

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

II. FINDINGS

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

A. Legal Authorities. This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (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. 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 subsection 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. 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 or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.*"

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

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

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

THEREFORE, IT IS HEREBY ORDERED that Order R5-2008-0060 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

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

B. The bypass 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. Discharge of waste classified as 'hazardous' as defined in Title 23, California Code of Regulations (CCR), Section 2521(a), et seq., is prohibited.

E. 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.

F. Direct discharge to the Merced River when the ratio of river flow to wastewater discharge is less than 150:1, is prohibited.

G. Direct discharge to the Merced River without utilizing a diffuser, when the ratio of river flow to wastewater discharge is less than 200:1, is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Points 001 and 002

1. Final Effluent Limitations – Discharge Points 001 and 002

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

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

Table 4. Final Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	20	--	--
	lbs/day	84	167	--	--
Total Suspended Solids	mg/L	10	20	--	--
	lbs/day	84	167	--	--
pH	standard units	--	--	6.5	8.5
Non-Conventional Pollutants					
Ammonia Nitrogen, Total (as N) (1 May – 31 October)	mg/L	4.0	8.1	--	--
	lbs/day	34	68	--	--
Ammonia Nitrogen, Total (as N) (1 November – 30 April)	mg/L	4.5	12	--	--
	lbs/day	38	101	--	--
Phosphorus, Total	mg/L	0.5	1.0	--	--
	lbs/day	4.2	8.4	--	--
Nitrite plus Nitrate (as N)	mg/L	64	--	--	--
Priority Pollutants					
Copper, Total Recoverable	µg/L	21	38	--	--
Zinc, Total Recoverable	µg/L	95	160	--	--

b. **Percent Removal:** The average monthly percent removal of 5-day biochemical oxygen demand (BOD_5) and total suspended solids (TSS) shall not be less than 90 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.
ii. 90%, median for any three consecutive bioassays.

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

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

iii. 240 MPN/100 mL at any time.

e. **Average Monthly Daily Flow.** The average monthly daily flow shall not exceed 1.0 million gallons per day (MGD).

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in the Merced River:

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

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

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

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

5. **Dissolved Oxygen:**

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

   b. The 95th 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 U.S. EPA 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 C.F.R. 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 (MCLs) 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 MCLs specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

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

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

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

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

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

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

17. **Turbidity.** Turbidity to:

a. Exceed 2 Nephelometric Turbidity Units (NTUs) where natural turbidity is less than 1 NTU;

b. Increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;

c. Increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;

d. Increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor

e. Increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations

Neither the Facility nor the discharge shall cause underlying groundwater to contain waste constituents in concentrations greater than background water quality unaffected by waste sources.

VI. PROVISIONS

A. Standard Provisions

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

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

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

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

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

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

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

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

      The causes for modification include:

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

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

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

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

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

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

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

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

ii. Controls any pollutant limited in the Order.

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

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

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

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

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

i. Safeguard to electric power failure:

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

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

   iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and U.S. EPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

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

   The technical report shall:

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

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

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

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

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

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

m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13268, 13350, 13385, 13386, and 13387.

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

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

p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, instantaneous minimum effluent limitation, instantaneous maximum effluent limitation, maximum daily effluent limitation, 1-hour average effluent limitation, acute toxicity effluent limitation, or receiving water

limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (559) 445-5116 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.

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.

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 C.F.R. 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. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, new acute toxicity limitations, and/or effluent limitations for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

d. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents, except for copper. A site-specific WER of 2.0 was used for total recoverable and dissolved copper (see section IV.C. of the Fact Sheet). 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 additional 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.

e. **Drinking Water Policy.** On 26 July 2013, the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (hereinafter Basin Plan) and establishing a Drinking Water Policy. The State Water Board will consider adoption of the Drinking Water Policy at a future meeting. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

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

g. **Site-Specific Ammonia Criteria.** If it is determined that the receiving water conditions warrant more stringent ammonia WQBELs to protect the beneficial uses applicable to the Merced River, this Order may be reopened and modified effluent limitations added for ammonia.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or

eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger during accelerated monitoring established 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. This Provision includes requirements for the Discharger to develop and submit a TRE work plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

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

ii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is **> 4 TUc** (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits toxicity.

iii. **Accelerated Monitoring Specifications**. If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

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

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

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity.

Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

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

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

(3) A schedule for these actions.

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

3. Best Management Practices and Pollution Prevention

a. **Salinity Evaluation and Minimization Plan.** The Discharger shall prepare a salinity evaluation and minimization plan to identify and address sources of salinity from the Facility, including any chemicals used for drinking water and wastewater treatment and the contribution of salinity from any commercial users. The plan shall be completed and submitted to the Central Valley Water Board by **<180 days prior to the Order expiration date>** for the approval by the Executive Officer.

4. Construction, Operation and Maintenance Specifications

a. **Filtration System Operating Specifications.**

i. When coagulation is used, the Discharger shall operate the treatment system to ensure the turbidity measured at Monitoring Location FIL-002, as described in the MRP (Attachment E), shall not exceed:

(a) 2 NTU, as a 24-hour average;
(b) 5 NTU, more than 5 percent of the time within a 24-hour period; and
(c) 10 NTU, at any time.

ii. When coagulation is not used, the Discharger shall operate the treatment system to ensure:

(a) The turbidity of the influent to the filtration unit measured at Monitoring Location FIL-001, as described in the MRP (Attachment E), shall not exceed 5 NTU for more than 15 minutes and never exceed 10 NTU; and
(b) The filter effluent turbidity measured at Monitoring Location FIL-002, as described in the MRP (Attachment E), shall not exceed 2 NTU at any time.

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

b. **Ultraviolet Light Disinfection System Operating Specifications.** The Discharger shall operate the ultraviolet light disinfection system to provide a minimum ultraviolet light dose per channel of 100 millijoules per square centimeter (mJ/cm2) at all times, unless otherwise approved by the Department of Public Health (DPH), and shall maintain an adequate dose for disinfection while discharging to the percolation ponds (Discharge Point 001) and the Merced River (Discharge Point 002), unless otherwise approved by DPH.

i. The Discharger shall provide continuous, reliable monitoring of flow, ultraviolet light transmittance, ultraviolet light power, and turbidity.

ii. The minimum hourly average ultraviolet light transmittance (at 254 nanometers) in the wastewater exiting the ultraviolet disinfection system shall not fall below 55 percent of maximum at any time, unless otherwise approved by DPH.

iii. The Discharger shall operate the treatment system to ensure that turbidity prior to disinfection meets the filtration system operational specifications listed in Section VI.C.4.a. of this Order.

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

v. The lamp sleeves must be cleaned periodically as necessary to meet the requirements.

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

vii. The Facility must be operated in accordance with an operations and maintenance program that assures adequate disinfection.

c. **Percolation Pond Operating Requirements.**

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

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

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

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

(b) Weeds shall be minimized.

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

(d) Vegetation management operations in areas in which nesting birds have been observed shall be carried out either before or after, but not during, the **1 April to 30 June** bird nesting season.

iv. The Discharger shall operate and maintain all percolation ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow).

v. Objectionable odors originating at this Facility shall not be perceivable beyond the limits of the wastewater treatment plant, percolation pond areas, or at the outfall to the Merced River.

vi. As a means of discerning compliance with Discharge Prohibition III.C., the dissolved oxygen (DO) content in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/L. Should the DO be below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Central Valley Water Board within 7 days with a proposal that will ensure a consistent DO of at least 1.0 mg/L within 30 days.

d. **Pretreatment Requirements.**

Pursuant to 40 C.F.R. 122.41(e), the Discharger must properly operate and maintain all facilities of treatment and control (and related appurtenances) to achieve compliance with the conditions of this permit. Proper control includes an enforceable ordinance or memorandum of agreement with Yosemite Concession Services that ensures grease and trash disposed to the collection system does not cause sewer collection spills.

e. **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 Central Valley Water Board will satisfy these specifications.

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

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

iv. The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 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.

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

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

vii. By **<180 days from the effective date>,** the Discharger submit a biosolids use or disposal plan to the Central Valley Water Board. The plan shall describe at a minimum:

(a) Sources and amounts of biosolids generated annually.

(b) Location(s) of on-site storage and description of the containment area and containment features. The description shall include the Discharger's means of complying with Provisions VI.C.4.d. and the expected date the Discharger plans to begin applying sludge to the lined sludge drying beds.

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

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

general WDRs. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system.

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

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

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

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

B. Total Coliform Organisms Effluent Limitations (Section IV.A.1.d.). 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 seven days for which analyses have been completed. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the Discharger will be considered out of compliance for that parameter for that one day only within the reporting period.

C. Average Monthly Daily Flow Limitation (Section IV.A.1.e.). The average monthly daily flow represents the daily average flow (in million gallons per day) as determined over a calendar month.

D. 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.

E. Mass Effluent Limitations. The mass effluent limitations contained in the Final Effluent Limitations IV.A.1.a. are based on the permitted average monthly daily flow limitation and calculated as follows:.

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

ATTACHMENT A – DEFINITIONS

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

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

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

Best Practicable Treatment or Control (BPTC)
BPTC is a requirement of State Water Resources Control Board (State Water Board) Resolution No. 68-16 – "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the "Antidegradation Policy"). BPTC is the treatment or control of a discharge necessary to ensure that *"(a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*" Pollution is defined in California Water Code (Water Code) section 13050(l). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

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

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

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

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

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

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

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

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

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

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value, but above the MDL. Same as Detected, but Not Quantified (DNQ).

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 effluent 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 effluent 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, Appendix B.

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

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

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

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

Pollutant Minimization Program (PMP)
Pollutant Minimization 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 PMP shall be prepared in accordance with section 2.4.5.1. of the SIP. 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 of the SIP.

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

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

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

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

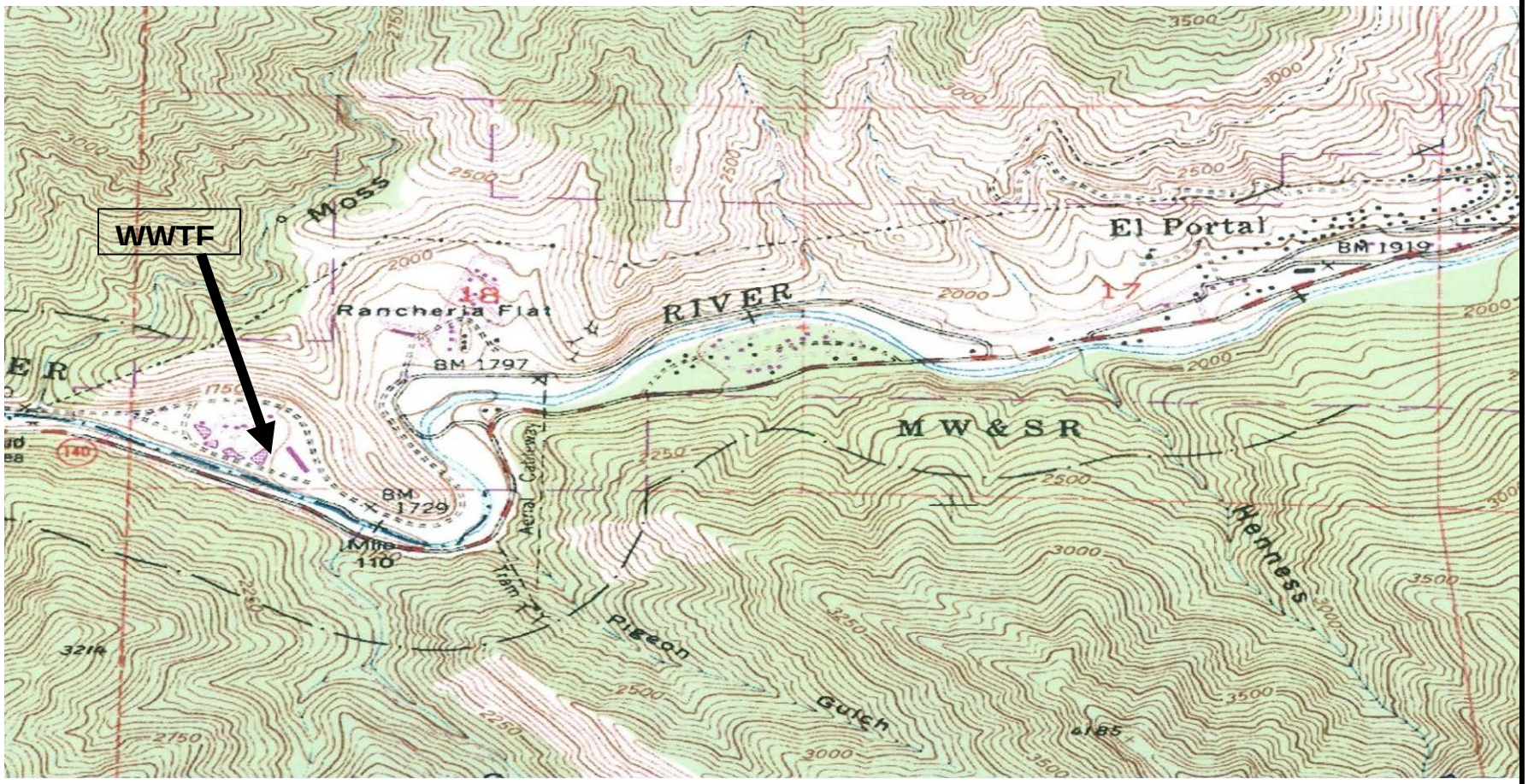
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

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

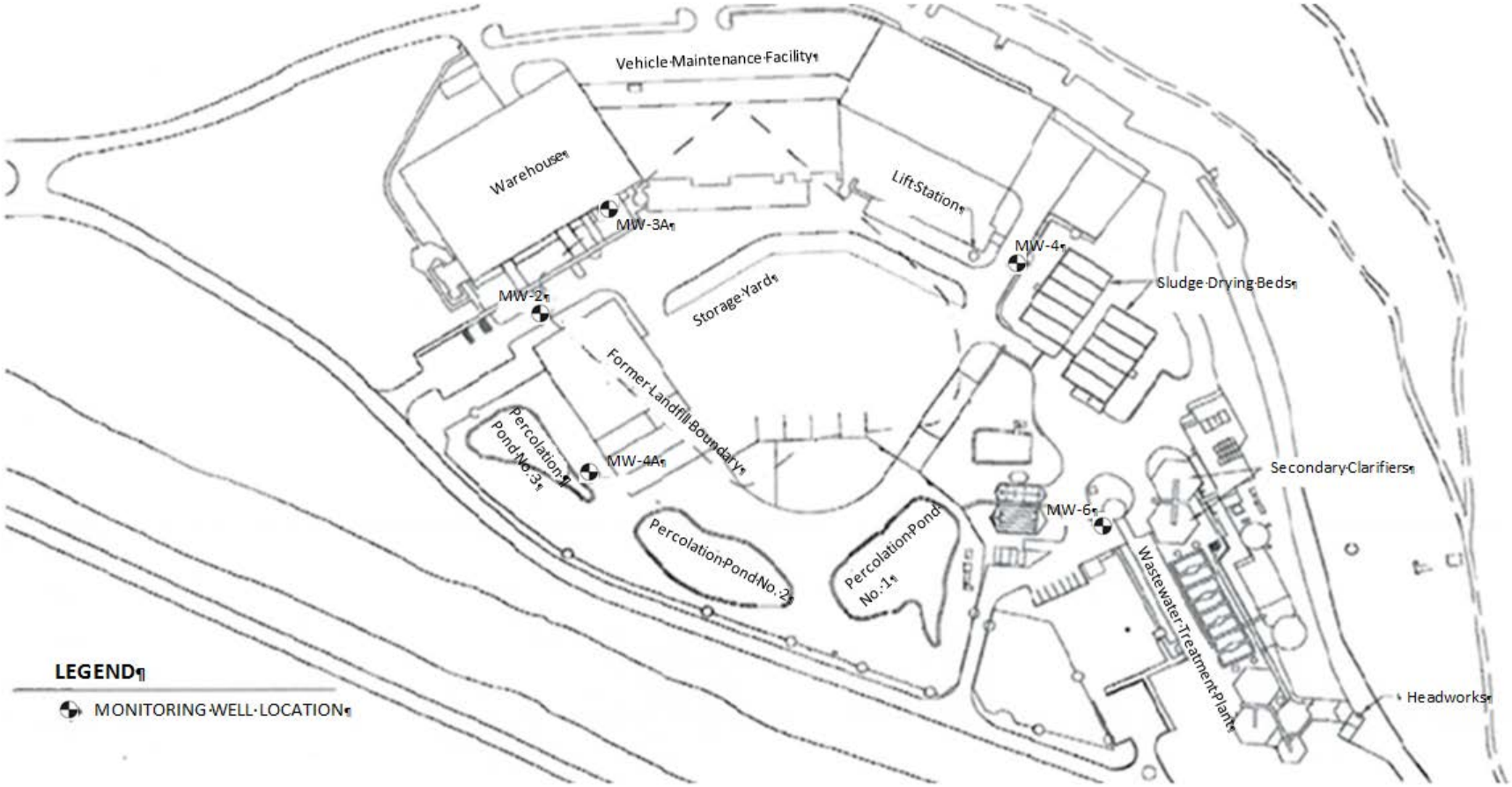
Toxicity Reduction Evaluation (TRE)

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.

ATTACHMENT B – MAPS

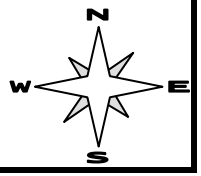


Drawing Reference: EL PORTAL U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE *Not to scale*	**SITE LOCATION MAP - 1** USDI, NPS, YOSEMITE NATIONAL PARK EL PORTAL WASTEWATER FACILITY MARIPOSA COUNTY	N W E S

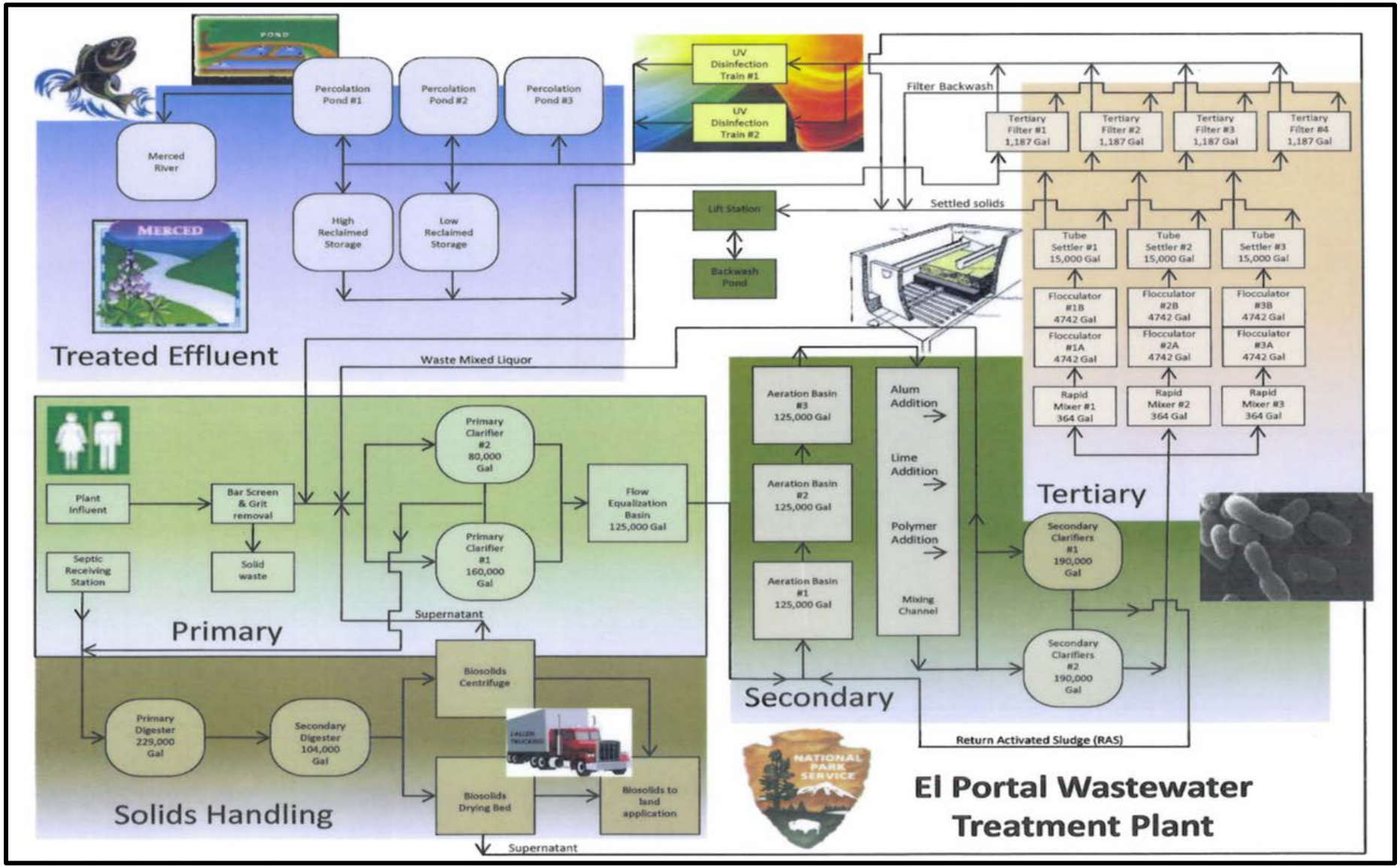


SITE LOCATION MAP - 2

USDI, NPS, YOSEMITE NATIONAL PARK
EL PORTAL WASTEWATER FACILITY
MARIPOSA COUNTY



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 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 or sludge use or disposal 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 (40 C.F.R. § 122.41(i); Water Code § 13383):

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

G. Bypass

1. Definitions
   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 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 a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 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. N o 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 results must be conducted according to test procedures under 40 C.F.R. part 136 or, in the case of sludge use or disposal, approved under 40 C.F.R. part 136 unless otherwise specified in 40 C.F.R. part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 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.)

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, and V.B.5 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).)

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 results of monitoring of sludge use or disposal practices. (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, in the case of sludge use or disposal, approved under 40 C.F.R. Part 136 unless otherwise specified in 40 C.F.R. Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the 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 notify the California Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):
   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
   b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)

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

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).)
3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R. § 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Central Valley Water Board or State 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. (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).)

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. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Central Valley Water Board as soon as they know or have reason to believe (40 C.F.R. § 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):
   a. 100 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(1)(i));
   b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));
   c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or
   d. The level established by the Central Valley Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)
2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" (40 C.F.R. § 122.42(a)(2)):
   a. 500 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(2)(i));
   b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));
   c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or
   d. The level established by the Central Valley Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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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. California Water Code (Water Code) sections 13267 and 13383 also authorize the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements 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 certified for such analyses by the California Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, dissolved oxygen, turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, dissolved oxygen, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff, State Water Resources Control Board (State Water Board) staff, United State Environmental Protection Agency (U.S. EPA) staff, and/or their authorized representatives. 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 U.S. EPA guidelines or to procedures approved by the Central Valley Water Board.

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

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

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

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

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

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	A location where a representative sample of the influent into the Facility can be collected prior to any plant return flows or treatment processes
001	EFF-001	Final disinfected tertiary-treated effluent, prior to discharge to the percolation ponds, where most representative of the effluent discharged
002	EFF-002	Final disinfected tertiary-treated effluent, prior to discharge to the Merced River, where most representative of the effluent discharged
--	RSW-001	Merced River, south of El Portal supply well #2, 119° 47’ 41” W, 37° 40’ 22”N
--	RSW-002	Merced River, downstream from bridge crossing at Railroad Flat, 119º 49’ 01” W, 37º 40’ 09” N
--	BIO-001	Representative of the dewatered biosolids shipped offsite for disposal and/or composting
--	PND-001	A location where a representative sample of percolation pond #1 can be collected (see Site Location Map #2, Attachment B)
--	PND-002	A location where a representative sample of percolation pond #2 can be collected (see Site Location Map #2, Attachment B)
--	PND-003	A location where a representative sample of percolation pond #3 can be collected (see Site Location Map #2, Attachment B)
--	SPL-001	Representative of water supply for the area served by the Facility
--	UVS-001	Ultraviolet light disinfection system
--	FIL-001	A location where a representative sample of the influent to the filtration system can be obtained
--	FIL-002	A location where a representative sample of the effluent from the filtration system prior to the ultraviolet disinfection system

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Biochemical Oxygen Demand (BOD 5-day @ 20°C)	mg/L	Composite [2]	1/Week	[1]
Electrical Conductivity @ 25 °C	µmhos/cm	Composite [2]	1/Week	[1]
Total Suspended Solids	mg/L	Composite [2]	1/Week	[1]

[1] 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.
[2] The Discharger shall conduct 12-hour or 24-hour composite sampling.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor tertiary-treated wastewater at Monitoring Location EFF-001 as follows during periods of discharge to the percolation ponds:

Table E-3. Effluent Monitoring Requirements – Monitoring Location EFF-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite [2]	1/Week	[1]
	lbs/day	Calculate		--
Total Suspended Solids	mg/L	24-hr Composite [2]	1/Week	[1]
	lbs/day	Calculate		--
pH	standard units	Grab	1/day [3]	[1, 4]
Priority Pollutants				
Copper, Total Recoverable	µg/L	24-hr Composite [2]	1/Quarter [10]	[1, 14]
Lead, Total Recoverable	µg/L	24-hr Composite [2]	1/Quarter [10, 13]	[1, 5]
Zinc, Total Recoverable	µg/L	24-hr Composite [2]	1/Month [10]	[1, 14]
Priority Pollutants and Other Constituents of Concern [11]	vary	24-hr Composite [2, 6]	1/Year [7]	[1, 5, 15, 16]
Non-Conventional Pollutants				
Aluminum, Total Recoverable OR Acid-Soluble	µg/L	24-hr Composite [2]	1/Quarter [10]	[1, 8]
Ammonia Nitrogen, Total (as N)	mg/L	Grab	2/Month [3, 9]	[1]
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite [2]	1/Week	[1]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month [10]	[1]
Phosphorus, Total (as P)	µg/L	24-hr Composite [2]	1/Quarter	[1]
Nitrite plus Nitrate (as N)	mg/L	Grab	1/Quarter	[1]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Quarter	[1]
Standard Minerals [12]	mg/L	Grab	1/Year	[1]
Temperature	°C	Grab	1/Day [3]	[1, 4]
Total Coliform Organisms	MPN/100 mL	Grab	1/Week	[1]
Whole Effluent Toxicity (see Section V. below)	--	--	--	--

[1] 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.
[2] 24-hour flow proportional composite.
[3] pH and temperature shall be recorded at the time of ammonia sample collection.
[4] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-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] Reporting levels for priority pollutants shall be equal to the reporting levels specified in Table E-10 of this Monitoring and Reporting Program (Attachment E). If more than one analytical test method is listed for a given parameter in Table E-10, the Discharger must select from the listed methods and corresponding reporting level.
[6] Volatile constituents shall be sampled in accordance with 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[7] Samples shall be collected at approximately the same time as the upstream receiving waters sample for priority pollutants and other constituents of concern.
[8] Samples can be analyzed by using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by U.S. EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.
[9] Concurrent with whole effluent toxicity monitoring.
[10] Hardness samples shall be collected concurrently with metals samples.
[11] See Table E-10 for the complete list of priority pollutants and other constituents of concern.
[12] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, sulfate, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[13] If the results of 8 quarters of monitoring indicate that the discharge does not cause or have reasonable potential to cause or contribute to an excursion above applicable water quality criteria, the Discharger may submit a written request to the Executive Officer to eliminate this requirement.
[14] The reporting level shall be any of the minimum levels listed in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP) that are below the effluent limitations specified in Section IV.A.1.a., Table 4 of this Order. If the lowest minimum level published in Appendix 4 of the SIP is not less than the effluent limitation, the reporting level shall be the lowest minimum level specified in Appendix 4 of the SIP.
[15] 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.
[16] Total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA method 1669: *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks* (section 9.4.4.2), and shall be analyzed by USEPA method 1631 (Revision E) with a reporting level of 0.5 ng/L.

B. Monitoring Location EFF-002

1. The Discharger shall monitor tertiary-treated wastewater at Monitoring Location EFF-002 as follows during periods of direct discharge to the Merced River (Discharge Point 002):

Table E-4. Effluent Monitoring Requirements – Monitoring Location EFF-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (BOD) (5-day @ 20 Deg. C)	mg/L	24-hr Composite [2]	2/Week	[1]
	lbs/day	Calculate		--
Total Suspended Solids	mg/L	24-hr Composite [2]	2/Week	[1]
	lbs/day	Calculate		--
pH	standard units	Grab	1/day [3]	[1, 4]
Priority Pollutants				
Copper, Total Recoverable	µg/L	24-hr Composite [2]	1/Quarter [10]	[1, 14]
Lead, Total Recoverable	µg/L	24-hr Composite [2]	1/Quarter [10, 13]	[1, 5]
Zinc, Total Recoverable	µg/L	24-hr Composite [2]	1/Month [10]	[1, 14]
Priority Pollutants and Other Constituents of Concern [11]	vary	24-hr Composite [2, 6]	1/Year [7]	[1, 5. 15 , 16]
Non-Conventional Pollutants				
Aluminum, Total Recoverable OR Acid-Soluble	µg/L	24-hr Composite [2]	1/Quarter [10]	[1, 8]
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week [3, 9]	[1]
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite [2]	1/Week	[1, 4]
Hardness (as $CaCO_3$)	mg/L	Grab	1/Month [10]	[1]
Phosphorus, Total (as P)	µg/L	24-hr Composite [2]	1/Month	[1]
Nitrite plus Nitrate (as N)	mg/L	Grab	1/Month	[1]
Standard Minerals [12]	mg/L	Grab	1/Year	[1]
Temperature	°C	Grab	1/Day [3]	[1, 4]
Total Coliform Organisms	MPN/100 mL	Grab	1/Day	[1]
Whole Effluent Toxicity (see Section V. below)	--	--	--	--

1 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.
2 24-hour flow proportional composite.
3 pH and temperature shall be recorded at the time of ammonia sample collection.
4 A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-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 Reporting levels for priority pollutants shall be equal to the reporting levels specified in Table E-10 of this Monitoring and Reporting Program (Attachment E). If more than one analytical test method is listed for a given parameter in Table E-10, the Discharger must select from the listed methods and corresponding reporting level.
6 Volatile constituents shall be sampled in accordance with 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
7 Samples shall be collected at approximately the same time as the upstream receiving water samples for priority pollutants and other constituents of concern.
8 Samples can be analyzed by using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by U.S. EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.
9 Concurrent with whole effluent toxicity monitoring.
10 Hardness samples shall be collected concurrently with metals samples.
11 See Table E-10 for the complete list of priority pollutants and other constituents of concern.

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

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

[13] If the results of 8 quarters of monitoring indicate that the discharge does not cause or have reasonable potential to cause or contribute to an excursion above applicable water quality criteria, the Discharger may submit a written request to the Executive Officer to eliminate this requirement.

[14] The reporting level shall be any of the minimum levels listed in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP) that are below the effluent limitations specified in Section IV.A.1.a., Table 4 of this Order. If the lowest minimum level published in Appendix 4 of the SIP is not less than the effluent limitation, the reporting level shall be the lowest minimum level specified in Appendix 4 of the SIP.

[15] 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.

[16] Total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA method 1669: *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks* (section 9.4.4.2), and shall be analyzed by USEPA method 1631 (Revision E) with a reporting level of 0.5 ng/L.

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 chronic toxicity testing requirements:

1. *Monitoring Frequency* – The Discharger shall perform **quarterly (1/quarter)** acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – The samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001 when discharge to the percolation ponds is occurring and at Monitoring Location EFF-002 when direct discharge to the Merced River is occurring.

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

4. *Test Type and Duration* – The test type shall be static renew or flow-through, and the test duration shall be 96 hours.

5. *Dilutions* – The acute toxicity testing shall be performed using undiluted effluent.

6. *Test Method* – The acute toxicity testing samples shall be analyzed using *Methods for Measuring the Acute Toxicity of Effluents and Receiving waters to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002. Temperature and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.

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

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

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

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001 when discharge to the percolation ponds is occurring and at Monitoring Location EFF-002 when direct discharge to the Merced River is occurring.

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

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

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The rainbow trout*, Oncorhynchus mykiss* (larval survival and growth test); and
   - The green alga, *Selenastrum capricornutum* (growth test).

5. Test Method – 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 (Method Manual).

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 – The chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below. For Toxicity Reduction Evaluation (TRE) monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below, unless use of an alternative diluent is detailed in the submitted TRE Action Plan. Laboratory control water shall be used as the diluent.

Table E-5. Chronic Toxicity Testing Dilution Series

	Dilutions (%)					Control
A. Sample	**100**	**75**	**50**	**25**	**12.5**	
% Effluent	100	75	50	25	12.5	0
% Laboratory Water	0	25	50	75	87.5	100

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

a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Method Manual, and its subsequent amendments or revisions; or

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

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

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

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

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

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

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

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted **within 30 days** following completion of the test.

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

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

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

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

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

VI. PERCOLATION PONDS MONITORING REQUIREMENTS

A. Monitoring Locations PND-001, PND-002, and PND-003

1. The Discharger shall monitor the percolation ponds at Monitoring Locations PND-001, PND-002, and PND-003 as follows:

Table E-6. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab [1]	1/Week [2]	--
pH	standard units	Grab	1/Week	--

[1] Sample shall be collected from the opposite to the inlet of each pond and shall be collected between 0800 and 0900 hours.
[2] If offensive odor detected by or brought to the attention of WWTF personnel, monitor affected pond(s) daily until dissolved oxygen $\geq$ 1.0 mg/L.

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. Monitoring Locations RSW-001 and RSW-002

1. The Discharger shall monitor the Merced River at upstream Monitoring Location RSW-001 and at downstream Monitoring Location RSW-002 as follows, during periods of discharge to the percolation ponds:

Table E-7a. Receiving Water Monitoring Requirements - RSW-001 and RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	cubic feet per second	USGS gauging station @ Pohono Bridge	1/Month	--
Conventional Pollutants				
pH	standard units	Grab	1/Month [3]	[1, 4]
Priority Pollutants				
Copper, Total Recoverable [2]	µg/L	Grab	1/Quarter [8]	[1, 5]
Zinc, Total Recoverable [2]	µg/L	Grab	1/Quarter [8]	[1, 5]
Priority Pollutants and Other Constituents of Concern [2, 10]	vary	Grab [11]	1/Year [6]	[1, 5, 12, 13]
Non-Conventional Pollutants				
Aluminum, Total Recoverable OR Acid-Soluble [2]	µg/L	Grab	1/Quarter [8]	[1, 7]
Dissolved Oxygen	mg/L	Grab	1/Month	[1, 4]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[1, 4]
Fecal Coliform Organisms	MPN/100 mL	Grab	1/Quarter	[1]
Hardness (as $CaCO_3$) [2]	mg/L	Grab	1/Month [8]	[1]
Nitrite plus Nitrate (as N)	mg/L	Grab	1/Quarter	[1]
Standard Minerals [2, 9]	mg/L	Grab	1/Year	[1]
Temperature	°C	Grab	1/Month [3]	[1, 4]
Turbidity	NTU	Grab	1/Quarter	[1, 4]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] 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.
[2] Monitoring is only required for upstream Monitoring Location RSW-001.
[3] pH and temperature shall be recorded at the same time.
[4] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-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] Reporting levels for priority pollutants shall be equal to the reporting levels specified in Table E-10 of this Monitoring and Reporting Program (Attachment E). If more than one analytical test method is listed for a given parameter in Table E-10, the Discharger must select from the listed methods and corresponding reporting level.
[6] Samples shall be collected at approximately the same time as effluent samples for priority pollutants and other constituents of concern.
[7] Samples can be analyzed by using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by U.S. EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.
[8] Hardness samples shall be collected concurrently with metals samples.
[9] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, sulfate, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[10] See Table E-10 for the complete list of priority pollutants and other constituents of concern.
[11] Volatile constituents shall be sampled in accordance with 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[12] In order to verify if bis (2-ethylhexyl) phthalate is truly present in the receiving water, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.
[13] Total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA method 1669: *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks* (section 9.4.4.2), and shall be analyzed by USEPA method 1631 (Revision E) with a reporting level of 0.5 ng/L.

2. The Discharger shall monitor the Merced River at upstream Monitoring Location RSW-001 and at downstream Monitoring Location RSW-002 as follows, during periods of direct discharge to the Merced River:

Table E-7b. Receiving Water Monitoring Requirements - RSW-001 and RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	cubic feet per second	USGS gauging station @ Pohono Bridge	1/Day	--
Conventional Pollutants				
pH	standard units	Grab	1/Day [3]	[1, 4]
Priority Pollutants				
Copper, Total Recoverable [2]	µg/L	Grab	1/Quarter [9]	[1, 5]
Zinc, Total Recoverable [2]	µg/L	Grab	1/Quarter [9]	[1, 5]
Priority Pollutants and Other Constituents of Concern [2, 10]	vary	Grab [11]	1/Year [6]	[1, 5, 12, 13]
Non-Conventional Pollutants				
Aluminum, Total Recoverable OR Acid-Soluble [2]	µg/L	Grab	1/Quarter [8]	[1, 7]

Dissolved Oxygen	mg/L	Grab	1/Day	[1, 4]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Day	[1, 4]
Fecal Coliform Organisms	MPN/100 mL	Grab	1/Day	[1]
Hardness (as $CaCO_3$) [2]	mg/L	Grab	1/Month [8]	[1]
Nitrite plus Nitrate (as N)	mg/L	Grab	1/Month	[1]
Standard Minerals [2, 9]	mg/L	Grab	1/Year	[1]
Temperature	°C	Grab	1/Day [3]	[1, 4]
Turbidity	NTU	Grab	1/Month	[1, 4]

[1] 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.
[2] Monitoring is only required for upstream Monitoring Location RSW-001.
[3] pH and temperature shall be recorded at the same time.
[4] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-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] Reporting levels for priority pollutants shall be equal to the reporting levels specified in Table E-10 of this Monitoring and Reporting Program (Attachment E). If more than one analytical test method is listed for a given parameter in Table E-10, the Discharger must select from the listed methods and corresponding reporting level.
[6] Samples shall be collected at approximately the same time as effluent samples for priority pollutants and other constituents of concern.
[7] Samples can be analyzed by using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by U.S. EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.
[8] Hardness samples shall be collected concurrently with metals samples.
[9] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, sulfate, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).
[10] See Table E-10 for the complete list of priority pollutants and other constituents of concern.
[11] Volatile constituents shall be sampled in accordance with 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
[12] In order to verify if bis (2-ethylhexyl) phthalate is truly present in the receiving water, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.
[13] Total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA method 1669: *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks* (section 9.4.4.2), and shall be analyzed by USEPA method 1631 (Revision E) with a reporting level of 0.5 ng/L.

3. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions bounded by Monitoring Locations RSW-001 and RSW-002. Notes on receiving water conditions shall be summarized in the monitoring report. Attention shall be given to the presence or absence of:

   a. Floating or suspended matter;
   b. Discoloration;
   c. Aquatic life (including plants, fish, shellfish, birds);
   d. Visible film, sheen, or coating;
   e. Fungi, slime, or objectionable growth; and
   f. Potential nuisance conditions.

   Receiving water observations shall be summarized in the monthly monitoring report.

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

a. A composite sample of the biosolids shall be collected **annually (1/year)** at Monitoring Location BIO-001 in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 C.F.R. Part 122, Appendix D, Tables II and III (excluding total phenols).

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

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

B. Domestic Water Supply

1. Monitoring Location SPL-001

The Discharger shall monitor the domestic water supply at SPL-001 consistent with Table E-8. Sampling stations shall be established where representative samples of the domestic water supply can be obtained.

Table E-8. Domestic Water Supply Monitoring Requirements

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

[1] If the water supply is from more than one source, the total dissolved solids and electrical conductivity shall be reported as a weighted average and include copies of supporting calculations.
[2] Standard minerals shall include 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] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

C. Ultraviolet Light Disinfection System

1. Monitoring Locations UVS-001 and FIL-001

The Discharger shall monitor the ultraviolet light disinfection system at Monitoring Locations UVS-001 and FIL-001 as follows:

Table E-9. Ultraviolet Light Disinfection System Monitoring Requirements

Parameter	Units	Sample Type	Monitoring Location	Minimum Sampling Frequency
Flow	MGD	Meter	UVS-001	Continuous [1]
Turbidity	NTU	Meter	FIL-001, FIL-002 [5]	Continuous [1, 3]
Number of ultraviolet light banks in operation	Number	Observation	N/A	Continuous [1]
Ultraviolet Light Transmittance	Percent (%)	Meter	UVS-001	Continuous [1]
Ultraviolet Light Dose [4]	[2]	Calculated	UVS-001	Continuous [1]

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

2 Ultraviolet light dosage shall be reported in units of millijoules per square centimeter (mJ/cm^2).

3 Report daily average turbidity and maximum turbidity

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

5 Turbidity monitoring at Monitoring Location FIL-002 is only required when the Discharger is not using coagulation.

D. Effluent and Receiving Water Characterization

1. **Annual Monitoring.** Annual priority pollutant samples shall be collected from the effluent (at Monitoring Location EFF-001 when discharging to Discharge Point 001 and at Monitoring Location EFF-002 when discharging to Discharge Point 002) and upstream receiving water (at Monitoring Location RSW-001) and analyzed for the constituents listed in Table E-10, below. The results of such monitoring shall be submitted to the Central Valley Water Board with the monthly self-monitoring reports in which the samples were taken.

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

3. **Sample type.** All effluent samples shall be taken as 24-hour flow proportioned composite samples except samples for constituents which 40 C.F.R. Part 136 indicates composite samples are inappropriate (e.g., volatile organic compounds). All receiving water samples shall be taken as grab samples.

Table E-10. Effluent and Receiving Water Characterization Monitoring

CTR #	Constituent	CAS Number	Reporting Level [2]	Method Type [1]
1	Antimony	7440360	5	GFAA
			0.5	ICPMS
			5	SPGFAA
			0.5	HYDRIDE
2	Arsenic	7440382	2	GFAA
			10	ICP
			2	ICPMS
			2	SPGFAA
			1	HYDRIDE

CTR #	Constituent	CAS Number	Reporting Level [2]	Method Type [1]
3	Beryllium	7440417	0.5	GFAA
			2	ICP
			0.5	ICPMS
			1	SFGFAA
4	Cadmium	7440439	0.25	ICPMS
5A	Chromium (III)	7440473	--	--
5B	Chromium (VI)	18540299	5	FAA
			10	COLOR
6	Copper[6]	7440508	0.5	ICPMS
7	Lead[7]	7439921	0.5	ICPMS
8	Mercury [3]	7439976	0.2 (ng/L	CVAFS
9	Nickel	7440020	1	ICPMS
10	Selenium	7782492	5	GFAA
			2	ICPMS
			5	SPGFAA
			1	HYDRIDE
11	Silver	7440224	0.25	ICPMS
12	Thallium	7440280	1	ICPMS
13	Zinc[9]	7440666	1	ICPMS
14	Cyanide	57125	5	COLOR
15	Asbestos	1332214	-- (MFL)	--
16	2,3,7,8-TCDD (Dioxin)	1746016	--	--
17	Acrolein	107028	2	GC
18	Acrylonitrile	107131	2	GC
			2	GCMS
19	Benzene	71432	0.5	GC
20	Bromoform	75252	0.5	GC
			2	GCMS
21	Carbon tetrachloride	56235	0.5	GC
22	Chlorobenzene (mono chlorobenzene)	108907	0.5	GC
			2	GCMS
23	Dibromochloromethane	124481	0.5	GC
24	Chloroethane	75003	0.5	GC
			2	GCMS
25	2- Chloroethyl vinyl ether	110758	1	GC
			1	GCMS
26	Chloroform	67663	0.5	GC
			2	GCMS
27	Dichlorobromomethane	75274	0.5	GC
28	1,1-Dichloroethane	75343	0.5	GC
			1	GCMS
29	1,2-Dichloroethane	107062	0.5	GC
30	1,1-Dichloroethylene	75354	0.5	GC
31	1,2-Dichloropropane	78875	0.5	GC
32	1,3-Dichloropropylene	542756	0.5	GC
33	Ethylbenzene	100414	0.5	GC
			2	GCMS
34	Bromomethane	74839	1	GC
			2	GCMS
35	Chloromethane	74873	0.5	GC
			2	GCMS

CTR #	Constituent	CAS Number	Reporting Level [2]	Method Type [1]
36	Dichloromethane	75092	0.5	GC
			2	GCMS
37	1,1,2,2-Tetrachloroethane	79345	0.5	GC
38	Tetrachloroethene	127184	0.5	GC
39	Toluene	108883	0.5	GC
			2	GCMS
40	trans-1,2-Dichloroethylene	156605	0.5	GC
			1	GCMS
41	1,1,1-Trichloroethane	71556	0.5	GC
			2	GCMS
42	1,1,2-Trichloroethane	79005	0.5	GC
43	Trichloroethylene	79016	0.5	GC
			2	GCMS
44	Vinyl chloride	75014	0.5	GC
45	2-Chlorophenol	95578	2	GC
			5	GCMS
46	2,4-Dichlorophenol	120832	1	GC
			5	GCMS
47	2,4-Dimethylphenol	105679	1	GC
			2	GCMS
48	4,6-Dinitro-2-methylphenol	534521	10	GC
			5	GCMS
49	2,4-Dinitrophenol	51285	5	GC
			5	GCMS
50	2-Nitrophenol	25154557	10	GCMS
51	4-Nitrophenol	100027	5	GC
			5	GCMS
52	4-Chloro-3-methylphenol	59507	5	GC
			1	GCMS
53	Pentachlorophenol	87865	1	GC
54	Phenol	108952	1	GC
			1	GCMS
55	2,4,6-Trichlorophenol	88062	10	GC
			10	GCMS
56	Acenaphthene	83329	1	GC
			1	GCMS
			0.5	LC
57	Acenaphthylene	208968	10	GCMS
			0.2	LC
58	Anthracene	120127	10	GCMS
			2	LC
59	Benzidine	92875	5	GCMS
60	1,2-Benzanthracene	56553	5	GCMS
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2	LC
62	3,4-Benzofluoranthene	205992	10	GCMS
			10	LC
63	Benzo(g,h,i)perylene	191242	5	GCMS
			0.1	LC
64	Benzo(k)fluoranthene	207089	2	LC
65	Bis(2-chloroethoxy) methane	111911	5	GCMS
66	Bis(2-chloroethyl) ether	111444	1	GCMS

CTR #	Constituent	CAS Number	Reporting Level [2]	Method Type [1]
67	Bis(2-chloroisopropyl) ether	39638329	10	GC
			2	GCMS
68	Bis(2-ethylhexyl) phthalate [4]	117817	5	GCMS
69	4-Bromophenyl phenyl ether	101553	10	GC
			5	GCMS
70	Butyl benzyl phthalate	85687	10	GC
			10	GCMS
71	2-Chloronaphthalene	91587	10	GCMS
72	4-Chlorophenyl phenyl ether	7005723	5	GCMS
73	Chrysene	218019	5	LC
74	Dibenzo(a,h)-anthracene	53703	0.1	LC
75	1,2-Dichlorobenzene	95501	2	GC
			2	GCMS
76	1,3-Dichlorobenzene	541731	2	GC
			1	GCMS
77	1,4-Dichlorobenzene	106467	2	GC
			1	GCMS
78	3,3'-Dichlorobenzidine	91941	5	GCMS
79	Diethyl phthalate	84662	10	GC
			2	GCMS
80	Dimethyl phthalate	131113	10	GC
			2	GCMS
81	Di-n-butylphthalate	84742	10	GCMS
82	2,4-Dinitrotoluene	121142	5	GCMS
83	2,6-Dinitrotoluene	606202	5	GCMS
84	Di-n-octylphthalate	117840	10	GCMS
85	1,2-Diphenylhydrazine	122667	1	GCMS
86	Fluoranthene	206440	10	GC
			1	GCMS
			0.05	LC
87	Fluorene	86737	10	GCMS
			0.1	LC
88	Hexachlorobenzene	118741	1	GCMS
89	Hexachlorobutadiene	87683	1	GCMS
90	Hexachlorocyclopentadiene	77474	5	GC
			5	GCMS
91	Hexachloroethane	67721	1	GCMS
92	Indeno(1,2,3-c,d)pyrene	193395	0.05	LC
93	Isophorone	78591	1	GCMS
94	Naphthalene	91203	10	GC
			1	GCMS
			0.2	LC
95	Nitrobenzene	98953	10	GC
			1	GCMS
96	N-Nitrosodimethylamine	62759	5	GCMS
97	N-Nitrosodi-n-propylamine	621647	5	GCMS
98	N-Nitrosodiphenylamine	86306	1	GCMS
99	Phenanthrene	85018	5	GCMS
			0.05	LC
100	Pyrene	129000	10	GCMS
			0.05	LC

CTR #	Constituent	CAS Number	Reporting Level [2]	Method Type [1]
101	1,2,4-Trichlorobenzene	120821	1	GC
			5	GC
102	Aldrin	309002	0.005	GC
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01	GC
104	beta-Hexachlorocyclohexane	319857	0.005	GC
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02	GC
106	delta-Hexachlorocyclohexane	319868	0.005	GC
107	Chlordane	57749	0.1	GC
108	4,4'-DDT	50293	0.01	GC
109	4,4'-DDE	72559	0.05	GC
110	4,4'-DDD	72548	0.05	GC
111	Dieldrin	60571	0.01	GC
112	alpha-Endosulfan	959988	0.02	GC
113	beta-Endosulfan	33213659	0.01	GC
114	Endosulfan sulfate	1031078	0.05	GC
115	Endrin	72208	0.01	GC
116	Endrin Aldehyde	7421934	0.01	GC
117	Heptachlor	76448	0.01	GC
118	Heptachlor Epoxide	1024573	0.01	GC
119	PCB-1016	12674112	0.5	GC
120	PCB-1221	11104282	0.5	GC
121	PCB-1232	11141165	0.5	GC
122	PCB-1242	53469219	0.5	GC
123	PCB-1248	12672296	0.5	GC
124	PCB-1254	11097691	0.5	GC
125	PCB-1260	11096825	0.5	GC
126	Toxaphene	8001352	0.5	GC
	cis-1,2-Dichloroethylene [8]	156592	--	--
	Methyl-tert-butyl ether (MTBE) [8]	1634044	--	--
	Trichlorofluoromethane [8]	75694	--	--
	1,1,2-Trichloro-1,2,2-Trifluoroethane [8]	76131	--	--
	Styrene [8]	100425	--	--
	Xylenes [8]	1330207	--	--
	Tributyltin	688733	--	--
	Alachlor [8]	15972608	--	--
	Atrazine [8]	1912249	--	--
	Bentazon [8]	25057890	--	--
	Carbofuran [8]	1563662	--	--
	2,4-D [8]	94757	--	--
	Dalapon [8]	75990	--	--
	1,2-Dibromo-3-chloropropane (DBCP) [8]	96128	--	--
	Di(2-ethylhexyl)adipate [8]	103231	--	--
	Dinoseb [8]	88857	--	--
	Diquat [8]	85007	--	--
	Endothal [8]	145733	--	--
	Ethylene Dibromide [8]	106934	--	--

CTR #	Constituent	CAS Number	Reporting Level [2]	Method Type [1]
	Glyphosate [8]	1071836	--	--
	Methoxychlor [8]	72435	--	--
	Molinate (Ordram) [8]	2212671	--	--
	Oxamyl [8]	23135220	--	--
	Picloram [8]	1918021	--	--
	Simazine (Princep) [8]	122349	--	--
	Thiobencarb [8]	28249776	--	--
	2,4,5-TP (Silvex) [8]	93765	--	--
	Diazinon [8]	333415	--	--
	Chlorpyrifos [8]	2921882	--	--
	Foaming Agents (MBAS) [8]		--	--
	Barium [8]	7440393	--	--
	Fluoride [8]	7782414	--	--
	Phosphorus, Total (as P) [5]	7723140	--	--

[1] **GC** = Gas Chromatography
GCMS = Gas Chromatography/Mass Spectrometry
LC = High Pressure Liquid Chromatography
FAA = Flame Atomic Absorption
GFAA = Graphite Furnace Atomic Absorption
Hydride = Gaseous Hydride Atomic Absorption
CVAA = Cold Vapor Atomic Absorption
ICP = Inductively Coupled Plasma
ICPMS = Inductively Coupled Plasma/Mass Spectrometry
SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP = Direct Current Plasma
COLOR = Colorimetric
CVAFS = Clean Vapor Atomic Absorption Fluorescence Spectrometry (i.e., EPA 1630/1631)

[2] µg/L or otherwise noted

[3] Total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA method 1669: *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks* (section 9.4.4.2), and shall be analyzed by USEPA method 1631 (Revision E) with a reporting level of 0.5 ng/L.

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

[5] Monitoring is only required for the upstream receiving water (Monitoring Location RSW-001)

[6] The copper monitoring performed to satisfy the annual priority pollutant monitoring requirements will also satisfy the monthly effluent and quarterly upstream receiving water monitoring requirements in which the sample was taken.

[7] The effluent lead monitoring performed to satisfy the annual priority pollutant monitoring requirement will also satisfy the quarterly effluent monitoring requirement in which the sample was taken.

[8] Monitoring is only required during the second, third, and fourth annual priority pollutant and other constituents of concern scans.

[9] The zinc monitoring performed to satisfy the annual priority pollutant monitoring requirements will also satisfy the monthly effluent and quarterly upstream receiving water monitoring requirements in which the sample was taken.

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. – Not Applicable**

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 continue to submit electronic SMRs (eSMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/water_issues/programs/ciwqs/). The Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs during the effective duration of this Order. This includes provision of training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs. The CIWQS Web site 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 eSMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly eSMRs including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. eSMRs are to include all new monitoring results obtained since the last eSMR 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 eSMR.

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

Table E-11. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	First day of the calendar month following the permit effective date or on the permit effective date if that date is the first day of the month	Continuous	Submit with the monthly SMR
1/Day	First day of the calendar month following the permit effective date or on the permit effective date if that date is the first day of the month	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with the monthly SMR
1/Week	First Sunday of the calendar month following the permit effective date or on the permit effective date if that date is the first Sunday of the month	Sunday through Saturday	Submit with the monthly SMR
2/Month	First day of the calendar month following the permit effective date or on the permit effective date if that date is first day of the month	First day of calendar month through the last day of calendar month	Submit with the monthly SMR
1/Month	First day of the calendar month following the permit effective date or on the permit effective date if that date is first day of the month	First day of calendar month through the last day of calendar month	First day of the second month following month of sampling
1/Quarter	Closest of 1 January, 1 April, 1 July, or 1 October following (or on) the permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	Submit with the monthly eSMR in which sample was taken (e.g., if a sample is taken in May, the result must be

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
			included in the May eSMR [due 1 July])
1/Year	1 January following (or on) the permit effective date	1 January through 31 December	Submit with the monthly eSMR in which sample was taken (e.g., if a sample is taken in May, the result must be included in the May SMR [due 1 July])
1/Quarter (Acute WET Tests)	Closest of 1 January, 1 April, 1 July, or 1 October following (or on) the permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	Within 30 days following completion of tests
1/Year (Chronic WET Tests)	1 January following (or on) the permit effective date	1 January through 31 December	Within 30 days following completion of tests

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:

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

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

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

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

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

4. **Multiple Sample Data.** When determining compliance with an AMEL 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.

5. **Reporting Requirements.** The Discharger shall submit eSMRs 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 all laboratory analysis sheets, including quality assurance/quality control information, with all its eSMRs for which sample analyses were performed.

c. Violations must be entered in to CIWQS under the Violations tab for the reporting period in which the violation occurred.

d. The Discharger shall attach or enter a cover letter with each eSMR. The cover letter shall include any information the Discharger would like to convey to Central Valley Water Board staff. If violations have been entered with complete entries on corrective actions and time frames, that information does not need to be repeated in the cover letter.

e. With the exception of flow and ultraviolet light dose, all parameters monitored on a continuous basis (metered) shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.

f. eSMRs must be submitted to the Central Valley Water Board, signed and certified as required by the Standard Provisions (Attachment D), through the CIWQS web site.

g. Reports must clearly show when the discharging to Discharge Points 001 and 002. Reports must show the date that the discharge started and stopped at each location.

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

6. **Calculation Requirements.** The Discharger shall submit in the eSMRs calculations and reports in accordance with the following requirements:

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

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

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

b. **Removal Efficiency (BOD_5 and TSS).** The Discharger shall calculate and report the percent removal of BOD_5 and TSS in the eSMRs. 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.B. of the Limitations and Discharge Requirements.

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

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 RSW-001 and RSW-002.

C. Discharge Monitoring Reports (DMRs)

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

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

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS

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

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

D. Other Reports

1. **Special Study Reports and Progress Reports.** As specified in the Special Provisions contained in section VI. of the Order, special study and progress reports shall be submitted in accordance with the following reporting requirements.

Table E-12. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Salinity Evaluation and Minimization Plan	**By <180 days prior to the Order expiration date>**

2. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, PMP, and Pollution Prevention Plan required by the Special Provisions VI.C. of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

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

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

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

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

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

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

e. The Discharger may also be requested to submit an annual report to the 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

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ATTACHMENT F – FACT SHEET

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

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

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5C220701002
Discharger	U.S. Department of the Interior, National Park Service, Yosemite National Park
Name of Facility	El Portal Wastewater Treatment Facility
Facility Address	5083 Foresta Road
	El Portal, CA 95318
	Mariposa County
Facility Contact, Title and Phone	Paul J. Laymon, Facility Manager, Branch of Utilities, (209) 379-1077
Authorized Persons to Sign and Submit Reports	Don Neubacher, Park Superintendent, Yosemite National Park, (209) 372-0201
Mailing Address	P.O. Box 700, El Portal, CA 95318
Billing Address	Same as Mailing Address
Type of Facility	Domestic Wastewater Treatment Plant
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	B
Pretreatment Program	N
Recycling Requirements	None
Facility Permitted Flow	1.0 million gallons per day (MGD)
Facility Design Flow	1.0 MGD
Watershed	Yosemite Hydrologic Area
Receiving Water	Merced River
Receiving Water Type	Inland surface water

A. The U.S. Department of the Interior, National Park Service, Yosemite National Park (hereinafter Discharger) is the owner and operator of El Portal Wastewater Treatment Facility (hereinafter Facility), a domestic wastewater treatment plant.

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 Merced River, a water of the United States, and a Wild Scenic River within the Yosemite Hydrologic Area. The Discharger was previously regulated by Order R5-2008-0060 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0081759 adopted on 25 April 2008 and expired on 23 April 2013. Attachment B provide maps of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for reissuance of its WDR's and NPDES permit on 11 October 2012.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the unincorporated community of El Portal and the Yosemite Valley in Yosemite National Park, and serves a population of approximately 2,200 permanent residents and up to 20,000 visitors per day to the Park during the peak summer months. The design daily average flow capacity of the Facility is 1.0 MGD.

A. Description of Wastewater and Biosolids Treatment and Controls

The treatment system at the Facility consists of preliminary, primary, secondary, and tertiary treatment. Preliminary treatment consists of bar screening, grit removal, and grinders. Primary treatment consists of two circular primary clarifiers which are followed by a 125,000-gallon flow equalization basin. Secondary treatment consists of activated sludge (three 125,000-gallon aeration tanks) and secondary clarification (two 50-foot diameter clarifiers). Tertiary treatment consists of coagulation, flocculation, tube settling, and sand filtration. The tertiary-treated effluent is then disinfected by ultraviolet light.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 18, T3S, R20E, MDB&M, as shown in Attachment B, a part of this Order.

2. Treated domestic wastewater is discharged to percolation ponds at Discharge Point 001 (via percolation), which are hydraulically connected to the Merced River, or Discharge Point 002 (direct discharge) to the Merced River, a water of the United States, at a point latitude 37° 40' 04" N and longitude 119° 48' 45" W.

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

Effluent limitations contained in Order R5-2008-0060 for discharges from Discharge Points 001 (Monitoring Location M-001) and 002 (Monitoring Location M-002) and representative monitoring data from the term of Order R5-2008-0060 are included in Table F-2, below. No discharges occurred at Discharge Point 002 during the term of Order R5-2008-0060; therefore, monitoring data reported in the following table represent monitoring data only collected at Monitoring Location M-001:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation		Monitoring Data (From June 2008– To August 2013)	
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge
Flow	MGD	1.0	--	0.82	--
Biochemical Oxygen Demand (BOD) (5-Day @ 20°C)	mg/L	10	20	3	6
	lbs/day	84	167	NR	NR
	% removal	90	--	97.3 [11]	--
Total Suspended Solids	mg/L	10	20	6.6	15
	lbs/day	84	167	NR	NR
	% removal	90	--	98.7 [11]	--
pH	standard units	--	6.5 – 8.5 (range)	--	6.6 – 8.0 (range)
Settleable Solids	mL/L	0.1	0.1	ND	ND
Total Phosphorus	mg/L	0.5	1.0	0.6	0.6
	lbs/day	4.2	8.4	1	1
Copper, Total Recoverable	µg/L		25 [1]	--	14
	µg/L	9.6 [2]	19.0 [2]	15	15
Acute WET	% survival	--	70 [3]/90 [4]	--	65 [12]/ 95 [13]
Turbidity	NTU	--	2 [5]/5 [6]/10 [7]		1.69
Total Coliform Organisms	MPN/100 mL	23 [8]	2.2 [9]/240 [10]	NR	16 [14]/23 [15]

NR = Not Reported
ND = Not Detected
[1] Interim effluent limitation effective until 17 May 2010.
[2] Final effluent limits effective 17 May 2010. Time Schedule Order R5-2011-0906 granted an interim average monthly effluent limit of 17 µg/L from 15 September 2011 to 30 May 2012.
[3] Minimum for any one bioassay.
[4] Median for any three consecutive bioassays.
[5] Applied as a daily average.
[6] Not to be exceeded more than 5% of the time within a 24-hour period.
[7] Not to be exceeded at any time.
[8] Not to be exceeded more than once in any 30-day period.
[9] Applied as a 7-day median.
[10] Not to be exceeded at any time.
[11] Lowest monthly average.
[12] Minimum observed bioassay.
[13] Minimum observed median of three bioassays.
[14] Highest observed 7-day median.
[15] Highest daily discharge.

D. Compliance Summary

The following compliance summary applies to the Facility during the term of Order R5-2008-0060 up to August 2013:

1. Based on the data contained in self-monitoring reports from June 2008 to August 2013, the Facility exceeded effluent limitations for phosphorus, copper, acute whole effluent toxicity, and total coliform organisms.

2. A compliance inspection of the Facility was conducted on 25 March 2010. The key findings from the inspection report are as follows:

a. Monitoring data reported in the self-monitoring reports were not consistent with monitoring data recorded in the raw data sheets for pH and dissolved oxygen. Concentrations of constituents detected below the reporting limit (RL) and above the method detection limit (MDL) were not noted as such in the self-monitoring reports.

b. The ultraviolet light system transmittance meter was not functioning at the time of the inspection.

c. Housekeeping in the lime storage area needed improvement.

d. The concrete around one of the primary clarifiers was cracked and broken off.

In response to the key findings of the 25 March 2010 inspection report, the Discharger stated that ultraviolet light system was running all lights at 100% to ensure proper disinfection was maintained while the ultraviolet light transmittance meter was not functioning. The 1 June 2011 inspection report noted that the ultraviolet light transmittance meter was repaired and that a backup meter was purchased. The 1 June 2011 inspection report also noted that the housekeeping procedures in the lime storage area appeared satisfactory and lime powder was not observed to be present in the air or on the concrete surfaces.

3. A compliance inspection of the Facility was conducted on 1 June 2011. The major findings from the inspection report are as follows:

a. Several transcriptions errors were noted in the self-monitoring reports.

b. The Discharger failed to report non-compliance with effluent limitations. The Discharger also failed to report daily maximums, daily minimums, and daily averages for turbidity.

c. Composite samples were time-paced rather than flow-proportioned as required in Order R5-2008-0060.

E. Planned Changes

1. Over the previous permit term, the Discharger has made modifications to the sludge drying beds in an attempt to seal the drying bends and prevent the drying beds from impacting groundwater. The Discharger reported in the ROWD that the post construction hydraulic testing conducted in 2012 showed that the drying beds were not completely sealed. The ROWD indicated that the Discharger would fix the leaks prior to using the drying beds.

2. The Discharger indicated in the ROWD that modifications to the Facility's intake structure will take place in 2014. The ROWD indicated that these modifications would allow the Discharger to take flow-proportioned composite influent samples.

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 (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 for the Sacramento and San Joaquin River Basins*, Fourth Edition, revised October 2011 (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. The Basin Plan designates municipal and domestic water supply (MUN) as a potential use; however, it is an existing use as the Mariposa Public Utility District has a municipal water supply intake on the Merced River downstream of the Facility's discharge points. Beneficial uses applicable to the Merced River are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001 002	Merced River	Existing: Municipal and domestic water supply (MUN); Agricultural supply, including irrigation (AGR); Hydropower Generation (POW); Water Contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); and Wildlife habitat (WILD)

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

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. 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.

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

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

8. **Emergency Planning and Community Right to Know Act.** This Order requires the Discharger to report any spills or releases to the State Emergency Response Commission in accordance with the Emergency Planning and Community Right to Know Act of 1986.

9. **Storm Water Requirements.** U.S. EPA 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 Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities, does not require facilities to obtain coverage if storm water is captured and treated and/or disposed of with the Facility's NPDES

permitted process wastewater or if storm water is disposed of to evaporation ponds, percolation ponds, or combined sewer systems. The Discharger captures and treats all storm water that falls on-site. Therefore, coverage under the General Storm Water Permit is not required.

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 2012, U.S. EPA 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 requirements 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 Merced River from its source to McClure Lake is not listed as a WQLS on the 303(d) list of impaired water bodies.

2. **Total Maximum Daily Loads (TMDLs).** U.S. EPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. TMDLs have not been developed for the Merced River.

E. Other Plans, Polices 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.

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. 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. 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. 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "*Policy for Application of Water Quality Objectives*", that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*" This Policy complies with 40 C.F.R. 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) U.S. EPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the 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-8.01) 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) specified 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 report of waste discharge (ROWD) before discharges can occur. The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at C.F.R. Part 122.41(m)(4)).** As stated in section I.G of Attachment D,

Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 C.F.R. 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. 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Central Valley Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 C.F.R. 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 discharge of "hazardous wastes").** This prohibition concerns a category of waste that is subject to full containment as prescribed by Title 23 and Title 27 of the CCR and, if discharged, has a high potential for creating a condition that would violate Prohibition III.C. as well.

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

6. **Prohibition III.F (Direct discharge to the Merced River is prohibited unless the ratio of river flow to wastewater discharge is 150:1 or greater).** This Order prohibits direct discharges to the Merced River that do not receive at least 150:1 (receiving water : effluent) dilution. This prohibition is carried over from R5-2008-0060.

7. **Prohibition III.G (Direct discharge to the Merced River without utilizing a diffuser is prohibited unless the ratio of river flow to wastewater discharge is 200:1 or greater).** This Order prohibits direct discharges to the Merced River that do not receive at least 200:1 (receiving water : effluent) dilution without utilizing a diffuser. This prohibition is carried over from R5-2008-0060.

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. 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 Best Professional Judgment (BPJ) in accordance with 40 C.F.R. 125.3.

CWA section 402(a)(1) and 40 C.F.R. 125.3 authorize the use of BPJ to derive technology-based effluent limitations on a case-by-case basis where effluent limitation guidelines (ELGs) are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the permit writer must consider specific factors outlined in 40 C.F.R. 125.3.

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

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the 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 biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

40 C.F.R. 403.3 defines a publically owned treatment works (POTW) as a treatment works that is owned by a state or municipality. Since the Facility is federally-owned, it does not meet the definition of a POTW. Consequently, the secondary treatment standards at 40 C.F.R. part 133 are not directly applicable to the Facility.

2. Applicable Technology-Based Effluent Limitations

a. **Flow.** The Facility was designed to provide a tertiary level of treatment for up to a flow of 1.0 MGD. Therefore, this Order contains an average monthly daily discharge flow effluent limit of 1.0 MGD.

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

Table F-4. Summary of Technology-based Effluent Limitations

Parameter	Units	Average Monthly Daily Flow Limitation
Flow	MGD	1.0

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

CWA Section 301(b) and 40 C.F.R. 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, is discussed in section IV.C.3.c. ii. of this 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, WQBELs must be established using: (1) U.S. EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion,

such as a proposed state criterion or policy interpreting 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 WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

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

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

The federal CWA section 101(a)(2), states: "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and provides 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 C.F.R. sections 131.2 and 131.10, require that all waters of the State be 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. 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. 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. **Receiving Water and Beneficial Uses.** Refer to Section III.C.1. of this Fact Sheet 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 June 2006 through August 2013, unless otherwise noted in section IV.C.3., which includes effluent and ambient background data submitted in SMRs.

c. **Assimilative Capacity/Mixing Zone.** The Central Valley Water Board has the discretion to accept or deny mixing zones and dilution credits. This Order includes a dilution ratio of 48:1 for non-CTR human health constituents based on a Merced River harmonic mean flow of 48 MGD and a maximum daily discharge flow of 1.0

MGD. The constituents with effluent limitations in this Order that are based on human health and have dilution credits include nitrite plus nitrate (as N).

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 C.F.R. 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). Water quality criteria and objectives must be met throughout a water body except within a mixing zone. All mixing zones shall be as small as practicable and must meet specific conditions. The allowance of mixing zones by the Central Valley Water Board is discretionary and can be granted parameter-by-parameter and/or type of criterion (e.g, acute or chronic aquatic life criterion)

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 Water Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Water 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 Water 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.*"[1]

For Priority Pollutants, the SIP supersedes the Basin Plan mixing zone provisions. Section 1.4.2. of the SIP states, in part, "[*w*]*ith the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a* [Central Valley Water Board] *basin plan, the* [Central Valley Water 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 a* [Central Valley Water Board]. ***The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis.*** *The* [Central Valley Water 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* [Central Valley Water Board]." [emphasis added]

[1] Basin Plan, pg. IV-16.00

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.****"* [emphasis added]

The Discharger has not determined whether complete mixing occurs or conducted a mixing zone study, as required by the SIP for priority pollutants. In the absence of this information, the worst-case dilution for priority pollutants is assumed to be zero. The impact of assuming zero assimilative capacity within the receiving water is the discharge limitations are end-of-pipe limitations with no allowance for dilution within the receiving water. Should the Discharger submit an approved dilution/mixing zone study that meets the requirements of section 1.4.2.2. of the SIP, the Central Valley Water Board may reopen this Order to include effluent limitations for priority pollutants based on an appropriate dilution factor.

The SIP is not applicable to non-priority pollutants; therefore, mixing zones and dilution credits may be considered for non-CTR constituents (e.g., nitrite plus nitrate (as N)). Flow data were available for the Merced River from the U.S. Geological Survey stream gauge station at the Pohono Bridge, which is upstream of the Facility's discharge points. Based on flows from January 1988 to September 2013,

the harmonic mean flow is 48 MGD. Using the average daily discharge flow limit of 1.0 MGD and the receiving water harmonic mean flow, the available dilution is 48:1 for human health criteria. Therefore, a dilution ratio of 48:1 is applicable for human health criteria.

The allowance of a mixing zone and dilution credits is a discretionary act by the Central Valley Water Board. The Central Valley Water Board has determined that the maximum dilution credit on a constituent-by-constituent basis needed for this discharge is as shown in the following table (also discussed further in section IV.C.3.d.).

Table F-5. Dilution Credits Associated with Performance-based Effluent Limitations

Pollutant	Units	ECA [1]	Criterion	Background [3]	Dilution Credit [2]
Nitrite plus Nitrate (as N)	mg/L	64	10	0.27	5.5

1 Equivalent to the performance-based AMEL.
2 The dilution credit is calculated using the steady-state mass balance equation rearranged to solve for the dilution credit, as follows:

$$D = (ECA – C) / (C – B)$$

3 Represents the maximum observed upstream receiving water nitrite plus nitrate (as N) concentration.

The Merced River contains assimilative capacity for nitrite plus nitrate (as N) and a human health mixing zone for nitrite plus nitrate (as N) meets the mixing zone requirements of the Basin Plan. For nitrite plus nitrate (as N), the WQBEL based on a human health dilution credit of 48:1 is an AMEL of 477 mg/L (as N). However, the Facility can comply with an effluent limitation more stringent than with the full allowance of dilution. As shown in Table F-5, based on monitoring data collected from the term of Order R5-2008-0060, the Discharger can meet a WQBEL calculated from a human health dilution credit of 5.5, which results in an AMEL of 64 mg/L.

The Central Valley Water Board finds that granting of the full dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity for nitrite plus nitrate (as N) and could violate the Antidegradation Policy. Although the Antidegradation Policy does not apply within a mixing zone, the allowance of a mixing zone allows an increase in the discharge of pollutants. Therefore, when a mixing zone and dilution credits are allowed, it is necessary to ensure the discharge complies with the antidegradation policy outside the mixing zone. The antidegradation policy requires that a discharge shall meet best practicable treatment and control (BPTC) to minimize degradation, which in this case for nitrite plus nitrate (as N) is, at a minimum, existing Facility performance. Allowing the full dilution credit would allow the Discharger to increase its loading of nitrite plus nitrate (as N) to the Merced River and reduce the treatment and control of the pollutant. Allowing the Discharger to reduce the level of treatment and/or control would not comply with the BPTC requirements of the antidegradation policy.

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-5 based on the following:

- The Central Valley Water Board is allowing a mixing zone for a non-CTR human health constituents only and has determined allowing such mixing zone will not cause acutely toxic conditions to aquatic life passing through the mixing zone.

- 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 for human health criteria only, 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 BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

- 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 Central Valley Water Board has determined that allowing dilution factors that exceed those proposed by this Order would not comply with the State Antidegradation Policy for receiving waters outside the allowable mixing zone for nitrite plus nitrate (as N). The State Water Board established California's Antidegradation Policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of Resolution 68-16 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 limitation established in the Order for nitrite plus nitrate (as N) that incorporates the dilution credit provided in Table F-5 was developed based on performance of the Discharger's current wastewater treatment capabilities. 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 ensure 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 limitation.

- Therefore, the Central Valley Water Board has determined the effluent limitation established in the Order for nitrite plus nitrate (as N) that incorporates the dilution credit provided in Table F-5 is appropriate and necessary to comply with the Basin Plan, SIP, Federal anti-degradation regulations and Resolution 68-16.

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

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

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

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

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

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

hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

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

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

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

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

[1] The pollutant must also be detected in the effluent.
[2] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[3] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.

hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

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

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

Where:

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

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

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

$$\text{ECA} = C \qquad (\text{when } C \leq B)^{3} \qquad \text{(Equation 2)}$$

Where:

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

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

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

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

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

The effluent hardness ranged from 140 mg/L to 320 mg/L, based on 78 samples from June 2008 to August 2013. The upstream receiving water hardness varied from 1.7 mg/L (non-detect) to 44 mg/L, based on 69 samples from June 2008 to August 2013, and the downstream receiving water hardness varied from 1.7 mg/L (non-detect) to 93 mg/L, based on 58 samples during the same period. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 140 mg/L. As demonstrated in the example shown in Table F-6, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for nickel assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water <u>always</u> at the lowest observed upstream receiving water hardness (i.e., 1.7 mg/L)

- Upstream receiving water nickel concentration <u>always</u> at the CTR criteria (i.e., no assimilative capacity).

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

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

Where:

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

[1] 2006 Study, p. 5700
[2] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

In this example, for nickel, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient nickel concentration is in compliance with the CTR criteria.[1].

Table F-6. Nickel ECA Evaluation

Lowest Observed Effluent Hardness					**140 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**1.7 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Nickel; Concentration					**1.7 µg/L [1]**
Nickel $ECA_{chronic}$ [2]					**69 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness [3] (mg/L)	**CTR Criteria [4] (µg/L)**	**Nickel [5] (µg/L)**	**Complies with CTR Criteria?**
High Flow	1%	3.1	2.7	2.3	**Yes**
	5%	8.6	6.6	5	**Yes**
	15%	22	15	12	**Yes**
	25%	36	22	19	**Yes**
	50%	71	39	36	**Yes**
Low	75%	105	54	52	**Yes**
Flow	100%	140	69	69	**Yes**

1 Highest assumed upstream receiving water nickel concentration calculated using Equation 1 for chronic criterion at a hardness of 1.7 mg/L.

2 ECA calculated using Equation 1 for chronic criterion at a hardness of 140 mg/L.

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

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

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

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

As discussed in the above example for nickel, an assumption was made that the background receiving water metal concentration did not exceed the CTR criteria. This assumption is correct for all Concave Down metals except for copper and zinc. In the case of copper and zinc, the receiving water at times contains copper and zinc concentrations that exceed the applicable water quality criteria associated with the hardness condition upstream of the discharge. The 2006 study procedures remain applicable under these conditions. The discharge cannot cause or contribute to a violation of water quality criteria/objectives in the receiving water. Although metals concentrations downstream of the discharge exceed CTR criteria, the cause of the exceedance is not due to the discharge, it is due to the elevated metals

[1] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-6 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

concentrations upstream of the discharge. Implementing the procedures of the 2006 study does not result in an increase in toxicity downstream of the discharge, and in fact reduces the amount of toxicity already present in the receiving water. This is demonstrated in the example below for zinc (see Table F-7).

As shown in Table F-7 for zinc, prior to the discharge, the zinc has been observed to exceed water quality criteria by up to 145%. When the receiving water contains some fraction of effluent, the percent exceedance is reduced. The greater the amount of effluent in the receiving water, the lower the percent exceedance, until a fully compliant state is achieved at some effluent fraction. The effluent limitations associated with copper and zinc (see section IV.C.3.), therefore, are sufficient to assure that the discharge never causes or contributes to a violation of a water quality criterion, and in fact reduce the amount of toxicity already present in the receiving water.

Table F-7. Zinc ECA Evaluation

Lowest Observed Effluent Hardness					**140 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**1.7 mg/L (as $CaCO_3$)**
Highest Observed Upstream Receiving Water Zinc Concentration					**9.3 µg/L[1]**
Zinc $ECA_{chronic}$[2]					**160 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Zinc[5] (µg/L)**	**Percent Exceeding Criterion**
High Flow	0%	1.7	3.8	9.3	**145%**
	1%	3.1	6.3	10.8	**72%**
	5%	8.6	15	17	**12%**
	15%	22	34	32	**0%**
	25%	36	51	47	**0%**
	50%	71	90	84	**0%**
	75%	105	125	122	**0%**
Low Flow	100%	140	160	160	**0%**

1 Highest observed upstream receiving water zinc concentration reported from June 2008 to August 2013.

2 ECA calculated using Equation 1 for chronic criterion at a hardness of 140 mg/L.

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

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

5 Fully mixed downstream ambient zinc concentration is the mixture of the maximum observed zinc receiving water concentration and the effluent zinc concentration calculated using Equation 3 at the applicable effluent fraction.

6 The effluent fraction ranges from 0% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

ECA for Acute Cadmium, Lead, and Acute Silver – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the relationship between hardness and the metals criteria is different than for Concave Down Metals. The 2006 Study demonstrates that for Concave Up Metals, the effluent and

upstream receiving water can be in compliance with the CTR criteria, but the resulting mixture may contain metals concentrations that exceed the CTR criteria and could cause toxicity. For these metals, the 2006 Study provides a mathematical approach to calculate the ECA that is protective of aquatic life, in all areas of the receiving water affected by the discharge, under all discharge and receiving water flow conditions (see Equation 4, below).

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-8).

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

where:

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

An example similar to the Concave Down Metals is shown for lead**,** a Concave Up Metal, in Table F-8, below. As previously mentioned, the lowest effluent hardness is 140 mg/L, while the upstream receiving water hardness ranged from 1.7 mg/L to 44 mg/L, and the downstream receiving water hardness ranged from 1.7 mg/L to 93 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 1.7 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-8, for lead.

Table F-8. Lead ECA Evaluation

Lowest Observed Effluent Hardness					**140 mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness					**1.7 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**0.018 µg/L[1]**
Lead $ECA_{chronic}$[2]					**1.9 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria?**
High Flow	1%	3.1	0.038	0.036	**Yes**
	5%	8.6	0.14	0.11	**Yes**
	15%	22	0.5	0.3	**Yes**
	25%	36	0.9	0.5	**Yes**
	50%	71	2.1	0.9	**Yes**
	75%	105	3.4	1.4	**Yes**
Low Flow	100%	140	4.9	1.9	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 1.7 mg/L.

2 ECA calculated using Equation 4 for chronic criterion.

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

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

5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.

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

Based on the procedures discussed above, Table F-9 lists all the CTR hardness-dependent metals and the associated ECAs used in this Order.

Table F-9. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)	
	acute	chronic
Copper[1]	38	25
Chromium (III)	2300	270
Cadmium	4.2	3.2
Lead	48	1.9
Nickel	620	69
Silver	0.52	--
Zinc	160	160

1 Calculated using a WER of 2.0. See section IV.C.3. for further discussion.

3. Determining the Need for WQBELs

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

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

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

i. **Aluminum**

(a) **WQO.** 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 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, WQBELs in the Central Valley Region's NPDES permits are based on the Basin Plan's narrative toxicity objective. The Basin Plan's *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 Regional Water Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective.*" (Basin Plan, IV-17). Relevant information includes, but is not limited to the following: (1) U.S. EPA Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses, (2) National U.S. EPA Ambient Water Quality Criteria (NAWQC), (3) NAWQC-Correction, (4) site-specific aluminum studies conducted by dischargers within the Central Valley Region, and (5) site specific conditions at the Facility.

USEPA's NAWQC. U.S. EPA recommended the NAWQC aluminum acute criterion of 750 µg/L based on test waters with a pH of 6.5 to 9.0. U.S. EPA also recommended in the NAWQC an aluminum chronic criterion at 87 µg/L based upon the following two toxicity tests. All test waters contained hardness at 12 mg/L as $CaCO_3$.

(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 chronic criterion of 87 µg/L recommended in the NAWQC.

(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 measured 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 criterion. 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. As described above, USEPA developed the chronic criterion of 87 µg/L under low pH and hardness conditions. The table below compares the test conditions for the applicability of the chronic criterion to site-specific water quality conditions.

Monitoring data for the Facility's effluent and the Merced River indicate that the pH and hardness values within the effluent and the receiving water are not entirely similar to the low pH and hardness conditions under which the chronic criterion for aluminum was developed, as shown in the table F-10, below, and therefore, the Central Valley Water Board does not expect aluminum to be as reactive in the Merced River as in the previously described toxicity tests. The pH of the Merced River ranges from 5.9 to 8.2, with an average of 7.3, based on 145 upstream receiving water monitoring results collected from June 2008 to August 2013. These water conditions are generally circumneutral pH where aluminum is predominately in the form of $Al(OH)_3$ and non-toxic to aquatic life. The hardness of the Merced River ranges from 1.7 (non-detect) mg/L to 44 mg/L, with an average of 11 mg/L, based on 69 upstream receiving water monitoring results collected from June 2008 to August 2013.

Table F-10. Site Specific pH and Hardness Characteristics

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Merced River
pH	standard units	6.0 – 6.5	6.6 - 8	5.9 – 8.2
Hardness, Total (as $CaCO_3$)	mg/L	12	140 - 320	1.7 - 44

Local Environmental Conditions. Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. As shown in the following table, all EC_{50} toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Thus, the toxic effects of aluminum in surface waters within the Central Valley Region, including the Merced River, are less toxic (or less reactive) to aquatic species than demonstrated in the toxicity tests that U.S. EPA used for the basis of establishing the chronic criterion of 87 µg/L.

Table F-11. Central Valley Region Site Specific Toxicity Data

Discharger (City)	Species	Test Waters	Hardness Value	pH	Total Aluminum EC_{50} Value	WER
Auburn	*Ceriodaphnia dubia*	Effluent	99	7.44	>5270	>19.3
	" "	Surface Water	16	7.44	>5160	>12.4
Manteca	" "	Surface Water/Effluent	124	9.14	>8000	N/C
	" "	Effluent	117	7.21	>8700	>27.8
	" "	Surface Water	57	7.58	7823	25.0
	" "	Effluent	139	7.97	>9500	>21.2
	" "	Surface Water	104	8.28	>11000	>24.5
	" "	Effluent	128	7.78	>9450	>25.0
	" "	Surface Water	85	7.85	>9700	>25.7
	" "	Effluent	106	7.66	>11900	>15.3
	" "	Surface Water	146	7.81	>10650	>13.7
Modesto	" "	Surface Water/Effluent	120/156	8.96	31604	211
Yuba City	" "	Surface Water/Effluent	114/164[2]	7.60/7.46	>8000	>53.5
Placer County	" "	Effluent	150	7.4 – 8.7	>5000	>13.7
Manteca	*Daphnia magna*	Surface Water/Effluent	124	9.14	>8350	N/C
Modesto	" "	Surface Water/Effluent	120/156	8.96	>11900	>79.6
Yuba City	" "	Surface Water/Effluent	114/164[2]	7.60/7.46	>8000	>53.5
Manteca	*Oncorhynchus mykiss* (rainbow trout)	Surface Water/Effluent	124	9.14	>8600	N/C
Auburn	" "	Surface Water	16	7.44	>16500	N/C
Modesto	" "	Surface Water/Effluent	120/156	8.96	>34250	>229
Yuba City	" "	Surface Water/Effluent	114/164[1]	7.60/7.46	>8000	>53.5

N/C = Not calculated

[1] Hardness values may be biased high because the EDTA titrimetic method is subject to interferences that measure as hardness (barium, cadmium, lead, manganese, strontium, and zinc are measured as hardness) producing hardness numbers that are likely to be greater than the calculation of hardness based upon the ICP analysis of calcium and magnesium. Upstream receiving water hardness ranged from 30 to 50.9 mg/L as $CaCO_3$ between January 2008 and August 2011. Furthermore, the upstream receiving water hardness was 37 mg/L as $CaCO_3$ on 4 October 2005, seven days prior to the Feasibility Assessment (first phase of a Water Effects Ratio study) sample collection date of 11 October 2005. It is likely that matrix interferences from other metals were responsible for the unexpected hardness values reported by Pacific EcoRisk.

The Discharger has not conducted a toxicity test for aluminum; however, the City of Auburn conducted two toxicity tests in Auburn Ravine, shown highlighted in the Table F-11, above. As shown in Table F-11, the test water quality characteristics of Auburn Ravine are somewhat similar to the Merced River with the pH at 7.4 and hardness at 16 mg/L as CaCO3. Thus, based on these two similar primary water quality characteristics (pH and hardness) that drive aluminum speciation, the aluminum toxicity within Auburn Ravine is expected to be similar in the Merced River. Therefore, the Auburn Ravine aluminum toxicity test study is relevant and appropriate in this case for use in determining the specific numerical

criteria to be used in determining compliance with the Basin Plan's narrative toxicity objective. The Auburn Ravine aluminum toxicity study resulted in a site-specific aluminum objective at 1,080 µg/L. This new information, and review of the toxicity tests U.S. EPA used to establish the chronic criterion, indicates that 87 µg/L is overly stringent and not applicable to the Merced River.

State of California Department of Public Health (DPH) has established Secondary MCLs to assist public drinking water systems in managing their drinking water for aesthetic conditions such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L.

(b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Aluminum 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 in the discharge, the Central Valley Water Board has used best professional judgment in determining the appropriate method for this non-priority pollutant constituent.

The most stringent objective is the Secondary MCL, which is derived from human welfare considerations (e.g., taste, odor, laundry straining), not for toxicity. Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average effluent and upstream receiving water aluminum concentrations. The maximum annual average effluent and upstream receiving water concentration for aluminum was 66 ug/L, as total recoverable, (excluding effluent samples collected from August 2012 to May 2013)[1] and 84 ug/L, as total recoverable, respectively. Therefore, the Central valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water of the human welfare criterion.

For protection of acute toxicity to aquatic life, the NAWQC recommends the acute criterion of 750 µg/L. The MEC for aluminum from June 2008 to August 2013 is 220 µg/L, as total recoverable. The maximum reported upstream receiving water concentration for aluminum, from June 2008 to August 2013, is 514 µg/L, as total recoverable. Therefore, aluminum in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC for the protection of acute toxicity to aquatic life.

[1] In an email dated 30 October 2013, the Discharger confirmed that from August 2012 to May 2013 various alum based treatment chemicals were being tested at the Facility to improve treatment capability of the plant. This resulted in an increased effluent aluminum concentration. The Discharger indicated the use of the different alum based chemicals had ceased as of May 2013.

ii. **Mercury**

(a) **WQO.** The current NAWQC for protection of freshwater aquatic life, continuous concentration for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed and 0.051 µg/L for waters which only aquatic organisms are consumed. These values are controversial and subject to change. In 40 C.F.R. part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative criterion*." In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

(b) **RPA Results.** The highest reported effluent concentration for mercury was 9 µg/L, as total recoverable. The maximum reported receiving water concentration was 0.0034 µg/L, as total recoverable. The effluent value of 9 µg/L was the only reported effluent mercury detection out of 24 reported results that exceeded the CTR human health criterion of 0.050 µg/L.

Effluent and receiving water mercury data are summarized in Table F-12, below.

Table F-12. Mercury Monitoring Results

Sample Date	Location	Qualifier	Results (µg/L)	MDL (µg/L)	RL (µg/L)	SIP Minimum Level [1] (µg/L)	Criteria (µg/L)
12/29/2008	Effluent	=	0.00048	--	0.0002	0.2	0.050
2/11/2009	Effluent	ND	ND	0.012	0.05	0.2	0.050
3/17/2009	Effluent	=	0.0027	0.0002	0.0005	0.2	0.050
4/7/2009	Effluent	=	0.0066	0.0002	0.0005	0.2	0.050
7/7/2009	Effluent	=	0.0037	0.0005	0.0002	0.2	0.050
9/2/2009	Effluent	ND	ND	0.00012	0.0002	0.2	0.050
10/7/2009	Effluent	=	0.0006	0.0002	0.0005	0.2	0.050
1/5/2010	Effluent	=	0.005	0.0002	0.0005	0.2	0.050
4/6/2010	Effluent	=	0.0009	0.0002	0.0005	0.2	0.050
7/7/2010	Effluent	=	0.0089	0.0002	0.0005	0.2	0.050
9/27/2010	Effluent	=	**9**	0.024	0.04	0.2	0.050
10/5/2010	Effluent	=	0.0008	0.0002	0.0005	0.2	0.050
1/5/2011	Effluent	=	0.0006	0.0002	0.0005	0.2	0.050
4/6/2011	Effluent	=	0.0009	0.0005	0.0002	0.2	0.050
7/6/2011	Effluent	=	0.0007	0.0002	0.0005	0.2	0.050
10/5/2011	Effluent	=	0.0067	0.0002	0.0005	0.2	0.050
11/15/2011	Effluent	ND	ND	--	0.5	0.2	0.050
1/4/2012	Effluent	=	0.0008	0.0002	0.0005	0.2	0.050
4/5/2012	Effluent	=	0.0018	0.0002	0.0005	0.2	0.050
7/11/2012	Effluent	=	0.0008	0.0002	0.0005	0.2	0.050
10/10/2012	Effluent	=	0.0077	0.0002	0.0005	0.2	0.050

Sample Date	Location	Qualifier	Results (µg/L)	MDL (µg/L)	RL (µg/L)	SIP Minimum Level [1] (µg/L)	Criteria (µg/L)
11/21/2012	Effluent	ND	ND	--	0.2	0.2	0.050
4/16/2013	Effluent	=	0.0031	0.0002	0.0005	0.2	0.050
7/11/2013	Effluent	=	0.0027	0.0002	0.0005	0.2	0.050
12/29/2008	Merced River	=	0.00092	--	0.0002	0.2	0.050
9/2/2009	Merced River	=	0.00074	0.00012	0.0002	0.2	0.050
9/27/2010	Merced River	=	0.00093	0.00012	0.0002	0.2	0.050
11/2/2010	Merced River	=	0.0008	0.0002	0.0005	0.2	0.050
11/15/2011	Merced River	=	0.0008	0.0002	0.0005	0.2	0.050
11/21/2012	Merced River	ND	ND	--	0.2	0.2	0.050
12/5/2012	Merced River	=	0.0017	0.0002	0.0005	0.2	0.050
4/4/2013	Merced River	=	0.0034	0.0002	0.0005	0.2	0.050

[1] The SIP ML for the test method used for analysis

Staff conducted a statistical test of the mercury data to evaluate the 9 µg/L mercury detection. Using the Shapiro-Wilk W test, staff found the mercury effluent data to be log-normally distributed at a 95% confidence level (when the mercury effluent value of 9 µg/L was not included). The Rosner's test for outliers was then used to determine if the 9 µg/L mercury detection was an outlier. When a 99% confidence level is used, the test value (0.95) is greater than the crucial value (0.50), indicating the 9 µg/L detection is a potential outlier. The 9 µg/L mercury detection could be the result of sample contamination since mercury can easily be introduced into a sample and, consequently, contaminate the sample. In addition, there is only one known dental office and no known heavy industries in both El Portal and Yosemite Valley. Therefore, the Central Valley Water Board concludes the September 2010 mercury effluent detection of 9 µg/L is a statistical outlier and, therefore, unrepresentative of the Facility's discharge and inappropriate for use in the RPA. Based on the rest of the mercury effluent monitoring data, mercury in the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above applicable water quality criteria or objectives.

iii. **Settleable Solids**

(a) **WQO.** For inland surface waters, the Basin Plan states that "[w]*aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses."* Order R5-2008-0060 established an average monthly effluent limitation (AMEL) of 0.1 mL/L and a maximum daily effluent limitation (MDEL) of 0.1 mL/L for settleable solids to implement the narrative settleable solids objective.

(b) **RPA Results.** Settleable solids were not detected in the effluent based on 1,643 samples collected from July 2008 to August 2013. Because settleable solids was not detected above existing effluent limitations and because the Discharger provides tertiary treatment, the discharge from the Facility does not have reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative objective for settleable

solids and the effluent limitations for settleable solids have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3. of the Fact Sheet).

iv. **Salinity**

(a) **WQO.** The Basin Plans contain 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 U.S. EPA National Ambient Water Quality Criteria (NAWQC) for chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for boron, electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no U.S. EPA 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 Plans 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 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-13. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[2]	U.S. EPA NAWQC	Effluent	
				Average	Maximum
Electrical Conductivity (µmhos/cm)	Varies	900, 1600, 2200	N/A	699	943
Total Dissolved Solids (mg/L)	Varies	500, 1000, 1500	N/A	508	770
Sulfate (mg/L)	Varies	250, 500, 600	N/A	59	81
Chloride (mg/L)	Varies	250, 500, 600	860 (1-hr) 230 (4-day)	38	60

[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 stated as a recommended level, upper level, and a short-term maximum level.

(1) **Chloride.** The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The U.S. EPA NAWQC for chloride recommends acute (1-hour) and chronic (4-day) criteria for the protection of freshwater aquatic life of 860 mg/L and 230 mg/L, respectively.

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

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

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

(b) **RPA Results.**

(1) **Chloride.** Chloride concentrations in the effluent ranged from 24 mg/L to 60 mg/L, with an average of 38 mg/L, based on 24 samples collected from July 2008 to April 2013. These levels do not exceed the Secondary MCL or the U.S. EPA recommended criteria. Background concentrations in the Merced River ranged from 2.2 mg/L to 3.7 mg/L, with an average of 2.8 mg/L, based on eight samples collected by the Discharger from December 2008 through December 2012.

(2) **Electrical Conductivity.** A review of the Discharger's monitoring reports shows an average effluent electrical conductivity of 699 µmhos/cm, with a range from 365 µmhos/cm to 943 µmhos/cm based on 291 samples collected from June 2008 to August 2013. The highest calendar year effluent average was 766 µmhos/cm (June 2008 – December 2008), which does not exceed the Secondary MCL. The maximum reported background receiving water electrical conductivity concentration was 89 µmhos/cm based on 61 samples collected from June 2008 to August 2013 and the highest calendar year upstream receiving water average was 38 µmhos/cm.

(3) **Sulfate.** Sulfate concentrations in the effluent ranged from 41 mg/L to 81 mg/L, with an average of 59 mg/L based on 25 samples collected from July 2008 to April 2013. These levels do not exceed the Secondary MCL. The Discharger also reported eight upstream receiving water sulfate results from December 2008 to December 2012, all eight results were reported as below analytical method detection levels (non-detect).

(4) **Total Dissolved Solids.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Total dissolved solids 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 in the discharge, the Central Valley Water Board has used best professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

The average total dissolved solids effluent concentration was 508 mg/L with concentrations ranging from 330 mg/L to 770 mg/L based on 25 samples collected from June 2008 to April 2013. The background receiving water total dissolved solids ranged from 20 mg/L to 44 mg/L, with an average of 33 mg/L based on eight samples collected from December 2008 to December 2012.

The Central Valley Water Board used a mass balance equation to determine the maximum in stream total dissolved solids concentration that could be caused by the Facility's discharge, as shown below.

TDS_{EFF} (mg/L)	=	770
Q_{EFF} (MGD)	=	1.0
$TDS_{RW\ Upstream}$ (mg/L)	=	44
$Q_{RW\ Upstream}$ (MGD)	=	48
$TDS_{RW\ Downstream}$[1] (mg/L)	=	59

[1] $TDS_{Downstream}=((TDS_{EFF} \times Q_{EFF})+(TDS_{RW} \times Q_{RW}))/(Q_{EFF}+Q_{RW})$, where:
TDS_{EFF} = Maximum observed effluent total dissolved solids concentration
Q_{EFF} = Maximum daily effluent flow permitted
TDS_{RW} = Maximum observed upstream receiving water total dissolved solids concentration
Q_{RW} = Upstream harmonic mean flow. Flow data from January 1988 to September 2013 from the Pohono Bridge U.S. Geological Survey stream gauge station was used to determine the upstream harmonic mean flow.

The calculated worst-case downstream receiving water total dissolved concentration is 59 mg/L, which does not exceed the Secondary MCL.

The Facility's discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. However, the Central Valley Water Board is concerned with the salinity levels in the effluent given the relatively low levels in the domestic water supply. Groundwater is used to meet the domestic water demand of the Discharger's service area. Previous Order R5-2008-0060 required electrical conductivity monitoring to determine the source of the high effluent electrical conductivity.

The average electrical conductivity reported for the water supply was 66 µmhos/cm, based on four weighted average samples collected from 2008 to 2012. The average total dissolved solids concentration reported for the water supply was 45 mg/L based on three samples collected from 2008 to 2011. Electrical conductivity in the Facility's influent ranged from 142 µmhos/cm to 1,315 µmhos/cm, with an average of 611 based on 152 samples. Chemicals used in the treatment system, according to the

Discharger's ROWD, include dry lime, dry cationic polymer, liquid aluminum sulfate, and calcium polysulfide. This Order requires the Discharger to prepare and implement a Salinity Evaluation and Minimization Plan (see Section VI.B.3.a. of this Fact Sheet for further discussion) since effluent salinity levels are relatively high compared to the water supply.

b. **Constituents with Limited Data.** Reasonable potential cannot be determined for the following constituents because effluent data and/or ambient background concentrations are not available or insufficient.

i. **Lead**

(a) **WQO.** Using the default conversion factors and reasonable worst-case measured hardness as described in section IV.C.2. of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for the effluent are 48 µg/L and 1.9 µg/L, respectively, as total recoverable. The applicable acute and chronic criteria for the Merced River are 0.46 µg/L and 0.018 µg/L, respectively, as total recoverable.

(b) **RPA Results.** The MEC for lead is 0.23 µg/L (estimated value, MDL = 0.01 µg/L, RL = 0.25 µg/L), based on 25 reported effluent monitoring results for lead. The maximum recorded lead monitoring result in the receiving water was 0.38 µg/L, based on 22 reported results.

Effluent and receiving water lead data are summarized in Table F-14 below.

Table F-14. Lead Monitoring Results

Sample Date	Location	Results (µg/L)	MDL (µg/L)	RL (µg/L)	SIP Minimum Level[1] (µg/L)	Criteria (µg/L)
7/10/2008	Effluent	DNQ [2] (0.23)	0.01	0.025	?	1.9
12/29/2008	Effluent	ND [1]	--	0.5	0.5	1.9
1/6/2009	Effluent	DNQ [2] (0.13)	0.01	0.25	0.5	1.9
4/7/2009	Effluent	DNQ [2] (0.15)	0.071	0.25	0.5	1.9
7/7/2009	Effluent	DNQ [2] (0.14)	0.071	0.25	0.5	1.9
9/2/2009	Effluent	ND [1]	--	0.5	0.5	1.9
10/7/2009	Effluent	DNQ [2] (0.13)	0.071	0.25	0.5	1.9
1/5/2010	Effluent	DNQ [2] (0.12)	0.071	0.25	0.5	1.9
4/6/2010	Effluent	DNQ [2] (0.14)	0.01	0.25	0.5	1.9
7/7/2010	Effluent	DNQ [2] (0.16)	0.071	0.25	0.5	1.9
9/27/2010	Effluent	ND [1]	--	0.5	0.5	1.9
10/5/2010	Effluent	DNQ [2] (0.12)	0.071	0.25	0.5	1.9
1/5/2011	Effluent	DNQ [2] (0.15)	0.071	0.25	0.5	1.9
4/6/2011	Effluent	DNQ [2] (0.1)	0.03	0.25	0.5	1.9
7/6/2011	Effluent	DNQ [2] (0.08)	0.03	0.25	0.5	1.9
10/5/2011	Effluent	DNQ [2] (0.05)	0.03	0.25	0.5	1.9
11/15/2011	Effluent	ND [1]	--	0.5	0.5	1.9
1/4/2012	Effluent	DNQ [2] (0.06)	0.03	0.25	0.5	1.9

Sample Date	Location	Results (µg/L)	MDL (µg/L)	RL (µg/L)	SIP Minimum Level[1] (µg/L)	Criteria (µg/L)
4/5/2012	Effluent	DNQ [2] (0.06)	0.03	0.25	0.5	1.9
7/11/2012	Effluent	DNQ [2] (0.07)	0.03	0.25	0.5	1.9
10/10/2012	Effluent	DNQ [2] (0.05)	0.03	0.25	0.5	1.9
11/21/2012	Effluent	ND [1]	--	5	5	1.9
1/3/2013	Effluent	DNQ [2] (0.05)	0.03	0.25	0.5	1.9
4/4/13	Effluent	DNQ [2] (0.04)	0.03	0.25	0.5	1.9
7/11/13	Effluent	DNQ [2] (0.1)	0.03	0.25	0.5	1.9
12/29/2008	Merced River	ND [1]	--	0.5	0.5	0.018
9/2/2009	Merced River	ND [1]	--	0.5	0.5	0.018
9/27/2010	Merced River	ND [1]	--	0.5	0.5	0.018
10/5/2010	Merced River	**0.38**	0.071	0.25	0.5	0.018
1/5/2011	Merced River	ND [1]	0.071	0.25	0.5	0.018
11/15/2011	Merced River	ND [1]	--	0.5	0.5	0.018
6/4/2012	Merced River	**DNQ [2] (0.04)**	0.03	0.25	0.5	0.018
7/10/2012	Merced River	ND [1]	0.03	0.25	0.5	0.018
8/8/2012	Merced River	ND [1]	0.03	0.25	0.5	0.018
9/10/2012	Merced River	**DNQ [2] (0.04)**	0.03	0.25	0.5	0.018
10/10/2012	Merced River	ND [1]	0.03	0.25	0.5	0.018
11/5/2012	Merced River	ND [1]	0.03	0.25	0.5	0.018
11/21/2012	Merced River	ND [1]	--	5	5	0.018
12/5/2012	Merced River	**DNQ [2] (0.03)**	0.03	0.25	0.5	0.018
1/3/2013	Merced River	ND [1]	0.03	0.25	0.5	0.018
2/6/2013	Merced River	ND [1]	0.03	0.25	0.5	0.018
3/7/2013	Merced River	ND [1]	0.03	0.25	0.5	0.018
4/4/13	Merced River	**DNQ [2] (0.06)**	0.03	0.25	0.5	0.018
5/2/13	Merced River	**DNQ [2] (0.04)**	0.03	0.25	0.5	0.018
6/11/13	Merced River	**DNQ [2] (0.05)**	0.03	0.25	0.5	0.018
7/11/13	Merced River	**DNQ [2] (0.04)**	0.03	0.25	0.5	0.018
8/7/13	Merced River	ND [1]	0.03	0.25	0.5	0.018

? = Discharger did not report the analytical method used; therefore, the SIP ML cannot be determined.
[1] The SIP ML for the test method used for analysis
[2] DNQ = Reported as Detect, but Not Quantified
[3] ND = Reported as below analytical method detection levels (non-detect)

Section 2.4.2 of the SIP 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.

a) Required MLs 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 Reported Level (RL).

b) A 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 MLs for lead.

c) Section 1.2 of the SIP requires that the Central Valley Water Board to use all available, valid, relevant, representative data and information, as determined by the Central Valley Water Board, to implement the SIP. Section 1.2 further states that the Central Valley Water Board has the discretion to consider if any data are inappropriate or insufficient for use in implementing the SIP.

d) Data reported below the ML indicates the data may not be valid due to possible matrix interferences during the analytical procedure.

e) Further, Section 2.4.5 of the SIP (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 are below the RL, that data cannot be used to determine compliance with effluent limitations.

f) Data reported below the ML are not considered valid data for use in determining Reasonable Potential. Therefore, in accordance with Section 1.2 of the SIP, the Board has determined that data reported below the ML are inappropriate and insufficient to be used to determine Reasonable Potential.

g) In implementing its discretion, the Board is not finding that Reasonable Potential does not exist; rather the Board cannot make such a determination given the invalid data. Therefore, the Board will require additional monitoring for such constituents until such time a determination can be made in accordance with the SIP.

Appendix 4 of the SIP cites several MLs for lead. The lowest ML for lead is 0.5 µg/L. As shown in Table F-14, besides the 5 October 2010 upstream receiving water lead detection, all the reported upstream receiving water and effluent lead results were either estimated values or reported below analytical method detection levels and were all below the required SIP ML. In addition, the 5 October 2010 quantified detection in the upstream receiving water was below the required SIP ML. Therefore, as discussed in detail above, the effluent and upstream receiving water data are insufficient to justify establishing an effluent limitation for lead at this time.

Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Instead of limitations, additional monitoring has been established for lead. Should the monitoring results indicate that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality standard, this

Order may be reopened and modified by adding an appropriate effluent limitation for lead.

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 (as N), BOD_5, copper, nitrite plus nitrate (as N), phosphorus, total suspended solids, total coliform, zinc, and total suspended solid and BOD_5 percent removal. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

(a) **WQO.** In August 2013, U.S. EPA published new NAWQC for the protection of freshwater aquatic life for total ammonia[1]. The 2013 NAWQC for ammonia recommends acute (1-hour average; criteria maximum concentration or CMC) and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. The 2013 NAWQC for ammonia takes into account data for several sensitive freshwater mussel species and non-pulmonate snails that had not previously been tested.

U.S. EPA found that as pH and temperature increased, both the acute and chronic toxicity of ammonia increased for invertebrates. However, U.S. EPA found that only pH significantly influenced acute and chronic ammonia toxicity for fish. Therefore, the 2013 acute NAWQC for ammonia is primarily based on the ammonia effects on species in the genus *Oncorhyncus* (salmonids) at lower temperatures and invertebrates at higher temperatures. However, due to the significant sensitivity unionid mussels have to the chronic toxicity effects of ammonia, the 2013 chronic NAWQC for ammonia is determined primarily by the effects of mussels.

The U.S. NAWQC document states that "*unionid mussel species are not prevalent in some waters, such as the arid west.*" The 2013 ammonia NAWQC also states 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."* Therefore, the 2013 ammonia NAWQC document includes acute and chronic criteria for waters where mussels are not present. The 2013 ammonia NAWQC also provides criteria for waters where *Oncorhynchus* species are not present and where protection of early life stages of fish genera is unnecessary.

Central Valley Regional Board staff could not find any documentation that recorded mussel species present in the Merced River within the vicinity of the Facility's discharge points. The Central Valley Water Board is

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

currently in the process of determining the best way to evaluate receiving waters within the Central Valley for the presence of mussels. Therefore, since 1) the Central Valley Water Board is not aware of any documentation recording the presence of mussels in the upper Merced River and 2) the site conditions (e.g., low calcium and pH concentrations) may inhibit mussels from being present in the receiving water near the Facility's discharge points, the site-specific criteria for waters where mussels are not present were used. However, because the Merced River has a beneficial use of cold freshwater habitat (COLD) and the presence of salmonids and early fish life stages in the Merced River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

Tertiary-treated wastewater is either discharged directly to the Merced River under minimum required dilution ratios (200:1 or 150:1) or via percolation. Thus, the Central Valley Regional Water Board considers it overly stringent to use the Facility's effluent pH and temperature immediately after treatment to calculate the ammonia criteria protective of the downstream receiving water beneficial uses. The acute criteria were calculated from the max reported downstream receiving water pH and temperature. The chronic criteria were calculated for each reported paired downstream receiving water pH and temperature.

Due to the variability of pH and especially temperature in the receiving water throughout the year, seasonal acute and chronic ammonia criteria were calculated. The pH and temperature within a specified "season" were used to derive seasonal acute and chronic criterion. The resulting acute criterion from May to October and from November to April is 8.1 mg/L (as N) and 13 mg/L (as N), respectively. The resulting 30-day CCC from May to October and from November to April is 3.5 mg/L (as N) and 4.8 mg/L (as N), respectively.

(b) **RPA Results.** The Facility is a wastewater treatment plant that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, without treatment, would be harmful to aquatic life and would violate the Basin Plan's narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore exists and WQBEL's are required.

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, "[l]*imitations 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.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" U.S. EPA's *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (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 POTWs, U.S. EPA recommends that, "*POTWs 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. The Discharger currently uses nitrification to remove ammonia from the waste stream. 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. Although the Discharger nitrifies the discharge, inadequate or incomplete nitrification creates the potential for ammonia to be discharged in concentrations that would cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBELs are required.

(c) **WQBELs.** The Central Valley Water Board calculated WQBELs for ammonia in accordance with SIP procedures; however, the Central Valley Water Board is not obligated to use the SIP procedures for non-CTR constituents. The SIP procedures assume a 4-day averaging period for calculating the long-term average (LTA) discharge condition. However, U.S. EPA recommends modifying the procedure for calculating effluent limitations for ammonia using a 30-day averaging period for the calculation of the LTAs corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to the SIP procedures, the LTAs corresponding to

the 30-day chronic criteria were calculated assuming a 30-day averaging period. The lowest LTA representing the acute criterion, 4-day chronic criterion, and 30-day chronic criterion are then selected, for each "season" to derive the seasonal AMELs and the MDELs. The remainder of the WQBEL calculations for ammonia was performed according to the SIP procedures. From 1 May through 31 October, this Order contains a final AMEL and MDEL for total ammonia of 4.0 mg/L (as N) and 8.1 mg/L (as N), respectively, based on the acute criterion. From 1 November through 30 April, this Order contains a final AMEL and MDEL for total ammonia of 4.5 mg/L (as N) and 12 mg/L (as N), respectively, based on the 30-day chronic criterion.

(d) **Plant Performance and Attainability.** The Facility is designed to provide complete nitrification of the discharge. In addition, analysis of the effluent data shows that the MEC of 4.4 mg/L (as N) does not exceed either seasonal MDELs and the maximum reported effluent monthly average ammonia of 2.2 mg/L (as N) does not exceed either seasonal AMELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these ammonia effluent limitations is feasible.

ii. **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. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent.

Order R5-2008-0060 contained effluent limitations for copper based on default water effects ratio (WER) of 1.0. The Discharger submitted the *Water Effects Ratio Study for Copper Compliance El Portal Wastewater Treatment Facility at Yosemite National Park* (Analytical Environmental Services) on 1 November 2013. The Discharger conducted the study per U.S. EPA's *Streamlined Water-Effect Ratio Procedure for Dischargers of Copper* (EPA-822-R-01-005). Based on the results of the study, the Central Valley Water Board concludes that a dissolved and total recoverable WER of 2.0 is applicable to the Facility's discharge to the Merced River.

Using a WER of 2.0 and a reasonable worst-case measured hardness as described in section IV.C.2. of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for the effluent are 38 µg/L and 25 µg/L, respectively, as total recoverable. Using a WER of 2.0 and reasonable worst-case measured hardness as described in section IV.C.2. of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for the receiving water are 0.60 µg/L and 0.57 µg/L, respectively, as total recoverable.

(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 MEC and maximum observed upstream receiving water concentration for total recoverable copper was 15 µg/L and 2.7 µg/L, respectively. The Discharger reported 76 effluent copper monitoring results (75 of which were reported as quantified detected concentrations) and 70 upstream receiving water copper monitoring results (11 of which exceed the applicable CTR chronic criterion).

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 to the MEC. The table below shows the specific criteria used for the RPA.

Table F-15. Copper RPA Summary

	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential?
Receiving Water	0.57 [1]	2.7	Yes [2]
Effluent	25 [3]	15	No [4]

[1] Based on the lowest observed upstream hardness of 1.7 mg/L (as $CaCO_3$) and a WER of 2.0.
[2] Per Section 1.3, step 6 of the SIP.
[3] Based on the reasonable worst-case downstream hardness of 44 mg/L (as $CaCO_3$) and a WER of 2.0.
[4] Per Section 1.3, step 4 of the SIP.

Based on the data, the MEC does not exceed the applicable CTR criteria, but the maximum ambient background copper concentration does. Section 1.3 of the SIP states that when the receiving water concentration for a pollutant exceeds the applicable criteria and the pollutant is detected in the effluent, there is reasonable potential and an effluent limitation is required. Therefore, 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) **WQBELs.** The Order contains a final AMEL and MDEL for copper of 21 µg/L and 38 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows the MEC of 15 is less than the applicable WQBELs. The Central Valley Water Board, therefore, concludes that immediate compliance with these effluent limitations is feasible.

iii. **Nitrate and Nitrite**

(a) **WQO.** DPH has adopted Primary MCLs for the protection of human health for nitrite (as N) and nitrate (as NO_3) that are equal to 1 mg/L and 45 mg/L respectively. DPH has also adopted a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

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

(b) **RPA Results.** The Facility is a domestic wastewater treatment plant that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, if untreated, will be harmful to fish and will violate 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 nitrite and nitrite to nitrate. 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). Reasonable potential for nitrate and nitrite therefore exists and WQBELs are required.

Federal regulations at 40 C.F.R. §122.44(d)(1)(i) requires that, *"*[l]*imitations 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.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "[s]*tate implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)*." U.S. EPA'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 POTWS, U.S. EPA recommends that, "*POTWs 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 nitrite plus nitrate unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrite plus nitrate is required. The Discharger currently uses nitrification to remove ammonia waste stream, but does not provide denitrification. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrite plus nitrate in concentrations that exceed the primary MCL would violate the Basin Plan narrative chemical constituents objective. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrite plus nitrate and WQBELs are required.

(c) **WQBELs.** As described in in section IV.C.2.c. of this Fact Sheet, assimilative capacity is available and the maximum allowable dilution ratio to calculate effluent limitations for nitrite plus nitrate is 48. Following the procedures established by the SIP for calculating WQBELs and applying a dilution credit of 48 to the Primary MCL, the resulting AMEL for nitrite plus nitrate (as N) is 477 mg/L. However, effluent limitations may only be as high as is justified under State and federal antidegradation policies. Therefore, this Order establishes a performance-based effluent limitation for nitrite plus nitrate (as N).

In developing the performance-based AMEL, the projected maximum effluent concentration was calculated using the statistics recommended in the TSD for statistically calculating the projected maximum effluent concentration (i.e., Table 3-1 of the TSD using the 99% probability basis and 99% confidence level). The resulting performance-based AMEL for nitrite plus nitrate (as N) is 64 mg/L, which corresponds to a dilution credit of 5.5:1.

(d) **Plant Performance and Attainability.** The effluent limitation of nitrite plus nitrate (as N) is based on the performance of the Facility. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

iv. **Pathogens**

(a) **WQO.** DPH has developed recycling 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 DPH's recycling 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 1) the receiving water may be used for the irrigation of food crops and/or for body-contact water recreation and 2) the Merced River is designated under the National Wild and Scenic Rivers system, as authorized by the 1968 Wild and Scenic Rivers Act, because of its outstandingly remarkable value. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

(b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under Water Code section 13050 if improperly treated or discharged untreated to the receiving water. Reasonable potential therefore exists and WQBELs 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.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "[s]*tate implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "[w]*hen 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 Merced River include municipal and domestic supply, water contact recreation, and agricultural irrigation supply. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

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

In addition to coliform limitations, turbidity operational 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 DPH recommended Title 22 disinfection criteria, weekly average effluent limitations are impracticable for turbidity. This Order includes operational specification 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.

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

Final WQBELs for BOD_5 and TSS are based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The application of tertiary

treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMELs for BOD_5 and TSS of 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. This Order also included an average monthly effluent limitation requiring at least 90% removal of BOD_5 and TSS compared to influent concentrations.

(d) **Plant Performance and Attainability.** The Facility is designed to provide tertiary treatment and ultraviolet disinfection to achieve compliance with the effluent limitations for BOD_5, total coliform, TSS, and BOD_5 and TSS percent removal. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. **Phosphorus**

(a) **WQO.** There are no applicable State or U.S. EPA criteria or MCLs for phosphorus. However, during the late 1980s, the Discharger conducted studies concerning potential algal growth on the Merced River near the Facility. Order R5-2008-0060 included a total phosphorus AMEL and MDEL of 0.5 mg/L and 1.0 mg/L, respectively, based on an evaluation by the California Department of Water Resources of the data generated from these studies. The California Department of Water Resources indicated that control of phosphorus from the Facility's effluent to a level below 0.5 mg/L would accomplish sufficient nutrient removal as not to induce algal growth in the Merced River.

(b) **RPA Results.** The MEC for total phosphorus was 0.6 mg/L based on 28 samples collected from June 2008 to July 2013. The maximum observed upstream receiving water concentration was reported as below analytical method detection levels (lowest RL = 0.5 mg/L). The discharger demonstrates reasonable potential to cause or contribute to an exceedance of a water quality criterion since the MEC exceeds the total phosphorus criterion of 0.5 mg/L. In addition, the Discharger uses polyaluminum chloride in the treatment system to remove phosphorus. Therefore, based on the monitoring data and to ensure that the Discharger provides adequate phosphorus removal in the treatment system, this Order carries over effluent limitations for phosphorus from previous Order R5-2008-0060.

(c) **WQBELs**. Consistent with Order R5-2008-0060, this Order contains a final AMEL and MDEL for phosphorus of 0.5 mg/L and 1.0 mg/L, respectively.

(d) **Plant Performance and Attainability.** The MEC of 0.6 mg/L is the only exceedance of the AMEL for total phosphorus out of 28 effluent samples collected from June 2008 to July 2013. Therefore, the Central Valley

Water Board concludes that immediate compliance with these effluent limitations is feasible.

vi. **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 WQBELs 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.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).*" U.S. EPA'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 domestic wastewater plant that treats domestic wastewater. Based on 2,049 samples taken from June 2008 to August 2013, the maximum pH reported was 8.0 and the minimum was 6.6 Although the Discharger has proper pH controls in place, the pH for the Facility's influent varies due to the nature of domestic sewage, which

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

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

(d) **Plant Performance and Attainability.** Based on 2,049 samples taken from June 2008 to August 2013, the effluent pH was maintained between 6.6 and 8.0. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. **Zinc**

(a) **WQO.** The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for zinc. These criteria for zinc are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the receiving water and effluent.

Using a reasonable worst-case measured hardness as described in section IV.C.2. of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for the effluent are both 160 µg/L as total recoverable. Using a reasonable worst-case measured hardness as described in section IV.C.2. of this Fact Sheet, the applicable acute (1-hour average) and chronic (4-day average) criteria for the receiving water are both 3.8 µg/L as total recoverable.

(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 MEC and maximum observed upstream receiving water concentration for total recoverable copper was 38 µg/L and 9.3 µg/L, respectively. The Discharger reported 33 effluent zinc monitoring results (all of which were reported quantified detected concentrations) and 31 upstream receiving water copper monitoring results (three of which exceed the applicable CTR chronic criterion).

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 to the MEC. The table below shows the specific criteria used for the RPA.

Table F-16. Zinc RPA Summary

	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total	Reasonable Potential?

		Recoverable)	
Receiving Water	3.8 [1]	9.3	Yes [2]
Effluent	160 [3]	38	No [4]

[1] Based on the lowest observed upstream hardness of 1.7 mg/L (as $CaCO_3$).
[2] Per Section 1.3, step 6 of the SIP.
[3] Based on the reasonable worst-case downstream hardness of 44 mg/L (as $CaCO_3$).
[4] Per Section 1.3, step 4 of the SIP.

Based on the data, the MEC does not exceed the applicable CTR criteria, but the maximum ambient background copper concentration does. Section 1.3 of the SIP states that when the receiving water concentration for a pollutant exceeds the applicable criteria and the pollutant is detected in the effluent, there is reasonable potential and an effluent limitation is required. Therefore, 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) **WQBELs.** The Order contains a final AMEL and MDEL for zinc of 95 µg/L and 160 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows the MEC of 38 is less than the applicable WQBELs. The Central Valley Water Board, therefore, concludes that immediate compliance with these effluent limitations is feasible.

4. WQBEL Calculations

a. This Order includes WQBELs for ammonia, BOD_5, copper, nitrite plus nitrate, pH, phosphorus, total coliform, total suspended solids, zinc, and BOD_5 and TSS percent removal. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C>B, \text{ and}$$
$$ECA = C \quad \text{where } C \leq B$$

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health

from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier is used to calculate the MDEL.

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

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

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

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations
Discharge Points 001 and 002

Table F-17. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	20	--	--
	lbs/day	84	167	--	--
Total Suspended Solids	mg/L	10	20	--	--
	lbs/day	84	167	--	--

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Copper, Total Recoverable	µg/L	21	38	--	--
Zinc, Total Recoverable	µg/L	95	160	--	--
Non-Conventional Pollutants					
Ammonia Nitrogen, Total (as N) (1 May – 31 October)	mg/L	4.0	8.1	--	--
	lbs/day	34	68	--	--
Ammonia Nitrogen, Total (as N) (1 November – 30 April)	mg/L	4.5	12	--	--
	lbs/day	38	101	--	--
Phosphorus, Total (as N)	mg/L	0.5	1.0	--	--
	lbs/day	4.2	8.4	--	--
Nitrite plus Nitrate (as N)	mg/L	64	--	--	--
Total Coliform Organisms	MPN/100 mL	23 [1]	2.2 [2]		240

[1] Not to be exceeded more than once in any 30-day period
[2] Applied as a 7-day median effluent limitation.

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-8.01) 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. U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might*

also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters)." Acute toxicity effluent limitations are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc*." Consistent with Order R5-2008-0060, 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-8.01) Based on chronic WET testing performed by the Discharger from June 2008 through April 2013, 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. As shown in Table F-18 below.

Table F-18. Whole Effluent Chronic Toxicity Testing Results

	Fathead Minnow *Pimephales promelas*		**Water Flea** *Ceriodaphnia dubia*		**Green Algae** *Selenastrum capricornutum*
Date	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
6/2/2008	1	1	1	1	1
9/22/2008	1	1	1	1	1
1/12/2009	1	1	1	1	1
4/13/2009	1	1	1	1	1
7/13/2009	1	1	1	1	1
3/8/2010	1	1	1	1	1
2/14/2011	1	1	1	1	1
4/23/2013	1	1	1	>1 [1]	1

[1] The laboratory noted that there was not a statistically significant reduction in the survival or reproduction response for the effluent sample with respect to the receiving water sample.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limitations. This has resulted in the petitioning of an NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limitations in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 C.F.R. 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E, section V.). If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE work plan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 C.F.R. 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. 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. 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

Mass-based effluent limitations have been established in this Order for ammonia, BOD_5, phosphorus, and TSS because they are oxygen demanding substances. Mass-based effluent limitations were calculated based upon the average monthly daily discharge flow (1.0 MGD) permitted in section IV.A.1.e. of this order. Except for the pollutants listed above, the mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

2. Averaging Periods for Effluent Limitations

40 C.F.R. 122.45 (d) requires maximum daily and average monthly discharge limitations for all dischargers other than POTWs unless impracticable. The rationale for using alternative averaging periods for pH and total coliform is discussed in section IV.C.3. of this Fact Sheet.

3. Anti-Backsliding Requirements

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. 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 copper, settleable solids, and turbidity. The effluent limitations for these pollutants are less stringent than those in previous Order No. R5-2008-0060. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations, as discussed in detail below.

a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits "*except in compliance with Section 303(d)(4).*" CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

   i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards.

   ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

   The Merced River is considered an attainment water for copper and settleable solids because the receiving water is not listed as impaired on the 303(d) list for these constituent.[1] As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal/relaxation of the effluent limitations for settleable solids and copper from Order R5-2008-0060 meets the exception in CWA section 303(d)(4)(B).

[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.

b. **CWQ section 402(o).** CWA section 402(o)(2) provides specific exceptions to the anti-backsliding prohibition contained in section 402(o)(1). 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 in section IV.C.3.a. of this Fact Sheet, updated information that was not available at the time Order R5-2008-0060 was issued indicates settleable solids in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. In addition, as described in section IV.C.3.c. of this Fact Sheet, updated information that was not available at the time Order R5-2008-0060 results in less stringent copper criteria and, therefore, less stringent copper WQBELs.

i. **Settleable Solids.** Effluent monitoring data collected between July 2008 and August 2013 for settleable solids indicate that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan narrative objective for settleable solids.

ii. **Copper.** Previous Order R5-2008-0060 contained effluent limitations for copper based on a default WER of 1.0. As described in section IV.C.3.c. of this Fact Sheet, the Discharger submitted the *Water Effects Ratio Study for Copper Compliance El Portal Wastewater Treatment Facility at Yosemite National Park* (Analytical Environmental Services) on 1 November 2013. Using the U.S. EPA's *Streamlined Water-Effect Ratio Procedure for Dischargers of Copper* (EPA-822-R-01-005), the final WER study determined the site-specific total recoverable and dissolved copper WER to be 2.0. Using a WER of 2.0 instead of 1.0 to calculate the CTR copper criteria results in less stringent WQBELs.

Thus, removal of the effluent limitations for settleable solids and relaxation of effluent limitations for copper from previous Order R5-2008-0060 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the relaxation and removal of effluent limitations based on information that was not available at the time of permit issuance.

c. **Turbidity.** Order R5-2008-0060 contained effluent limitations for turbidity. The prior limitations were solely an operational check to ensure the treatment system was functioning properly and could meet the limits for solids and coliform. The prior effluent limitations were not intended to regulate turbidity in the receiving water. Rather, turbidity is an operational parameter to determine proper system functioning and not a WQBEL.

This Order contains operational turbidity specifications to be met in lieu of effluent limitations and does not include effluent limitations for turbidity. However, the performance-based specifications in this Order are equivalent limitations that are not less stringent, and therefore do not constitute backsliding.

The revised operational specifications for turbidity are the same as the effluent limitations in Order R5-2008-00606. These revisions are consistent with State regulations implementing recycled water requirements. The revision in the turbidity limitations is consistent with the antidegradation provisions of 40 C.F.R. 131.12 and State Water Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than Order R5-2008-0060 and, therefore, does not allow any additional degradation.

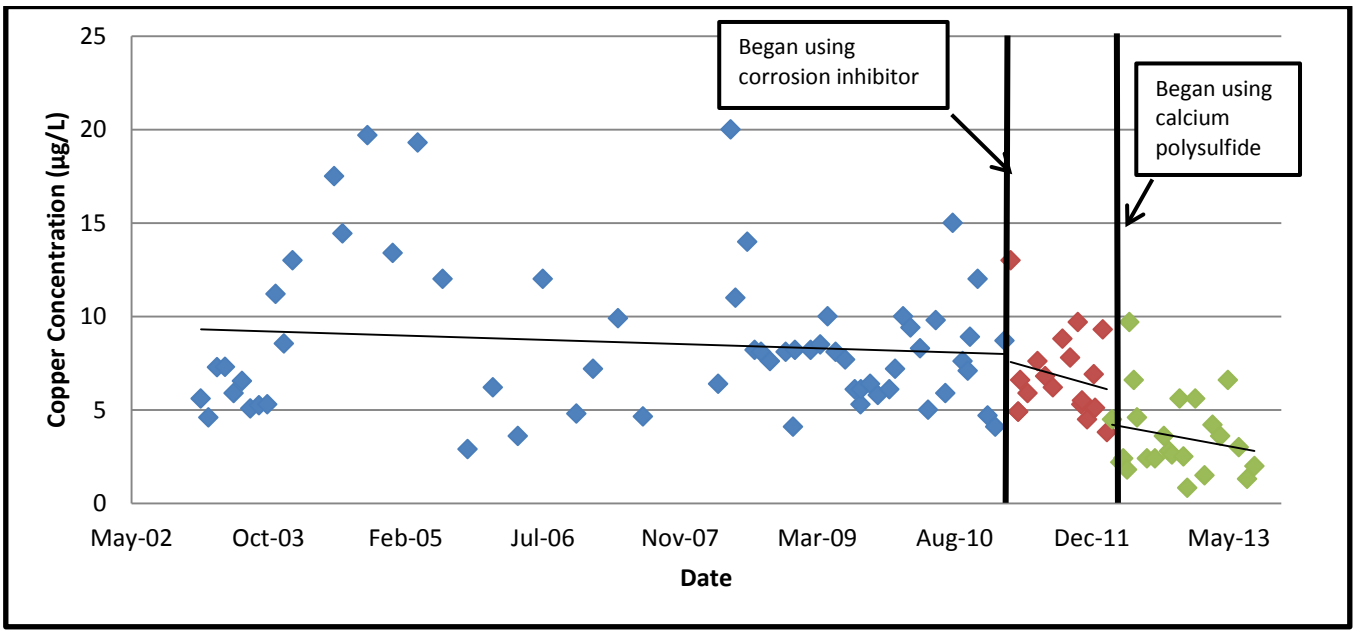
4. Antidegradation Policies

a. **Surface Water.** The Central Valley Water Board found in Order R5-2008-0060 that "[t]*he permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.*" This Order does not allow for an expansion or an increase in flow to the receiving water from previous Order R5-2008-0060. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

i. **Settleable Solids.** This Order removes existing effluent limitations for settleable solids. The Central Valley Water Board finds that the removal of the effluent limitations is not expected to result in an increase in pollutants or any additional degradation of the receiving water. Thus, the removal of the settleable solids effluent limitations in this Order is consistent with the antidegradation provisions of 40 C.F.R. 131.12 and State Water Board Resolution No. 68-16.

ii. **Copper**. This Order relaxes the existing effluent limitations for copper. As described in detail in section IV.C.3.c., a WER of 2.0 was used to calculate the CTR criteria for copper, as opposed to a WER of 1.0 used in Order R5-2008-060. State Water Resources Control Board Administrative Procedures Update (APU) 90-004 *Antidegradation Policy Implementation for NPDES Permitting* recommends a simple antidegradation analysis is sufficient, where a Regional Water Board determines the proposed action will not result in a significant reduction in water quality.

Previous Order R5-2008-0060 established copper effluent limitations and the Discharger was granted an interim limit as well as a time schedule to achieve compliance with the new copper effluent limits. The Discharger began enacting corrosion control measures (e.g., zinc orthophosphate) in the Facility's collection system in March 2011. In addition, the Discharge began using calcium polysulfide to increase removal of copper in the Facility's treatment system in March 2012. As shown in the graph below, these measures resulted in a reduction in the effluent copper concentration. The average copper effluent concentration from February 2003 to March 2011 (prior to when the copper control measures were implemented) was 8.6 µg/L. The average copper effluent concentration from March 2011 (when use of calcium polysulfide commenced) to August 2013 was 3.6 µg/L.



The relaxed copper effluent limitations in this Order could potentially result in higher copper concentrations in the Facility's discharge since the Discharger may no longer implement the control and treatment measures described above. However, based on the data, even if the control and treatment measures ceased, the copper effluent concentrations would still be below the applicable CTR criteria (CCC = 25 µg/L and CMC = 38). Furthermore, downstream receiving water quality would be minimally affected, if even at all, by the potential increase in the mass of copper discharged to the receiving water since the receiving water often provides significant continuous dilution. The relaxed copper effluent limitations in this Order may also allow the Discharger reduce the amount of chemicals added to the collection and treatment system, thus reducing the mass of other pollutants in the Facility's Discharger, such as salinity and zinc. Therefore, the relaxation of copper effluent limitations in this Order will not cause a significant reduction of the receiving water quality and does not impact beneficial uses in the receiving water. The relaxation of copper effluent limitations in this Order is consistent with the antidegradation provisions of 40 C.F.R. 131.12 and State Water Board Resolution No. 68-16.

iii. **Mixing Zone.** This Order allows a mixing/dilution zone in accordance with the Basin Plan and U.S. EPA's TSD. As discussed in section IV.C.2.c. of this Fact Sheet (Assimilative Capacity/Mixing Zone), the mixing zone is as small as practical and complies with all applicable requirements. In addition, this Order includes a performance-based effluent limitation for nitrite plus nitrate (as N) that is more stringent than would be allowed under the mixing zone analysis alone, implementing BPTC. Therefore, with BPTC implemented, the Central Valley Water Board finds that the degradation due to the increase of pollutant concentration allowed by the mixing zone does not impact beneficial uses in the receiving water downstream of the mixing zone, and is in accordance with state and federal antidegradation policies. In addition, the Central Valley Water Board is not authorizing any additional degradation than previous Order R5-2008-0060.

b. **Groundwater.** Disinfected tertiary-treated wastewater is discharged to percolation ponds adjacent to and hydraulically connected to the Merced River. The percolation ponds to which effluent is discharge are separated from the Merced River only by a road constructed on a base of large cobbles and sand. The treated effluent discharged to the percolation ponds flows through sand and gravel and emerges as river flow. The Discharger was given a compliance schedule in Order R5-2008-0060 to ensure the sludge drying beds are sealed. The Discharger noted in the ROWD that until the drying beds are fully sealed, sludge would not be disposed to the drying beds. Therefore, the Facility's discharge is not expected to cause degradation of the underlying groundwater. The Discharger is not required to monitor groundwater. However, this Order includes a groundwater limitation that prohibits the discharge from causing underlying groundwater to contain waste constituents in concentrations greater than background groundwater quality.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on flow. The WQBELs consist of restrictions on ammonia (as N), BOD_5, copper, nitrite plus nitrate (as N), pH, phosphorus, total coliform, total suspended solids, BOD_5 and total suspended solids percent removal, zinc, and acute whole effluent toxicity. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to 30 May 2000, but not approved by U.S. EPA before that date, are nonetheless "*applicable water quality standards for purposes of the* [Clean Water] *Act*" pursuant to 40 C.F.R. 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations
Discharge Points 001 and 002

Table F-19. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	1.0	--	--	--	DC
Conventional Pollutants						
Biochemical Oxygen Demand 5-day @ 20°C	mg/L	10	20	--	--	TTC
	lbs/day [2]	84	167	--	--	
	% Removal	90	--	--	--	TTC
Total Suspended Solids	mg/L	10	20	--	--	TTC

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
	lbs/day [2]	84	167	--	--	
	% Removal	90	--	--	--	TTC
pH	standard units	--	--	6.5	8.5	BP
Priority Pollutants						
Copper, Total Recoverable	µg/L	21	38	--	--	CTR
Zinc, Total Recoverable	µg/L	95	160	--	--	CTR
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N) (1 May – 31 October)	mg/L	4.0	8.1	--	--	NAWQC
	lbs/day [2]	34	68	--	--	NAWQC
Ammonia Nitrogen, Total (as N) (1 November – 30 April)	mg/L	4.5	12	--	--	NAWQC
	lbs/day	38	101	--	--	NAWQC
Phosphorus, Total	mg/L	0.5	1.0	--	--	PO
	lbs/day [2]	4.2	8.4	--	--	
Nitrite plus Nitrate (as N)	mg/L	64	--	--	--	BP (MCL)
Total Coliform	MPN/100 mL	2.2 [3]	23 [4]	--	240	BP (Title 22)
Acute Toxicity	% Survival	--	[5]	--	--	BP

[1] **DC** – Based on the design capacity of the Facility.
TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
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 U.S. EPA'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 CA Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).
PO – Based on effluent limitations contained in previous Order R5-2008-0060**.**

[2] Based on a design flow of 1.0 MGD.

[3] Applied as a 7-day median effluent limitation.

[4] Not to be exceeded more than once in any 30-day period.

[5] 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%

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

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, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

a. **Turbidity.** Order R5-2008-0060 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The San Joaquin Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution R5-2007-0136 the Central Valley Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial uses of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 C.F.R. 131.12).

This Order includes operational specifications that require the Discharger to operate the treatment system to ensure that turbidity shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period and 10 NTU, at any time. Because this Order limits the average daily discharge of turbidity to 2 NTU, the Order will be protective of the receiving water under all natural background conditions as defined in Basin Plan's revised water quality objective for turbidity. The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than prescribed in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the turbidity receiving water limitation in this Order is to the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of waters, will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 C.F.R. 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher

than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

B. Groundwater

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

2. The 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 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.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. 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. 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. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE) if toxicity is detected in the chronic

whole effluent monitoring required in this Order. This Order may be reopened to include a numeric chronic toxicity effluent limitation, new acute toxicity limitations, and/or effluent limitations for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on that objective.

b. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents, except for copper. 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 additional studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

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

d. **Ultraviolet Disinfection Operating Specifications.** The ultraviolet light disinfection operating specifications are required to ensure that the ultraviolet light system is operated to achieve the required pathogen removal. Ultraviolet light disinfection system specifications and monitoring and reporting requirements are required to ensure that adequate ultraviolet light dosage is applied to the wastewater to inactivate pathogens (e.g., viruses) in the wastewater. Ultraviolet light dosage is dependent on several factors such as ultraviolet light transmittance, ultraviolet light power setting, wastewater turbidity, and wastewater flow through the ultraviolet light disinfection system. The ultraviolet light specifications in this Order are based on the National Water Research Institute and American Water Works Association Research Foundation titled, "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse."* If the Discharger conducts a site-specific Ultraviolet Light Engineering study that identifies site-specific ultraviolet light operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, this Order may be reopened to modify the ultraviolet light specifications, in accordance with Reopener Provision VI.C.1.f.

e. **Site-Specific Ammonia Criteria.** If it is determined that the receiving water conditions warrant more stringent ammonia WQBELs to protect the beneficial uses applicable to the Merced River, this Order may be reopened and modified effluent limitations added for ammonia.

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-8.01) Based on whole effluent chronic toxicity testing performed by the Discharger from June 2008 through April 2013, the discharge does not have reasonable potential to cause or

contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires chronic WET monitoring for demonstration of compliance with the narrative toxicity objective. In addition to WET monitoring, this provision includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of **> 4** TUc (where TUc = 100/NOEC) is applied in the provision, based on available receiving water dilution. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e., toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

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

TRE Guidance. The Discharger is required to prepare a TRE work plan in accordance with U.S. EPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, EPA/833-B-99/002, August 1999.
- *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs)*, EPA/600/2-88/070, April 1989.

- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures*, Second Edition, EPA 600/6-91/003, February 1991.

- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents*, Phase I, EPA/600/6-91/005F, May 1992.

- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA/600/R-92/080, September 1993.

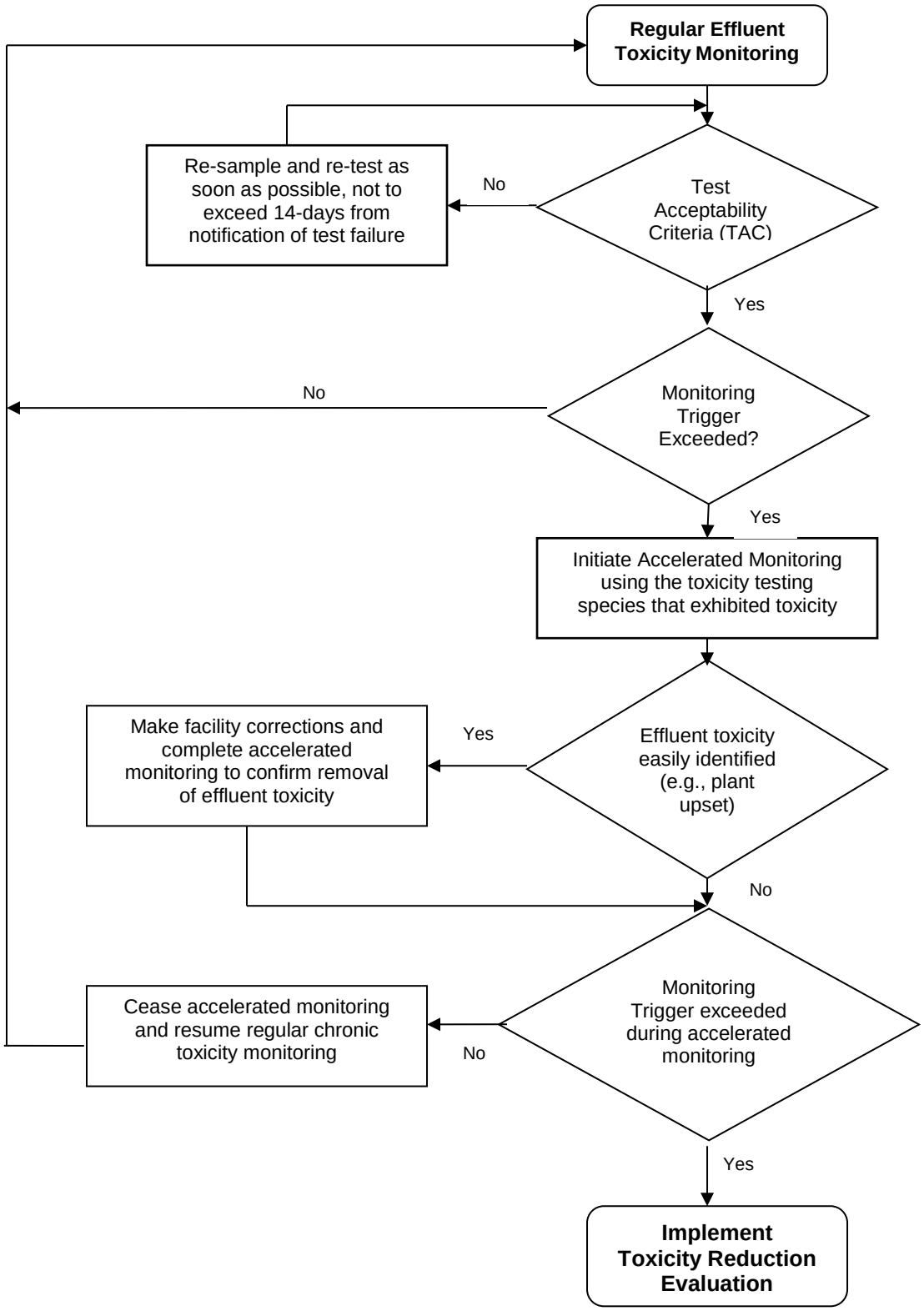
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.

- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002.

- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002.

- *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991.

Figure F-1
WET Accelerated Monitoring Flow Chart



3. Best Management Practices and Pollution Prevention

a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to the Merced River. The Plan shall identify and address sources of salinity in the Facility's effluent, including any chemicals used for drinking water and wastewater treatment and the contribution of salinity from sewer users. The plan shall be completed and submitted to the Central Valley Water Board by **<180 days prior to the Order expiration date>.**

4. Construction, Operation, and Maintenance Specifications

a. **Filtration System Operating Specifications.** Operational specifications for turbidity are included as an indicator of the effectiveness of the filtration system for providing adequate disinfection. The tertiary treatment process utilized at this Facility is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTUs) as a daily average. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity and could impact ultraviolet light dosage. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period, and an instantaneous maximum of 10 NTU.

b. **Ultraviolet Disinfection System Operating Specifications.** This Order requires that wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the Department of Public Health (DPH) recycled water criteria, CCR, Title 22, division 4, chapter 3, (Title 22), or equivalent. To ensure that the ultraviolet light disinfection system is operated to achieve the required pathogen removal, this Order includes effluent limits for total coliform organisms, filtration system operating specifications, and ultraviolet light disinfection system operating specifications. Compliance with total coliform effluent limits alone does not ensure that pathogens in the domestic wastewater have been deactivated by the ultraviolet light disinfection system. Compliance with the effluent limits and the filtration system and ultraviolet light disinfection operating specifications demonstrates compliance with the equivalency to Title 22 disinfection requirement.

The National Water Research Institute (NWRI) and American Water Works Association Research Foundation (AWWRF) "*Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse"* first published in December 2000 and revised as a Third Edition dated August 2012 (NWRI guidelines) includes ultraviolet light operating specifications for compliance with Title 22. For water recycling in accordance with Title 22, the ultraviolet light system shall be an approved system included in the *Treatment Technology Report for Recycled Water*, December 2009 (or a later version, as applicable) published by the DPH. The ultraviolet light system shall also conform to all requirements and operating specifications of the NWRI guidelines. A Memorandum dated 1 November 2004 issued by DPH to Regional Water Board executive offices recommended that provisions be included in permits for recycling water treatment plants employing ultraviolet light disinfection requiring Dischargers to establish fixed cleaning frequency of lamp sleeves, as well as,

include provisions that specify minimum delivered ultraviolet light dose that must be maintained (per the NWRI Guidelines).

For granular media filtration, the NWRI guidelines recommend a minimum hourly average ultraviolet light dose of 100 mJ/cm^2. Therefore, this Order includes ultraviolet light operating specification requiring a minimum hourly average ultraviolet light dose of 100 mJ/cm^2 and a minimum hourly average ultraviolet light transmittance of 55%, per the NWRI Guidelines. If the Discharger conducts a site-specific ultraviolet light engineering study that demonstrates a lower ultraviolet light dose meets a Title 22 equivalent virus removal, or if the Discharger installs an alternative filtration system (e.g., membrane filtration), this Order may be reopened to revise the ultraviolet light operating specifications accordingly.

c. **Percolation Pond Operating Requirements.** The operation and maintenance specifications for the treatment ponds are included to prevent flooding and nuisance conditions. The specifications include in this Order are retained from Order R5-2008-0060.

d. **Pretreatment Requirements.** Pursuant to 40 C.F.R. 122.41(e), the Discharger must properly operate and maintain all facilities of treatment and control (and related appurtenances) to achieve compliance with the conditions of this permit. Proper control includes an enforceable ordinance or memorandum of agreement with Yosemite Concession Services that ensures grease and trash disposed to the collection system does not cause sewer collection spills.

e. **Biosolids.** The sludge/biosolids requirements are required to ensure compliance with State disposal requirements (Title 27, Division 2, Subdivision 1, section 20005, et seq.) and U.S. EPA sludge/biosolids use and disposal requirements at 40 C.F.R. part 503.

f. **Collection System.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ on 2 May 2006. Order 2006-0003-DWQ 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. General Order 2006-0003-DWQ requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions. The Discharger has applied for and has been approved for coverage under Order 2006-0003-DWQ for operation of its wastewater collection system.

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

5. Special Provisions for Municipal Facilities (POTWs Only)

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 C.F.R. 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 (MRP), Attachment E, establishes monitoring and reporting 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., BOD_5 and TSS reduction requirements). The monitoring frequencies for BOD_5 (1/week), electrical conductivity (1/week), and total suspended solids (1/week) have been retained from Order No. R5-2008-0060. The settleable solids and pH monitoring requirements have not been retained from Order R5-2008-0060 as they are unnecessary to determine compliance with the requirements of this Order.

2. According to the Discharger, the current headworks configuration prevents the Discharger from conducting 24-hour flow proportional composite sampling at Monitoring Location INF-001. Based on distances of the wastewater generation areas from the Facility and the general information provided by the Discharger, it is unclear to Central Valley Water Board staff as to whether 12-hour time proportional composite sampling at Monitoring Location INF-001 is representative of the actual influent to the Facility. Central Valley Water Board staff will continue addressing this issue with the Discharger outside of the permitting process.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 C.F.R. 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. Order R5-2008-0060 established two effluent monitoring locations, Monitoring Location M-001 when discharging to the percolation ponds (Discharge Point 001) and Monitoring Location M-002 when discharging directly to the Merced River (Discharge Point 002). To be consistent with the Central Valley Water Board's standard naming conventions for monitoring locations, this Order revises the monitoring location names from M-001 and M-002 to EFF-001 and EFF-002, respectively.

3. Effluent monitoring frequencies and sample types for BOD_5 (1/week or 2/week), copper (1/quarter), electrical conductivity (1/week), flow (continuous), hardness (1/month), pH (1/day), phosphorus (1/quarter or 1/month), total coliform organisms (1/week or 1/day), total suspended solids (1/week or 2/week), and turbidity (continuous) have been retained from Order No. R5-2008-0060 to determine compliance with effluent limitations for these parameters, where applicable, and to characterize the effluent.

4. This Order establishes new effluent limitations for ammonia (as N), nitrite plus nitrate (as N), and zinc. Therefore, this Order includes effluent monitoring for ammonia (2/month or 1/week), nitrite plus nitrate (1/quarter or 1/Month), and zinc (1/month).

5. To better characterize the effluent, the monitoring frequency for temperature, when discharging to the percolation ponds (Discharge Point 001), has been increased to 1/day.

6. Monitoring data collected over the previous permit term for aluminum and settleable solids, did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for aluminum and settleable solids have been relaxed to 1/quarter and removed, respectively, in this Order.

7. Quarterly effluent monitoring requirements for lead have been established in this Order to determine if there is reasonable potential for the discharge to cause an exceedance above applicable water quality criteria or objectives.

8. The monitoring frequency for standard minerals has been revised from 1/quarter to 1/year, as a robust data set has been established for the effluent and less frequent monitoring is warranted.

9. In accordance with Section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Consistent with Order R5-2008-0060, this Order requires effluent monitoring for priority pollutants and other constituents of concern once a year.

10. California Water Code section 13176, subdivision (a), states: "*The analysis of any material required by* [Water Code sections 13000-16104] *shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.*" DPH certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

    Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) The Discharger has an ELAP-certified laboratory on-site.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Quarterly (1/quarter) 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Annual (1/year) 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 water.

b. The receiving water monitoring frequency and sample type for flow (1/month or 1/day), dissolved oxygen (1/month or 1/day), electrical conductivity (1/month or 1/day), fecal coliform organisms (1/quarter or 1/day), nitrate (1/month or 2/month), pH (1/month or 1/day), temperature (1/month or 1/day), and turbidity (1/quarter or 1/month) have been retained from Order R5-2008-0060.

c. This Order reduces the monitoring frequency for aluminum to quarterly (1/quarter) and only requires aluminum to be monitored at the upstream receiving monitoring location.

d. Previous Order R5-2008-0060 required hardness to be monitored at the upstream and downstream receiving water monitoring locations. This Order only requires hardness to be monitored at the upstream receiving water monitoring location as downstream receiving water hardness monitoring is not necessary to characterize the receiving water.

e. This Order establishes quarterly monitoring for copper and zinc at upstream monitoring location RSW-001 only. The monitoring requirements for copper and zinc are necessary to continue to characterize the receiving water.

f. This Order removes the ammonia receiving water monitoring requirement as it is not necessary to determine compliance with permit requirements.

g. Priority pollutant data for the receiving water have been provided by the Discharger over the term of Order R5-2008-0060, and were used to conduct a reasonable potential analysis (RPA). In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. This Order requires monitoring for priority pollutants and other pollutants of concern, at upstream Monitoring Location RSW-001U only, in order to collect data to conduct an RPA for the next permit renewal.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. **Biosolids Monitoring**

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements contained in the Special Provision contained in section VI.C.4.e. of this Order. Biosolids disposal requirements are imposed pursuant to 40 C.F.R. Part 503 to protect public health and prevent groundwater degradation.

2. **Water Supply Monitoring**

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

3. **Ultraviolet Light Disinfection System Monitoring**

Ultraviolet light system monitoring and reporting are required to ensure that the ultraviolet light system is operated to adequately inactivate pathogens in the wastewater. Ultraviolet light disinfection system monitoring is imposed to achieve equivalency to requirements established by DPH, NWRI/AWWARF's *"Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse."*

4. **Percolation Pond Monitoring**

Weekly pond monitoring for pH and dissolved oxygen are required to ensure proper operation of the percolation ponds and to identify potential nuisance conditions.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's. The Central Valley Water Board encourages 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: direct mailing to agencies and known interested parties; posting of a Notice of Public Hearing at the Facility entrance, local post office, nearest city hall or county courthouse, and the Central Valley Regional Water Board's web site; and publication in the Mariposa Gazette on 3 April 2014.

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.swrcb.ca.gov/centralvalley/board_decisions/tentative_orders/

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 Officer at the Central Valley Water Board at the address listed on the coverage 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 5 May 2014**.

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: 5/6 June 2014
Time: 9:00 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, if any, 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 aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

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

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

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at our office at any time between 8:00 a.m. and 4:30 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (559) 445-5116. Our office is located at 1685 "E" Street, Fresno, CA 93706.

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 Alexander Mushegan at (559) 488-4397 or at Alexander.Mushegan@waterboards.ca.gov.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum, Total Recoverable	µg/L	220	514	200 [2]	750 [1]	--	--	--	--	200 [2]	No
Electrical Conductivity @ 25°C	µmhos/cm	766 [4]	38 [4]	900	--	--	--	--	--	900	No
Mercury, Total Recoverable	µg/L	0.0089 [3]	0.0034	0.050	--	--	0.050	0.051	--	2	No
Total Dissolved Solids	mg/L	564 [4]	44	500	--	--	--	--	--	500	No [5]
Lead, Total Recoverable	µg/L	0.23 [6]	0.38	1.9 [7] 0.018 [8]	48 [7] 0.46 [8]	1.9 [7] 0.018 [8]	--	--	--	15	Insufficient Data [9]
Ammonia Nitrogen, Total (as N)	mg/L	4.4	0.33	3.5 [10] 4.8 [11]	8.1 [10] 13 [11]	3.5 [10] 4.8 [11]	--	--	--	--	Yes
Copper, Total Recoverable	µg/L	15	2.7	25 [7] 0.57 [8]	38 [7] 0.60 [8]	25 [7] 0.57 [8]	1300	--	--	1000	Yes
Nitrite plus Nitrate (as N)	mg/L	47	0.27	10	--	--	--	--	--	10	Yes
Zinc, Total Recoverable	µg/L	38	9.3	160 [7] 3.8 [8]	160 [7] 3.8 [8]	160 [7] 3.8 [8]				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

Footnotes:
(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour
(2) State of California Department of Public Health Secondary MCL. RPA was conducted based on the calendar annual average aluminum effluent (66 µg/L) and upstream receiving water (84 µg/L). See section IV.C.3.a. of the Fact Sheet (Attachment F).
(3) The highest observed effluent concentration of 9 µg/L is considered an outlying data point, second highest detected mercury concentration is 0.0089. See section IV.C.3.a. of the Fact Sheet (Attachment F).
(4) Highest calendar year average.
(5) The calculated worst-case downstream receiving water total dissolved concentration is 59 mg/L, which does not exceed the Secondary MCL. See Section IV.C.3.a. of the Fact Sheet (Attachment F).
(6) Estimated value(s); considered invalid for RP determination.
(7) Criterion applicable to the maximum effluent concentration.
(8) Criterion applicable to the maximum upstream receiving water concentration.
(9) Insufficient data to conduct RPA. See section IV.C.3.b. of the Fact Sheet (Attachment F).
(10) The applicable criterion from 1 May to 31 October.
(11) The applicable criterion from 1 November to 30 April.

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			Dilution Factors			HH Calculations			Aquatic Life Calculations									Final Effluent Limitations	
		HH	CMC	CCC	HH	CMC	CCC	ECA_{HH} = $AMEL_{HH}$	AMEL/MDEL $Multiplier_{HH}$	$MDEL_{HH}$	ECA $Multiplier_{acute}$	LTA_{acute}	ECA $Multiplier_{chronic}$	$LTA_{chronic}$	Lowest LTA	AMEL $Multiplier_{95}$	$AMEL_{AL}$	MDEL $Multiplier_{99}$	$MDEL_{AL}$	Lowest AMEL	Lowest MDEL
Ammonia Nitrogen, Total (as N) [1]	mg/L	--	8.1	3.5	--	--	--	--	--	--	0.32	2.6	0.78	2.7	2.6	1.6	4.0	3.11	8.1	4.0	8.1
Ammonia Nitrogen, Total (as N) [2]	mg/L	--	13	4.8	--	--	--	--	--	--	0.32	4.3	0.78	3.8	3.8	1.2	4.5	3.1	12	4.5	12
Copper, Total Recoverable	µg/L	--	38	25	--	--	--	--	--	--	0.39	14.9	0.6	15.0	14.9	1.4	21	2.6	38	21	38
Nitrite plus Nitrate (as N)	mg/L	--	--	--	--	--	--	See Section IV.C.3.c of the Fact Sheet			--	--	--	--	--	--	--	--	--	64	--
Zinc, Total Recoverable	µg/L		160	160	--	--	--	--	--	--	0.43	69	0.64	102	69	1.4	95	2.3	160	95	160

[1] Effluent limits applicable from 1 May through 31 October.
[2] Effluent limits applicable from 1 November through 30 April.