

**IX. OTHER MONITORING REQUIREMENTS**

**A. Biosolids**

1. Monitoring Location BIO-001

- a. A composite sample of sludge shall be collected **annually (1/year)** at Monitoring Location BIO-001 in accordance with U.S. EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants listed in 40 CFR Part 122, Appendix D, Tables II and III (excluding total phenols).
- b. Biosolids monitoring shall be conducted using the methods in *Test Methods for Evaluating Solid Waste, Physical/Chemical* (U.S. EPA publication SW-846), as required in 40 CFR 503.8(b)(4). All results must be reported on a 100% dry weight basis. Records of all analyses must state on each page of the laboratory report whether the results are expressed in "100% dry weight" or "as is."
- c. Sampling records shall be retained for a minimum of **5 years**. A log shall be maintained of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log must be complete enough to serve as a basis for part of the annual report.

**B. Municipal Water Supply**

1. Monitoring Location SPL-001

- a. The Discharger shall monitor the municipal water supply at SPL-001 as follows. Sampling stations shall be established where representative samples of the municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples, at minimum on the same day as samples collected for the same parameters. The results for EC and nitrate shall be reported as flow-weighted monthly averages and be supplemented with supporting calculations.

**Table E-8. Municipal Water Supply Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Flow	million gallons	Meter	Continuous <sup>1</sup>	--
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	<sup>2</sup>
General Minerals <sup>3</sup>	mg/L	Grab	1/Year	<sup>2</sup>

<sup>1</sup> Reported as total flow per month, per water source (well), on a monthly basis.

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

<sup>3</sup> General 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).

**C. Filtration System Monitoring**

1. Monitoring Location FIL-001

- a. The Discharger shall monitor the influent to filtration system at Monitoring Location FIL-001, as follows:

**Table E-9. Filtration System Monitoring Requirements – FIL-001**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Filtration Rate	<sup>1</sup>	Calculate	Continuous	--

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity <sup>2</sup>	NTU	Meter	Continuous <sup>3,4</sup>	<sup>5</sup>

<sup>1</sup> Units are gallons per minute per square foot of surface area (gpm/ft<sup>2</sup>).

<sup>2</sup> **Turbidity monitoring is only required when the Discharger is not using coagulation.**

<sup>3</sup> For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration in which the analyzer is not in operation.

<sup>4</sup> If turbidity exceeds 5 NTU for more than 15 minutes when not coagulating, the Discharger shall add chemicals or divert the wastewater. If turbidity exceeds 10 NTU when not coagulating and the wastewater is not diverted, the Discharger shall collect a sample as soon as practicable for total coliform at Monitoring Location EFF-001 and report the duration of the turbidity exceedance.

<sup>5</sup> Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

2. Monitoring Location FIL-002

- b. The Discharger shall monitor the effluent from the filtration system prior to disinfection at Monitoring Location FIL-002, as follows:

**Table E-10. Filtration System Monitoring Requirements – FIL-002**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTU	Meter	Continuous <sup>1,2</sup>	<sup>3</sup>

<sup>1</sup> For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration in which the analyzer is not in operation.

<sup>2</sup> If turbidity exceeds 10 NTU when coagulation is used or 2 NTU when coagulation is not used, and the wastewater is not diverted, the Discharger shall collect a sample as soon as practicable for total coliform at Monitoring Location EFF-001 and report the duration of the turbidity exceedance.

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

**D. Ultraviolet Light (UV) Disinfection System**

1. Monitoring Location UVS-001

- a. The Discharger shall monitor the UV disinfection system at UVS-001 as follows:

**Table E-11. Ultraviolet Light Disinfection System Monitoring Requirements**

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	mgd	Meter	Continuous <sup>1</sup>
Number of UV banks in operation	Number	Meter	Continuous <sup>1</sup>
UV Transmittance	Percent (%)	Meter	Continuous <sup>1</sup>
UV Power Setting	Percent (%)	Meter	Continuous <sup>1</sup>
UV Dose	<sup>3</sup>	Calculate <sup>2</sup>	Continuous <sup>1</sup>

<sup>1</sup> 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.

<sup>2</sup> Report daily minimum UV dose, daily average UV dose, and weekly average UV dose. For the daily minimum UV dose, also report associated number of banks, gallons per minute per lamp, and UV transmittance used in the calculation. If effluent discharge has received less than the minimum UV dose and is not diverted from discharging to Central Canal, report the duration and dose calculation variables associated with each incident.

<sup>3</sup> UV dosage shall be reported in units of millijoules per square centimeter (mJ/cm<sup>2</sup>).

**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 from the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act" of 1986.

**B. Self-Monitoring Reports (SMRs) and Discharge Monitoring Reports (DMRs)**

1. The Discharger shall electronically submit SMRs and DMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://ciwqs.waterboards.ca.gov/>). The CIWQS Web site will provide additional information for SMR and DMR submittal in the event there will be a planned service interruption for electronic submittal. The Discharger shall maintain sufficient staffing and resources to ensure it submits SMRs and DMRs that are complete and timely. This includes provision of training and supervision of individuals on how to prepare and submit SMRs and DMRs.
2. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

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

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR/DMR Due Date
Continuous	Permit effective date	All	Submit with monthly SMR/DMR
1/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling	Submit with monthly SMR/DMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR/DMR
1/Month	Permit effective date	1 <sup>st</sup> day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter (Groundwater; Chronic Toxicity)	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR/DMR Due Date
1/Quarter (Pretreatment)	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 28 February (with Annual)
2/Year (Acute Toxicity)	Permit effective date	1 January through 30 June 1 July through 31 December	Submit with the monthly SMR/DMR in which sample was taken (e.g., if a sample is taken in March, the result must be included in the March SMR/DMR [due 1 May])
1/Year	Permit effective date	1 January through 31 December	Submit with the monthly SMR/DMR in which sample was taken (e.g., if a sample is taken in March, the result must be included in the March SMR/DMR [due 1 May])
1/Year (Biosolids)	Permit effective date	1 January through 31 December	Submit with Annual Report
1/Year (Annual Report)	Permit effective date	1 January through 31 December	1 February
1/Year (Pretreatment)	Permit effective date	1 January through 31 December	28 February

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

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

- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- 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 ( $\pm$  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 quantified value and ND is lower than DNQ.
5. The Discharger shall submit eSMRs and DMRs in accordance with the following requirements:
- a. The Discharger shall arrange all reported data in a tabular format, using the Permittee Entry Template (PET) Tool. 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 under the Attachments tab.
  - b. The Discharger shall submit DMR data using the DMR tab in CIWQS.
  - c. The Discharger shall attach complete laboratory reports, as it receives them from any contract laboratory, with all its eSMRs for which sample analyses were performed. This includes, but is not limited to, all laboratory analysis sheets and quality assurance/quality control information.
  - d. Violations must be entered into CIWQS under the Violations tab for the reporting period in which the violation occurred. Violations do not need to be duplicated in the Annual Report if they have already been entered.
  - e. 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.
6. **Calculation Requirements.** The following shall be calculated and reported in the SMRs:
- a. **Mass Loading Limitations.** For BOD<sub>5</sub> and TSS, the Discharger shall calculate and report the mass loading (lbs/day) in the SMRs. The mass loading shall be calculated as follows:  
$$\text{Mass Loading (lbs/day)} = \text{Flow (mgd)} \times \text{Concentration (mg/L)} \times 8.34$$

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

- b. **Removal Efficiency (BOD<sub>5</sub> and TSS).** The Discharger shall calculate and report the percent removal of BOD<sub>5</sub> and TSS in the SMRs. The percent removal shall be calculated as specified in Section VII.A. of the Limitations and Discharge Requirements.
- c. **Total Coliform Effluent Limitations.** The Discharger shall calculate and report the 7-sample median of total coliform for the effluent. The 7-sample median of total coliform 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. The values shall be reported for RSW-001 and RSW-002. The monthly median of the mean daily dissolved oxygen concentration and the 95 percentile concentration shall be determined as follows: (a) calculate the percent of saturation for each monitoring event during the month (based on the temperature for each monitoring event), (b) calculate the median of all the percent of saturation values computed during the month, and (c) calculate the 95th percentile of all the percent of saturation values computed during the month.
- 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.18.a-d 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. Other Reports

1. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, and TRE/TIE required under Special Provisions VI.C.
2. By **<60 days of permit effective date>**, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Attachment I provides required maximum reporting levels in accordance with the SIP.
3. **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. If the Discharger submits, and the Executive Officer approves, the request for a higher flow limitation at Discharge Point 002 (disposal ponds), the Discharger must submit in its annual report a description of which disposal ponds received maintenance work during the calendar year, and a statement certifying whether the disposal ponds still have the disposal capacity approved by the Executive Officer. If the Discharger determines that the disposal ponds no longer have enough capacity to dispose of the permitted flow, the Discharger shall include a detailed explanation of what it intends to do to restore disposal capacity, and a schedule for doing so.
  - f. Beginning **<permit expiration date>**, the Discharger shall provide documentation that it conferred with Fresno Irrigation District regarding the beginning and end of irrigation water deliveries. The documentation must specify the beginning and end dates of the irrigation water delivery period for the year.
  - g. 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.
4. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit **annually (1/year)** a report to the Central Valley Water Board, with copies to U.S. EPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months (1 January through 31 December). In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

An annual report shall be submitted by **28 February** and include at least the following items:

- a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the Facility's influent and effluent for those pollutants U.S. EPA has identified under section 307(a) of the CWA which are known or suspected to be discharged by nondomestic users. This will consist of an annual full priority pollutant scan. The Discharger is not required to sample and analyze for asbestos. The Discharger shall submit the results of the annual priority pollutant scan electronically to the Central Valley Water Board using the State Water Board's CIWQS Program Website.

Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The Discharger shall also provide any influent, effluent or sludge monitoring data for non-priority pollutants that may be causing or contributing to interference, pass-through or adversely impacting sludge quality. Sampling and

analysis shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto.

- b. A discussion of upset, interference, or pass-through incidents, if any, at the Facility, which the Discharger knows or suspects were caused by nondomestic users of the Facility. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of, the nondomestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent pass-through, interference, or noncompliance with sludge disposal requirements.
- c. The cumulative number of nondomestic users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of nondomestic user responses.
- d. An updated list of the Discharger's significant industrial users (SIUs) including their names and addresses, or a list of deletions, additions and SIU name changes keyed to a previously submitted list. The Discharger shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall indicate which SIUs, or specific pollutants from each industry, are subject to local limitations. Local limitations that are more stringent than the federal categorical standards shall also be identified.
- e. The Discharger shall characterize the compliance status through the year of record of each SIU by employing the following descriptions:
  - i. complied with baseline monitoring report requirements (where applicable);
  - ii. consistently achieved compliance;
  - iii. inconsistently achieved compliance;
  - iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
  - v. complied with schedule to achieve compliance (include the date final compliance is required);
  - vi. did not achieve compliance and not on a compliance schedule; and
  - vii. compliance status unknown.
- f. A report describing the compliance status of each SIU characterized by the descriptions in items i through vii above shall be submitted **quarterly (1/quarter)**. The report shall identify the specific compliance status of each such SIU and shall also identify the compliance status of the Facility with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report due every 28 February. This quarterly reporting requirement shall commence upon issuance of this Order.
- g. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the SIUs. The summary shall include:



- i. The names and addresses of the SIUs subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
  - ii. The conclusions or results from the inspection or sampling of each industrial user.
- h. The Discharger shall characterize the compliance status of each SIU by providing a list or table which includes the following information:
- i. Name of SIU;
  - ii. Category, if subject to federal categorical standards;
  - iii. The type of wastewater treatment or control processes in place;
  - iv. The number of samples taken by the Discharger during the year;
  - v. The number of samples taken by the SIU during the year;
  - vi. For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;
  - vii. A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits.
  - viii. Whether an SIU or nondomestic user is in significant noncompliance (SNC) as defined at 40 CFR 403.8(f)(2)(viii) at any time during the year; and
  - ix. A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action (e.g., warning letters or notices of violation, administrative orders, civil actions, and criminal actions), final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;
  - x. Restriction of flow to the Facility.
  - xi. Disconnection from discharge to the Facility.
- i. A brief description of any programs the Discharger implements to reduce pollutants from nondomestic users that are not classified as SIUs;
  - j. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning: the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;
  - k. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and
  - l. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(viii).

Pretreatment Program reports shall be submitted to the Central Valley Water Board via CIWQS and:

State Water Resources Control Board  
Division of Water Quality  
1001 I Street  
Sacramento, CA 95812

MALAGA COUNTY WATER DISTRICT  
WASTEWATER TREATMENT FACILITY

ORDER R5-2014-XXXX  
NPDES NO. CA0084239

or  
P.O. Box 100  
Sacramento, CA 95812

and the

Regional Administrator  
U.S. Environmental Protection Agency, Region 9 WTR-5  
R9Pretreatment@epa.gov  
~~75 Hawthorne Street~~  
San Francisco, CA 94105

**ATTACHMENT F – FACT SHEET**

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**ATTACHMENT F – FACT SHEET**

As described in section II.B. of this Order, the Central Valley Water Board incorporates this Fact Sheet as findings of the Central Valley Water Board supporting the issuance of this Order. This Fact Sheet 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	5D100124001
Discharger	Malaga County Water District
Name of Facility	Malaga Wastewater Treatment Facility
Facility Address	3749 South Maple Avenue
	Fresno, CA 93725
	Fresno County
Facility Contact, Title and Phone	James D. Anderson, General Manager/Chief Plant Operator, 559-485-7353
Authorized Person to Sign and Submit Reports	James D. Anderson, General Manager/Chief Plant Operator, 559-485-7353
Mailing Address	3580 South Frank Street, Fresno, CA 93725
Billing Address	3580 South Frank Street, Fresno, CA 93725
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	A
Pretreatment Program	Yes
Recycling Requirements	Not Applicable
Facility Permitted Flow	0.45 million gallons per day (mgd) tertiary; 0.49 mgd secondary; 1.2 mgd total
Facility Design Flow	0.45 mgd tertiary; 1.2 mgd secondary
Watershed	South Valley Floor Hydrologic Unit, Fresno Hydrologic Area (No. 551.30)
Receiving Water	Fresno Irrigation District Central Canal
Receiving Water Type	Inland Surface Water

**A.** Malaga County Water District (hereinafter Discharger) is the owner and operator of the Malaga Wastewater Treatment Facility (hereinafter Facility), a Publicly-Owned Treatment Works (POTW).

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

**B.** The Facility discharges wastewater to Fresno Irrigation District Central Canal, which is hydraulically connected to Fresno Slough, a water of the United States, within the South Valley Floor Hydrologic Unit, Fresno Hydrologic Area (No. 551.30). The Discharger was previously regulated by Order R5-2008-0033 and National Pollutant Discharge Elimination System

(NPDES) Permit No. CA0084239 adopted on 14 March 2008 and expired on 14 March 2013. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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

- C. The Discharger filed a report of waste discharge and submitted an application for reissuance of its WDRs and NPDES permit on 13 September 2012. The application was deemed sufficient on 1 March 2014. A site visit was conducted on 21 May 2014, to observe operations and collect additional data to develop limitations and requirements for waste discharge.

## II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the community of Malaga and serves a population of approximately 1,300. The design daily average flow treatment capacity of the Facility is 1.2 million gallons per day (mgd) for secondary treatment and 0.45 mgd for tertiary treatment.

Based on a report prepared by Bartle Wells Associates in February 2010, the non-residential flows comprise over 90% of the flows into the Facility, with the other approximately 10% of flows coming from residential customers.

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

The treatment train consists of three screw pumps (one in service at a time), bar screen, grit chamber, flocculation tank (no longer in use), primary clarifier/dissolved air flotation unit, three activated sludge aeration basins, and three secondary sedimentation basins. Secondary-treated wastewater is discharged to onsite disposal ponds. When discharging to Central Canal, wastewater is tertiary-treated with filtration ("fuzzy" filter) and disinfected with ultraviolet light.

Solids handling includes two aerobic sludge digesters, sludge thickening tank, three soil-cement lined sludge drying beds, and a lined holding area for dried biosolids. Dried biosolids are hauled off-site for disposal, reuse, or further treatment prior to reuse.

### B. Discharge Points and Receiving Waters

1. The Facility is located in Section 25, T14S, R20E, MDB&M, as shown in Attachment B, a part of this Order.
2. Disinfected, tertiary-treated municipal wastewater is discharged at Discharge Point 001 to Fresno Irrigation District Central Canal, at point latitude 36° 40' 41.52" N and longitude 119° 44' 43.98" W.
3. Un-disinfected, secondary-treated municipal wastewater is discharged at Discharge Point 002 to eight onsite disposal ponds. The ponds have a surface area of approximately 23.24 acres and a storage capacity of approximately 185.92 acre-feet (60.6 million gallons).

Cease and Desist Order (CDO) Order R5-2008-0032, adopted on 14 March 2008, required the Discharger to, among other things, evaluate its disposal capacity and propose measures to secure adequate disposal capacity through at least 2028. Based on the information submitted by the Discharger in its *Treatment and Disposal Capacity Study* (Study) on 28 July 2008, the disposal capacity of the ponds remains below the treatment capacity of the Facility. The Central Valley Water Board calculated the disposal capacity of the ponds based on 100-year rainfall and evaporation, assuming half of the storage capacity available at the beginning of the water year (1 October), and a percolation rate of 0.6 inch per day. The rainfall, evaporation, and percolation rates used for calculation were obtained from the

Study. The Study assumed the percolation rate would initially increase to 1.0 inch per day if, and when, the Discharger performed pond maintenance, including ripping and scraping. In September 2009, Central Valley Water Board staff provided a review of the Study, which indicated the Study was deficient and requested the Discharger re-submit the Study to address the deficiencies (noted in the review) and provide additional information. The Central Valley Water Board case file indicates a revised Study was not submitted. However, in April 2011, the Discharger submitted the *Short Term Improvements Implementation Report* (Report), which included a list of the ponds that had been drained, scraped and ripped. The Report also indicated the Discharger had adopted a moratorium on new sewer connections until the disposal capacity was expanded. The Discharger also reportedly had several discussions with the City of Fresno regarding consolidation of sewerage services, but no additional information was provided regarding this particular matter. Additionally, the Report indicated the Discharger had contacted entities to inquire about their willingness to sell property, or to receive recycled water, but none were reportedly willing to do so. The Report, however, did not include any updated information regarding percolation rates or disposal capacity.

In August 2013, the Central Valley Water Board requested updated information regarding the Facility's disposal capacity, and requested the Discharger provide the number of ponds that had received maintenance work and whether the work had affected disposal capacity (e.g., increased percolation rates). The Discharger's response did not include detailed information about which ponds had received maintenance work, and only indicated the Discharger intended to isolate one or more ponds to determine the current percolation rate. The Discharger did not submit subsequent documentation indicating whether it isolated disposal ponds to determine the percolation rate(s). Additionally, the Discharger provided three tables showing the pond disposal capacity for three different percolation rates and three different flow rates. In the discussion section, the Discharger did not discuss the meaning of each percolation rate or each flow rate and only indicated that the ponds had capacity for disposing of current flows with a 1.0 inch per day percolation rate. There was no other discussion on how the 1.0 inch per day percolation rate was determined, or why each table had a different effluent flow rate with each different percolation rate. Due to the vagueness in the Discharger's response to the August 2013 letter, Central Valley Water Board staff used information from the Discharger's 2008 Study to calculate the disposal capacity of the ponds.

On 27 October 2014, as part of the public comment period for adoption of this Order, the Discharger submitted an internal memorandum from its consulting engineer addressed to the Discharger. The memorandum included information that may be useful in determining if the disposal ponds have a higher disposal capacity. The memorandum was resubmitted on 3 November 2014 with the signature and stamp of the engineer in responsible charge. However, the memorandum did not include a proposed pond maintenance program from the Discharger and there was also no communication from the Discharger on whether it agreed with the information in the memorandum and whether it intends on implementing the engineer's recommendations. This Order provides a path for the Discharger to provide necessary information and obtain approval prior to allowing a higher effluent flow to Discharge Point 002.

Based on the available data information in the July 2008 Study, which included the most complete and useful information, the estimated capacity of the disposal ponds is approximately 0.49 mgd, which is less than the average flow treated by the Facility between 2010-2013 of 0.65 mgd. This Order restricts the flow to the disposal ponds (Discharge Point 002) to 0.49 mgd as a monthly average. Additionally, this Order requires the Discharger to cease discharging to Central Canal during months when there are no irrigation water

deliveries by **<permit expiration date>** (see Fact Sheet section VI.B.6.b). The new lower flow effluent limitation for Discharge Point 002 and the requirement to cease discharge to Central Canal during months when there are no irrigation water deliveries by **<permit expiration date>** puts the Discharger in threatened noncompliance with this Order because the disposal capacity of the disposal ponds alone is insufficient to accommodate flows coming into the Facility. The Central Valley Water Board issued Cease and Desist Order R5-2014-XXXX to ensure the Discharger addresses the threatened noncompliance and addresses its disposal capacity issues.

4. Surface Water

- a. Central Canal is a distributary of the Kings River via the Fresno and Fancher Creek Canals, and feeds into other canals and aqueducts to the south and to the west. Central Canal is hydraulically connected to Fresno Slough, which drains to the San Joaquin River. Fresno Slough and San Joaquin River are waters of the United States.
- b. Receiving water flow data provided by the Discharger indicate that Central Canal is mostly dry (i.e., there is no flow upstream) during periods when there are no irrigation water deliveries. As such, when there is a discharge to Central Canal during periods when there are no irrigation water deliveries, the Canal is an effluent-dominated water body.

5. Groundwater

- a. Surface soils in the vicinity are moderately permeable and classified as Hesperia fine sandy loam, consisting of well-drained, mainly sandy loam underlain by a silty layer according to the Soil Conservation Service 1962 Soil Survey of the Eastern Fresno Area. The soil has a hardpan layer at five to seven feet that is underlain by alluvial fan deposits of alternating sand and clay layers.
- b. First encountered groundwater is approximately 50-60 feet below ground surface.
- c. Order R5-2008-00033 required the Discharger to monitor groundwater once per quarter for the first year of the permit and annually thereafter. The 2013 Annual Report indicated three of the four groundwater monitoring wells were dry. Discussions with Discharger personnel indicate the fourth well has also gone dry since. This Order requires groundwater monitoring. A companion cease and desist order requires the Discharger to modify its groundwater monitoring network to ensure adequate groundwater data are collected.

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

Effluent limitations and discharge specifications contained in Order R5-2008-0033 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and Discharge Point 002 (Monitoring Location EFF-002) and representative monitoring data from the term of Order R5-2008-0033 are as follows:

**Table F-2. Historic Effluent Limitations and Monitoring Data at Discharge Point 001**

Parameter	Units	Effluent Limitations			Monitoring Data (April 2008–December 2013) <sup>1</sup>		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Maximum Daily
Flow	mgd	0.45	--	--	0.43	0.45	0.47
Electrical Conductivity @ 25°C	µmhos/cm	(see below)	--	--	916	--	2300
Chloride	mg/L	--	--	175	--	--	88



Parameter	Units	Effluent Limitations			Monitoring Data (April 2008–December 2013) <sup>1</sup>		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Maximum Daily
pH	standard units	--	--	6.5-8.3 <sup>2</sup>	--	--	6.5-9.7 <sup>2</sup>
Biochemical Oxygen Demand (BOD <sub>5</sub> ) @ 20°C	mg/L	10	15	30	7.0	19	19
	lbs/day	38	56	113	22	60	62
	% removal	(see below)	--	--	99.4 <sup>3</sup>	--	--
Total Suspended Solids (TSS)	mg/L	10	15	30	14	19	19
	lbs/day	38	56	113	38	59	61
	% removal	(see below)	--	--	99.7 <sup>3</sup>	--	--
Settleable Solids	mL/L	0.1	--	0.2	ND	--	ND
Bromoform	µg/L	4.3 <sup>6</sup>	--	8.6 <sup>6</sup>	28	--	28
Chlorodibromomethane (Dibromochloromethane)	µg/L	0.41 <sup>6</sup>	--	0.82 <sup>6</sup>	69	--	69
Dichlorobromomethane (Bromodichloromethane)	µg/L	0.56 <sup>6</sup>	--	1.1 <sup>6</sup>	41	--	41
Ammonia Nitrogen, Total (as N) [May-Oct]	mg/L	0.8 <sup>7</sup>	--	1.1 <sup>7</sup>	2.6	--	2.6
	lbs/day	3.0 <sup>7</sup>	--	4.1 <sup>7</sup>	1.1	--	9.4
Ammonia Nitrogen, Total (as N) [Nov-Apr]	mg/L	0.4 <sup>7</sup>	--	0.6 <sup>7</sup>	1.0	--	1.2
	lbs/day	1.5 <sup>7</sup>	--	2.3 <sup>7</sup>	0.39	--	3.7
Boron	mg/L	--	--	1.0	--	--	0.36
Turbidity	NTU	2	--	5 <sup>4</sup>	4.6	--	10
Acute Toxicity	% survival	(see below)			--	--	90 <sup>3</sup>
Total Residual Chlorine	mg/L	(see below)			--	--	<0.01
Total Coliform	MPN/100 mL	(see below)			--	--	18 <sup>5</sup>

<sup>1</sup> These data include data collected prior to the Discharger implementing ultraviolet light disinfection and bringing several treatment units back into service. See Section IV.C.2.b of this Fact Sheet for a description of the data set used for the reasonable potential analysis.

<sup>2</sup> Minimum to maximum range

<sup>3</sup> Lowest reported (or calculated) value

<sup>4</sup> 5 NTU more than 5% of the 24-hour period, 10 NTU at any time.

<sup>5</sup> Highest 7-sample median

<sup>6</sup> Final effluent limitations, which became applicable on 1 November 2008

<sup>7</sup> Final effluent limitations, which became applicable on 19 May 2010

- a. **Percent Removal.** The average monthly percent removal of BOD and total suspended solids shall not be less than 90 percent.
- b. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
  - i. 70% for any one bioassay; and
  - ii. 90% for the median for any three consecutive bioassays.
- c. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:
  - i. 0.01 mg/L, as a 4-day average; and

- ii. 0.02 mg/L, as a 1-hour average;
- d. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:
  - i. 2.2 most probable number (MPN)/ 100 mL as a 7-day median;
  - ii. 23 MPN/ 100 mL more than once in any month; and
  - iii. 240 MPN/ 100 mL at any time.
- e. The effluent shall not, as an average monthly EC, exceed the monthly flow-weighted average of EC in the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

**Table F-3. Historic Discharge Specifications and Monitoring Data at Discharge Point 002**

Parameter	Units	Discharge Specifications		Monitoring Data (April 2008–December 2013)	
		Average Monthly	Maximum Daily	Highest Average Monthly	Highest Daily
Flow	mgd	0.85	--	0.736	--
Electrical Conductivity @ 25°C	µmhos/cm	(see below)	--	968	--
Chloride	mg/L	--	175	--	28
pH	standard units	--	6.5-8.3 <sup>1</sup>	--	6.8-8.0 <sup>1</sup>
Biochemical Oxygen Demand (BOD) (5-day @ 20°C)	mg/L	40	80	5.3	17
Total Suspended Solids (TSS)	mg/L	40	80	18	23
Settleable Solids	mL/L	0.2	1.0	ND	ND

<sup>1</sup> Minimum to maximum range

- a. The effluent shall not, as an average monthly EC, exceed the monthly flow-weighted average of EC in the source water plus 500 µmhos/cm, or a total of 1,000 µmhos/cm, whichever is more stringent.

**D. Compliance Summary**

The Central Valley Water Board adopted Administrative Civil Liability Order R5-2013-0090 on 25 July 2013, assessing mandatory minimum penalties for violations of effluent limitations contained in Order 99-100 and R5-2008-0033 prior to 1 January 2013. Violations included exceedances of effluent limitations for electrical conductivity, pH, ammonia (as N), bromoform, total coliform, BOD, settleable solids, total suspended solids, and turbidity. The Discharger was also issued Notices of Violation (NOVs) for compliance inspections conducted in March 2009, April 2010, May 2011, and July 2012.

The 2009 inspection report notes that the dissolved air flotation unit and the two secondary sedimentation basins were out of service. The inspection report also notes that the sludge thickener, electronic management and control system, automatic chlorination and dechlorination system, continuous turbidity meters at the filter, and the electronic notification (alarm) system were all out of service. The report notes that the chain to repair the sludge thickener, which had been out of service for one year at that time, was onsite but repairs had not been made. The report notes that due to the electronic management and control system and automatic chlorination and dechlorination system being out of service, Facility personnel were operating the Facility manually. The report also notes that the continuous turbidity meters at the filter were reportedly not in operation because the pump would overheat. Additionally, the report notes that there was no maintenance schedule available, and maintenance records were maintained only for completed work and not for work that needed to be completed. In 2010, staff conducted another compliance inspection, which found all of the issues noted in 2009 were

still true, with the exception of the automatic chlorination and dechlorination system, which was no longer in use because the Discharger had switched to ultraviolet light disinfection. Additionally, Facility personnel indicated the electronic notification system had been fixed but did not know which units were included in the dial-out alarm.

By 2011, the Discharger had repaired or addressed most of the issues, except one secondary sedimentation basin was still out of service and there was still no maintenance schedule available. In 2012, staff conducted another compliance inspection, with staff from State Water Board present. During the inspection, the chief plant operator was on vacation and the operator in charge only had a Grade I certification. The Facility had been classified a Class IV facility four months prior to the inspection. State Water Board staff issued a NOV to the Discharger for failure to provide adequate operations staff. The NOV noted that the chief plant operator needed, at minimum, a Grade IV or V certificate, whereas the current chief plant operator was a Grade III. Additionally, in accordance with Title 23, CCR, at least 50% of operations staff are required to have a Grade II or higher certificate. The Facility, at the time, was employing four operators, three with Grade I certificates and one with a Grade III certificate. The NOV also noted that two operators had recently left, one with a Grade II certificate and one with a Grade I certificate.

Other items noted during all of the inspections were the DO, pH, and chlorine residual sample analyses. In 2009, it was noted that the pH and chlorine residual samples were being sent to the Discharger's contract laboratory, exceeding the 15-minute holding time required by 40 CFR Part 136. In 2010 and 2011, it was noted that the Discharger was now conducting pH and chlorine residual sample analyses onsite; however, based on the sample collection and sample analysis times reported by Facility personnel, the Discharger was still not adhering to the 15-minute sample holding time. During the 2012 inspection, it was noted that, once again, the Discharger was sending pH, chlorine residual, and DO samples for analyses at a contract lab, exceeding the holding time.

On 21 May 2014, the Central Valley Water Board conducted a compliance inspection evaluation of the Facility to determine compliance with Order R5-2008-0033 and also as part of the NPDES permit renewal. The Discharger was found to be in violation of Order R5-2008-0033. The violations included representative samples at the monitoring location for Discharge Point 002 (formerly M-002), sample holding times, and reporting of additional samples. The samples collected at the Discharge Point 002 monitoring location were being collected at the effluent of one secondary sedimentation basin, whereas the Discharger is required to collect samples that are representative of the effluent and volume discharged. The sample holding times exceeded 15 minutes for dissolved oxygen and pH, which were being sent to the contract laboratory for analyses. Lastly, additional samples collected during March 2012 were not included in the calculations or reported in the summary spreadsheet. The inspection also revealed the Discharger may not have been calibrating onsite hand-held meters in accordance with manufacturer's specifications, and did not have a quality assurance/quality control plan for onsite analyses. The Discharger was instructed to determine if onsite the manufacturers of the onsite hand-held meters recommended calibration more often than once per year, and to update its quality assurance/quality control plan for onsite analyses to ensure the Discharger would be in compliance its permit once it began conducting onsite analyses for parameters with short holding times.

A pretreatment compliance inspection was conducted in 2010, and a pretreatment compliance audit/inspection was conducted in January 2014. Both events resulted in Notices of Violation for the Discharger failing to properly implement its pretreatment program.

#### **E. Planned Changes**

The Central Valley Water Board is not aware of any proposed major changes to the Facility.

**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 WDRs 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 a 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 a 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 Plans.** Requirements of this Order specifically implement the applicable Water Quality Control Plan.

a. **Basin Plan.** The Central Valley Water Board adopted a *Water Quality Control Plan for the Tulare Lake Basin*, Second Edition, revised January 2004 (hereinafter Basin Plan), that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Central Canal is a distributary of the Kings River via the Fresno and Fancher Creek Canals, and feeds into other canals and aqueducts to the south and to the west. Central Canal is hydraulically connected to Fresno Slough. Accordingly, Central Canal carries waters of the United States and must be maintained swimmable (REC-1) and fishable (WARM). Additionally, the Canal is used for irrigation deliveries. Thus, beneficial uses applicable to Central Canal are as listed in Table F-4, below.

Groundwater underlying the Facility and onsite disposal ponds is in the Fresno Detailed Analysis Unit (DAU) No. 233. The beneficial uses of groundwater in this DAU are designated in the Basin Plan and listed in Table F-4, below.

**Table F-4. Basin Plan Beneficial Uses**

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Fresno Irrigation District Central Canal	Municipal and domestic supply (MUN), agricultural supply (AGR), water contact recreation (REC-1), and warm freshwater habitat (WARM)
002	Groundwater	MUN, AGR, industrial service supply (IND), industrial process supply (PRO), REC-1, and non-contact water recreation (REC-2).

The Basin Plan, at page IV-9, includes a policy to govern waste discharges to navigable waters in the Tulare Lake Basin that states: *"Discharges to surface waters will not be considered a permanent solution when the potential exists for wastewater reclamation."* The policy also states: *"Discharge to ephemeral streams or to streams that have limited dilution capacity will not be considered a permanent solution unless it is accomplished in*

*such a manner as to safeguard the public health and prevent nuisances, and the wastewater is of such quality that it benefits streamflow augmentation."*

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.
3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted *the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
4. **Antidegradation Policy.** Federal regulations at 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality of Waters in California"). Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 CFR 131.12 and State Water Board Resolution 68-16.
5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.
6. **Domestic Water Quality.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.
7. **Endangered Species Act Requirements.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code, §§ 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. §§ 1531 to 1544). This Order requires compliance with effluent limitations, receiving water limitations, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

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

The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted.

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

9. **Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment facilities are applicable industries under the storm water program and are obligated to comply with the federal regulations. The State Water Board Water Quality Order 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 in evaporation ponds, percolation ponds, or combined sewer systems. The Discharger captures all storm water that falls onsite. 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 2011, 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 effluent limitations for point sources {40 CFR Part 130, et seq.}"* The Basin Plan also states, *"Additional treatment beyond minimum federal requirements will be imposed on dischargers to a WQLS. Point source dischargers will be assigned or allocated a maximum allowable load of critical pollutants."* Central Canal is not listed as a WQLS on the 303(d) list of impaired waterbodies.
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. No TMDLs are scheduled for Central Canal.

#### **E. Other Plans, Polices, and Regulations**

##### **1. Title 27, California Code of Regulations (CCR), section 20005 et seq (hereinafter Title 27)**

- a. 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. The exemption of the treatment and storage facilities, pursuant to Title 27, CCR, subsection 20090(a), is based on the following:
  - i. The waste consists primarily of domestic sewage and treated effluent;
  - ii. The waste discharge requirements are consistent with water quality objectives; and
  - iii. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

The Discharger's treatment and storage facilities, including sludge handling facilities, are exempt from Title 27.

- b. Pursuant to Title 27, CCR, subsection 20090(b), "*[d]ischarges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields [shall be exempt] if the following conditions are met:*

*(1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;*

*(2) the discharge is in compliance with the applicable [Basin Plan]; and*

*(3) the wastewater does not need to be managed... as a hazardous waste."*

The onsite disposal ponds (Discharge Point 002) may be exempted from Title 27 if they meet the preconditions listed above. The effluent to the ponds meets preconditions (1) and (3). The groundwater monitoring data, however, indicate that precondition (2) may not be met. Additional evaluation is needed to determine whether precondition (2) has been met. The Discharger conducted groundwater monitoring at the Facility. However, there was disagreement between the Discharger and Central Valley Water Board regarding the adequacy of the wells, in particular the adequacy of the upgradient (background) well in depicting regional groundwater conditions. The Discharger reported in early 2014 that all four groundwater monitoring wells had gone dry. Cease and Desist Order R5-2014-XXXX prescribes requirements for the Discharger to install new wells or modify its existing wells to ensure adequate data are collected to determine compliance with Groundwater Limitations V.B in this Order, and to allow the Central Valley Water Board to determine if the groundwater meets precondition (2) in section 20090(b) of Title 27.

#### **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 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations at 40 CFR 122.44(d)(1)(i), NPDES permits must contain limitations 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 at 40 CFR 122.44(d)(1)(vi), further provide that “[w]here a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-21, contains an implementation policy, “*Application of Water Quality Objectives*”, that specifies that the Central Valley Water Board “*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*” This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) 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 “*Application of Water Quality Objectives*”)(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: “*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*” (Basin Plan at page III-6) 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 MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in*” Title 22 of the 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: “*Waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies.*”

#### **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 40 CFR 122.41(m)(4)).** This Order prohibits bypass pursuant to 40 CFR 122.41(m)(4), with federal allowance for exceptions set forth in Section I.G. of



Attachment D – Federal Standard Provisions. It also prohibits overflows, which concerns release of untreated and partially treated wastewater to surface waters.

3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050, which requires water quality objectives be established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance. Prohibition III.C. also reflects general situations that, if created, justify cleanup or abatement enforcement activities and assessment of administrative civil liabilities.
4. **Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility's systems).** This prohibition is based on 40 CFR 122.41 et seq., which requires the proper design and operation of treatment facilities.
5. **Prohibition III.E. (No discharge of waste classified as 'hazardous').** 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.

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

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

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

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

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, at 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 CFR Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH.

### **2. Applicable Technology-Based Effluent Limitations**

#### **a. Discharge Point 001**

- i. **BOD<sub>5</sub> and TSS.** Federal regulations at 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD<sub>5</sub> and TSS, for discharges to waters of the United States. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order establishes WQBELs that are equal to or more stringent than the secondary treatment technology-based effluent limitations described in 40 CFR Part 133 and are necessary to protect the beneficial uses of the

receiving stream (see Section IV.C.3 of this Fact Sheet for the discussion of WQBELs for pathogens).

- ii. **Flow.** The Facility was designed to provide a tertiary level of treatment for up to a design flow of 0.45 mgd. Therefore, this Order contains a discharge flow effluent limitation at Discharge Point 001 of 0.45 mgd.
- iii. **pH.** The secondary treatment regulations at 40 CFR Part 133 also require that pH be maintained between 6.0 and 9.0 standard units

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

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

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	0.45	--	--	--	--
Biochemical Oxygen Demand 5-day @ 25°C (BOD <sub>5</sub> )	mg/L	30	45	--	--	--
	% removal	85	--	--	--	--
Total Suspended Solids (TSS)	mg/L	30	45	--	--	--
	% removal	85	--	--	--	--
pH	standard units	--	--	--	6.0	9.0

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

**1. Scope and Authority**

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

40 CFR 122.44(d)(1)(i) 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, water quality-based effluent limitations (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 40 CFR 122.44(d)(1)(vi).

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

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

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution 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 states: "*Protection and enhancement of beneficial uses of water against quality degradation is a basic requirement of water quality planning under the Porter-Cologne Water Quality Control Act. In setting water quality objectives, the Regional Water Board must consider past, present, and probable future beneficial uses of water...*" and with respect to disposal of wastewaters states that "*use of waters for disposal of wastewaters is not included as a beneficial use...and are subject to regulation as activities that may harm protected 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 at 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. 40 CFR 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 at 40 CFR 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

- a. **Receiving Water and Beneficial Uses.** Refer to III.C.1. above for a complete description of the receiving water and beneficial uses.
- b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from January 2010 through December 2013 for effluent data at Discharge Point 001 and April 2008 through December 2013 for ambient background data submitted in SMRs, the Report of Waste Discharge (ROWD), and as part of a 13267 Order issued in April 2012. The Discharger reported in December 2009 that it stopped using its chlorine disinfection system and began using its ultraviolet light disinfection system. Other changes to the Facility include repair of a secondary clarifier and the primary clarifier/DAF unit in late January 2011. Staff looked into using effluent data from February 2011 forward; however, staff compared data from before and after the treatment units were repaired and found that concentrations of constituents did not change significantly. Therefore, effluent data prior to February 2011 were used for the reasonable potential analysis.
- c. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc, which are presented in dissolved concentrations. 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.

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

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP<sup>1</sup> and the CTR<sup>2</sup>. The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR 131.38(c)(4)) The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones.<sup>3</sup> Where design flows for aquatic life criteria include the lowest one-day flow with an average reoccurrence frequency of once in ten years (1Q10) and the lowest average seven consecutive day flow with an average reoccurrence frequency of once in ten years (7Q10).<sup>4</sup> The CTR also requires that when mixing zones are allowed, the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge.<sup>5</sup> 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.

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant. The State Water Board recognized that the SIP and the CTR do not discuss the manner in which hardness is to be ascertained, and, thus, Regional Water Boards have considerable discretion in determining ambient hardness. (Davis Order, p.10) The State Water Board explained that it is necessary that, "*The [hardness] value selected should provide protection for all times of discharge under varying hardness conditions.*" (Yuba City Order, p. 8). The Davis Order also provides that, "*Regardless of the hardness used, the resulting limits must always be protective of water quality criteria under all flow conditions.*" (Davis Order, p. 11)

The equation describing the total recoverable regulatory criterion, as established in the CTR<sup>6</sup>, is as follows:

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

Where:

H = ambient hardness (as CaCO<sub>3</sub>)<sup>7</sup>

WER = water-effects ratio

m, b = metal- and criterion-specific constants

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

<sup>2</sup> The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO<sub>3</sub>), or less, the actual ambient hardness of the surface water must be used.

<sup>3</sup> 40 CFR 131.38-(c)(4)(ii)

<sup>4</sup> 40 CFR 131.38-(c)(42)(iii) Table 4

<sup>5</sup> 40 CFR 131.38-(c)(2)(i)

<sup>6</sup> 40 CFR 131.38(b)(2)-

<sup>7</sup> For this discussion all hardness values are measured as CaCO<sub>3</sub>.

The upstream receiving water hardness varied from 7.4 mg/L to 130 mg/L, based on 13 samples from 3 September 2009 to 9 July 2013. Only one downstream receiving water value is available, and was reported as 9.4 mg/L on 9 July 2013, which is during the period of irrigation deliveries. During portions of the year, however, Central Canal is effluent dominated, so the downstream ambient hardness that is consistent with the design low flow conditions is equivalent to the effluent hardness because the effluent is, in effect, the ambient surface water under these regularly occurring conditions. The effluent hardness varied from 85 mg/L to 180 mg/L, based on 19 samples from 10 August 2010 to 9 July 2013.

For calculating the CTR criteria the downstream ambient hardness has been used. The SIP, CTR, and State Water Board do not require use of the minimum observed ambient hardness in the CTR equations. The hardness used must be consistent with design conditions and protective of water quality criteria under all flow conditions. The minimum effluent hardness of 85 mg/L represents the downstream ambient hardness under the design condition, and the downstream ambient hardness was considered for use in the CTR equations.

A downstream ambient hardness of 85 mg/L results in CTR criteria that are protective of aquatic life under all flow conditions for copper, zinc, chromium III, nickel, and cadmium (chronic). However, for lead, silver, and cadmium (acute), using this hardness to calculate the CTR criteria is protective during the effluent dominated condition, but lower criteria are necessary to be fully protective of aquatic life under higher flow conditions in the receiving water.

The Facility discharges both hardness and metals, which must be considered in the downstream ambient receiving water to ensure the criteria are protective under all flow conditions. The tables below examine how the downstream ambient conditions change with varying mixtures of effluent and upstream receiving water. The calculations determine whether or not toxicity could result from one or more metals using the selected design ambient hardness to calculate the CTR criteria.

A simple mass balance (Equation 2) is used to model the ambient concentrations of hardness and metals in the receiving water downstream of the discharge for all possible mixtures of effluent and upstream receiving water under all flow conditions.

$$C_{\text{downstream}} = C_{\text{upstream}} \times (1-\text{MIX}) + C_{\text{effluent}} \times (\text{MIX}) \quad (\text{Equation 2})^8$$

Where:

$C_{\text{downstream}}$  = Downstream receiving water concentration

$C_{\text{upstream}}$  = Upstream receiving water concentration

$C_{\text{effluent}}$  = Effluent concentration

MIX = Fraction of effluent in downstream ambient receiving water

For each of several downstream ambient mixtures of upstream receiving water and effluent, the potential for toxicity is examined. The hardness of the mixture is calculated, and the resultant water quality criterion is calculated from the CTR equation (Equation 1). The metals concentration is also calculated for the mixture of upstream receiving water and effluent. If the metals concentration complies with the CTR criterion for that mixture, the ambient mixture is not toxic and "Yes" is indicated in the far right column. If the metals concentration exceeds the CTR criterion for that mixture, the

<sup>8</sup> U.S. EPA NPDES Permit Writers' Manual, September 2010 (EPA-833-K-10-001)

ambient concentration is toxic and “No” is indicated in the far right column. The results of these evaluations are summarized in Table F-15.

For this evaluation, the following conservative assumptions have been made:

- Upstream receiving water at the lowest observed upstream receiving water hardness (i.e., 7.4 mg/L)
- No assimilative capacity for each metal in the upstream receiving water (i.e., metals concentration equal to CTR criterion calculated using a hardness of 7.4 mg/L)
- Effluent hardness at the lowest observed effluent hardness of 85 mg/L

Table F-6, below, is an example for lead where a design ambient hardness of 85 mg/L (i.e., downstream receiving water hardness at design low flow conditions) was used to calculate the CTR criteria. In this example, the mixed downstream ambient lead concentrations exceed the mixed CTR criteria at some mixtures. This example demonstrates that using a design ambient hardness of 85 mg/L to calculate the CTR criteria for lead is not fully protective under the reasonable worst-case conditions described above. The CTR criteria for silver and cadmium (acute) act in the same manner as lead. Tables similar to Table F-6 are not provided in this discussion for these metals, but the results are similarly non-compliant with the CTR criteria. Based on the conservative assumptions discussed above, an iterative method was used to determine the applicable design ambient hardness that results in fully protective criteria for lead, silver, and cadmium (acute).

**Table F-6. Lead Evaluation (Design Ambient Hardness = 85 mg/L)**

		Assumed Upstream Receiving Water Lead Concentration		0.12 µg/L <sup>1</sup>	
		Lead Chronic Criterion <sup>2</sup>		2.6 µg/L	
		Fully Mixed Downstream Ambient Concentration			
Mix <sup>6</sup>		Hardness <sup>3</sup> (mg/L)	CTR Criteria <sup>4</sup> (µg/L)	Lead <sup>5</sup> (µg/L)	Complies with CTR Criteria?
High Flow ↓ Low Flow	1%	8.2	0.13	0.14	No
	5%	11	0.20	0.24	No
	15%	19	0.39	0.49	No
	25%	27	0.60	0.74	No
	50%	46	1.2	1.4	No
	75%	66	1.9	2.0	No
	100%	85	2.6	2.6	Yes

The following tables (F-7 through F-14) demonstrate that the selected design ambient hardness used to calculate the CTR criteria result in protective criteria for all flow conditions (i.e., the mixed downstream ambient metals concentrations do not exceed the CTR criteria). Table F-15 summarizes the design ambient hardness for each metal.

**Table F-7. Lead Evaluation (Design Ambient Hardness = 61 mg/L)**

Assumed Upstream Receiving Water Lead Concentration		0.12 µg/L <sup>1</sup>			
Lead Chronic Criterion <sup>2</sup>		1.7 µg/L			
Mix <sup>6</sup>		Fully Mixed Downstream Ambient Concentration			
		Hardness <sup>3</sup> (mg/L)	CTR Criteria <sup>4</sup> (µg/L)	Lead <sup>5</sup> (µg/L)	Complies with CTR Criteria?
High Flow ↓	1%	8.2	0.13	0.13	Yes
	5%	11	0.20	0.19	Yes
	15%	19	0.39	0.35	Yes
	25%	27	0.60	0.51	Yes
	50%	46	1.2	0.91	Yes
Low Flow	75%	66	1.9	1.3	Yes
	100%	85	2.6	1.7	Yes

**Table F-8. Copper Evaluation (Design Ambient Hardness = 85 mg/L)**

Assumed Upstream Receiving Water Copper Concentration		1.0 µg/L <sup>1</sup>			
Copper Chronic Criterion <sup>2</sup>		8.1 µg/L			
Mix <sup>6</sup>		Fully Mixed Downstream Ambient Concentration			
		Hardness <sup>3</sup> (mg/L)	CTR Criteria <sup>4</sup> (µg/L)	Copper <sup>5</sup> (µg/L)	Complies with CTR Criteria?
High Flow ↓	1%	8.2	1.1	1.1	Yes
	5%	11	1.4	1.4	Yes
	15%	19	2.3	2.1	Yes
	25%	27	3.0	2.8	Yes
	50%	46	4.8	4.6	Yes
Low Flow	75%	66	6.5	6.3	Yes
	100%	85	8.1	8.1	Yes

**Table F-9. Chromium III Evaluation (Design Ambient Hardness = 85 mg/L)**

Assumed Upstream Receiving Water Chromium III Concentration		25 µg/L <sup>1</sup>			
Chromium III Chronic Criterion <sup>2</sup>		180 µg/L			
Mix <sup>6</sup>		Fully Mixed Downstream Ambient Concentration			
		Hardness <sup>3</sup> (mg/L)	CTR Criteria <sup>4</sup> (µg/L)	Chromium III <sup>5</sup> (µg/L)	Complies with CTR Criteria?
High Flow ↓	1%	8.2	27	26	Yes
	5%	11	35	32	Yes
	15%	19	53	48	Yes
	25%	27	70	63	Yes
	50%	46	110	102	Yes
Low Flow	75%	66	147	141	Yes
	100%	85	181	180	Yes

**Table F-10. Cadmium (Chronic) Evaluation (Design Ambient Hardness = 85 mg/L)**

<b>Assumed Upstream Receiving Water Cadmium Concentration</b>		<b>0.32 µg/L<sup>1</sup></b>			
<b>Cadmium Chronic Criterion<sup>2</sup></b>		<b>2.2 µg/L</b>			
		<b>Fully Mixed Downstream Ambient Concentration</b>			
<b>Mix<sup>6</sup></b>		<b>Hardness<sup>3</sup> (mg/L)</b>	<b>CTR Criteria<sup>4</sup> (µg/L)</b>	<b>Cadmium<sup>5</sup> (µg/L)</b>	<b>Complies with CTR Criteria?</b>
High Flow ↓	1%	8.2	0.34	0.34	Yes
	5%	11	0.44	0.41	Yes
	15%	19	0.67	0.60	Yes
	25%	27	0.88	0.79	Yes
	50%	46	1.3	1.3	Yes
Low Flow	75%	66	1.8	1.7	Yes
	100%	85	2.2	2.2	Yes

**Table F-11. Cadmium (Acute) Evaluation (Design Ambient Hardness = 72 mg/L)**

<b>Assumed Upstream Receiving Water Cadmium Concentration</b>		<b>0.24 µg/L<sup>1</sup></b>			
<b>Cadmium Acute Criterion<sup>2</sup></b>		<b>3.1 µg/L</b>			
		<b>Fully Mixed Downstream Ambient Concentration</b>			
<b>Mix<sup>6</sup></b>		<b>Hardness<sup>3</sup> (mg/L)</b>	<b>CTR Criteria<sup>4</sup> (µg/L)</b>	<b>Cadmium<sup>5</sup> (µg/L)</b>	<b>Complies with CTR Criteria?</b>
High Flow ↓	1%	8.2	0.27	0.27	Yes
	5%	11	0.39	0.38	Yes
	15%	19	0.70	0.67	Yes
	25%	27	1.0	1.0	Yes
	50%	46	1.9	1.7	Yes
Low Flow	75%	66	2.8	2.4	Yes
	100%	85	3.8	3.1	Yes

**Table F-12. Nickel Evaluation (Design Ambient Hardness = 85 mg/L)**

<b>Assumed Upstream Receiving Water Nickel Concentration</b>		<b>5.8 µg/L<sup>1</sup></b>			
<b>Nickel Chronic Criterion<sup>2</sup></b>		<b>45 µg/L</b>			
		<b>Fully Mixed Downstream Ambient Concentration</b>			
<b>Mix<sup>6</sup></b>		<b>Hardness<sup>3</sup> (mg/L)</b>	<b>CTR Criteria<sup>4</sup> (µg/L)</b>	<b>Nickel<sup>5</sup> (µg/L)</b>	<b>Complies with CTR Criteria?</b>
High Flow ↓	1%	8.2	6.3	6.2	Yes
	5%	11	8.2	7.7	Yes
	15%	19	13	12	Yes
	25%	27	17	16	Yes
	50%	46	27	25	Yes
Low Flow	75%	66	37	35	Yes
	100%	85	45	45	Yes



**Table F-13. Silver (Acute) Evaluation (Design Ambient Hardness = 41 mg/L)**

Assumed Upstream Receiving Water Silver Concentration		0.046 µg/L <sup>1</sup>			
Silver Acute Criterion <sup>2</sup>		0.88 µg/L			
Mix <sup>6</sup>		Fully Mixed Downstream Ambient Concentration			
		Hardness <sup>3</sup> (mg/L)	CTR Criteria <sup>4</sup> (µg/L)	Silver <sup>5</sup> (µg/L)	Complies with CTR Criteria?
High Flow ↓	1%	8.2	0.055	0.054	Yes
	5%	11	0.10	0.088	Yes
	15%	19	0.23	0.17	Yes
	25%	27	0.42	0.25	Yes
	50%	46	1.1	0.46	Yes
Low Flow	75%	66	2.0	0.67	Yes
	100%	85	3.1	0.88	Yes

**Table F-14. Zinc Evaluation (Design Ambient Hardness = 85 mg/L)**

Assumed Upstream Receiving Water Zinc Concentration		13 µg/L <sup>1</sup>			
Zinc Chronic Criterion <sup>2</sup>		100 µg/L			
Mix <sup>6</sup>		Fully Mixed Downstream Ambient Concentration			
		Hardness <sup>3</sup> (mg/L)	CTR Criteria <sup>4</sup> (µg/L)	Zinc <sup>5</sup> (µg/L)	Complies with CTR Criteria?
High Flow ↓	1%	8.2	14	14	Yes
	5%	11	19	18	Yes
	15%	19	29	26	Yes
	25%	27	39	35	Yes
	50%	46	62	57	Yes
Low Flow	75%	66	84	78	Yes
	100%	85	104	100	Yes

Footnotes for CTR Hardness-dependent Metals Tables (F-6 through F-14):

- <sup>1</sup> Highest assumed upstream receiving water metals concentration calculated using CTR equation (Equation 1) for chronic/acute criterion at a hardness of 7.4 mg/L.
- <sup>2</sup> CTR criteria calculated using CTR equation (Equation 1) for chronic/acute criterion at the design ambient hardness for the particular metal (see Table F-15).
- <sup>3</sup> Mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable mixture using Equation 2.
- <sup>4</sup> Mixed downstream ambient criteria are the chronic/acute criteria calculated using the CTR equation (Equation 1) at the mixed hardness.
- <sup>5</sup> Mixed downstream ambient metals concentration is the mixture of the receiving water and effluent metals concentrations at the applicable mixture using Equation 2.
- <sup>6</sup> The mixture percentage represents the fraction of effluent in the downstream ambient receiving water. The mixture ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

The applicable design ambient hardness and CTR criteria for the hardness-dependent metals for which toxicity in ambient waters does not occur are as follows in Table F-15.

**Table F-15. Summary of Design Ambient Hardness and CTR Criteria for Hardness-dependent Metals**

CTR Metals	Design Ambient Hardness (mg/L)	CTR Criteria (µg/L, total recoverable) <sup>1</sup>	
		acute	chronic
Copper	85	12	8.1
Chromium (III)	85	1500	180
Cadmium	72 (acute) 85 (chronic)	3.1	2.2
Lead	61	44	1.7
Nickel	85	410	45
Silver	41	0.88	--
Zinc	85	100	100

<sup>1</sup> Metals criteria rounded to two significant figures in accordance with the CTR.

### 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 that were not detected in the effluent or receiving water at or above criteria/objectives). 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 appropriate effluent limitations.

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. Bromoform

- (a) **WQO.** The CTR includes a criterion of 4.3 µg/L for bromoform for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0033 established an average monthly effluent limitation (AMEL) of 4.3 µg/L and a maximum daily effluent limitation (MDEL) of 8.6 µg/L at Discharge Point 001, based on the CTR criterion.
- (b) **RPA Results.** Bromoform was not detected in the effluent between January 2010 and December 2013, based on 26 samples. Bromoform was also not detected in the receiving water, based on three samples. Bromoform is a chlorine disinfection by-product, and the Discharger no longer uses chlorine for disinfection. The effluent limitations for bromoform have not been retained. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.E.3 of the Fact Sheet). However, this Order still requires the Discharger to monitor for bromoform with the annual priority pollutant monitoring event.

#### ii. Cadmium

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for cadmium. These criteria for cadmium are presented in dissolved concentrations, as short-term acute 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.

- (b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as cadmium. The table below shows the specific criteria used for the RPA.

	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
<u>Upstream Receiving Water</u>	0.32 µg/L <sup>1</sup>	ND (<0.2 µg/L)	No <sup>3</sup>
<u>Effluent Design Ambient Hardness</u>	2.2 µg/L <sup>2</sup>	ND (<0.2 µg/L)	No

<sup>1</sup> Based on lowest observed upstream receiving water hardness of 7.4 mg/L (as CaCO<sub>3</sub>)

<sup>2</sup> Based on lowest observed effluent the design ambient hardness of 85 mg/L (as CaCO<sub>3</sub>)

<sup>3</sup> See discussion below  
ND = Non-detect

Section 1.2 of the SIP states, "the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy." The highest reported concentrations in the effluent and receiving water were 0.53 µg/L and 0.55 µg/L, respectively. However, both of these samples were reported as estimated concentrations. All of the samples for the effluent and receiving water that had reportable concentrations were reported as estimated concentrations. Estimated concentrations do not provide an adequate level of scientific certainty to use as evidence that the effluent or receiving water cadmium concentrations are above criteria. Therefore, the Central Valley Water Board finds that the sample results are inappropriate and did not use the data in conducting the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for cadmium with the annual priority pollutant monitoring event, and requires the Discharger to meet the lowest applicable minimum level in the State Implementation Policy.

### iii. Chlorine Residual

- (a) **WQO.** U.S. EPA developed National Recommended Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective. Order R5-2008-0033 established a 4-day average effluent limitation of 0.01 mg/L and a 1-hour average effluent limitation of 0.02 mg/L at Discharge Point 001, based on the NAWQC.
- (b) **RPA Results.** Total residual chlorine was not detected in the effluent between January 2010 and December 2013. The Discharger no longer uses chlorine for disinfection, and the effluent limitations have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.E.3 of this Fact Sheet).

iv. **Chlorodibromomethane (Dibromochloromethane)**

- (a) **WQO.** The CTR includes a criterion of 0.41 µg/L for chlorodibromomethane for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0033 established an AMEL of 0.41 µg/L of a MDEL of 0.82 µg/L at Discharge Point 001, based on the CTR criterion.
- (b) **RPA Results.** Chlorodibromomethane was not detected in the effluent between January 2010 and December 2013, based on 26 samples. Chlorodibromomethane was also not detected in the receiving water based on three samples. Chlorodibromomethane is a chlorine disinfection by-product, and the Discharger no longer uses chlorine disinfection. The effluent limitations for chlorodibromomethane have not been retained. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.E.3 of the Fact Sheet). However, this Order still requires the Discharger to monitor for chlorodibromomethane with the annual priority pollutant monitoring event.

v. **Dichlorobromomethane (Bromodichloromethane)**

- (a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0033 established an AMEL of 0.56 µg/L and a MDEL of 1.1 µg/L at Discharge Point 001, based on the CTR criterion.
- (b) **RPA Results.** Dichlorobromomethane was not detected in the effluent between January 2010 and December 2013, based on 26 samples. Dichlorobromomethane was also not detected in the receiving water based on three samples. Dichlorobromomethane is a chlorine disinfection by-product, and the Discharger no longer uses chlorine disinfection. The effluent limitations for dichlorobromomethane have not been retained. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.E.3 of the Fact Sheet). However, this Order still requires the Discharger to monitor for dichlorobromomethane with the annual priority pollutant monitoring event.

vi. **Fluoride**

- (a) **WQO.** CDPH has adopted a Primary MCL for fluoride of 2.0 mg/L, which is protective of the Basin Plan's chemical constituent objective. The Primary MCL is based on the average of samples collected over a calendar year.
- (b) **RPA Results.** The MEC for fluoride was 2.7 mg/L (out of 22 samples) and highest calendar year average was 2.05 mg/L (based on two samples), while the maximum observed upstream receiving water concentration was 1.2 mg/L. Order R5-2008-0033 included a discussion indicating that fluoride in the effluent might have reasonable potential to cause or contribute to an exceedance of water quality objectives. The discussion compared the MEC to the agricultural objective for fluoride in *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Revision 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). However, Order R5-2008-0033 indicated additional data were needed because the data set at the time consisted of only two effluent samples. This Order does not use the Ayers and Westcot objective for determining reasonable potential. However, based on the effluent data, and using only two significant figures to evaluate the data,

fluoride in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the primary MCL.

vii. **Lead**

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. These criteria for lead are presented in dissolved concentrations, as short-term 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.
- (b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as lead. The table below shows the specific criteria used for the RPA.

	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Upstream Receiving Water	0.12 µg/L <sup>1</sup>	ND (<1.4 µg/L)	No <sup>3</sup>
Effluent Design Ambient Hardness	1.7 µg/L <sup>2</sup>	ND (<1.4 µg/L)	No <sup>3</sup>

<sup>1</sup> Based on lowest observed upstream receiving water hardness of 7.4 mg/L (as CaCO<sub>3</sub>)

<sup>2</sup> Based on lowest observed effluent the design ambient hardness of 85-61 mg/L (as CaCO<sub>3</sub>) and the lowest observed upstream receiving water hardness of 7.4 mg/L (as CaCO<sub>3</sub>)

<sup>3</sup> See discussion below

ND = Non-detect

Section 1.2 of the SIP states, "the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy." The highest reported lead concentration in the effluent was 5 µg/L and in the receiving water was 4.4 µg/L (as an estimated concentration). The laboratory report for the sample analysis on the date the 5 µg/L value was reported indicates lead was detected in the method blank. The remaining effluent samples with reportable concentrations of lead were reported as estimated concentrations. All of the receiving water samples with reportable concentrations of lead were also reported as estimated concentrations. Estimated concentrations do not provide an adequate level of scientific certainty to use as evidence that the effluent or receiving water lead concentrations are above criteria. Therefore, the Central Valley Water Board finds that the sample results for the effluent and receiving water are inappropriate and did not use the data in conducting the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for lead with the annual priority pollutant monitoring event, and requires the Discharger to meet the lowest applicable minimum level in the State Implementation Policy.

viii. **Mercury**

- (a) **WQO.** The CTR includes a criterion of 0.050 µg/L for mercury for the protection of human health for waters from which both water and organisms are consumed.

- (b) **RPA Results.** The MEC for mercury was 0.0035 µg/L, as a quantified concentration. Mercury bioaccumulates in fish tissue and, therefore, the discharge of mercury to the receiving water may contribute to exceedances of the narrative toxicity objective and impact beneficial uses.

Section 1.2 of the SIP states, "*the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy.*" The highest reported concentrations in the effluent and receiving water were 0.33 µg/L and 0.26 µg/L, respectively. However, both of these samples were collected and analyzed on the same date, and the contract laboratory reported the method blank contained an estimated concentration of 0.198 µg/L. Based on the information available, staff determined that the reported concentrations of mercury may not be representative of the effluent discharge and receiving water conditions due to the detections in the method blank. Therefore, the Central Valley Water Board finds that the sample results are inappropriate and did not use the data in conducting the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for mercury with the annual priority pollutant monitoring event, and requires the Discharger use clean hands/dirty hands sample collection techniques to ensure that mercury samples are collected in a way that the data will not be invalid.

ix. **Persistent Chlorinated Hydrocarbon Pesticides**

- (a) **WQO.** The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; persistent chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. Persistent chlorinated hydrocarbon pesticides include aldrin; alpha-BHC; beta-BHC; chlordane; 4,4-DDT; 4,4-DDE; 4,4-DDD; delta-BHC; dieldrin; alpha-endosulfan (endosulfan I); beta-endosulfan (endosulfan II); endosulfan sulfate; endrin; endrin aldehyde; gamma-BHC (lindane); heptachlor; heptachlor epoxide; and toxaphene. The CTR includes criteria for each persistent chlorinated hydrocarbon pesticide.

- (b) **RPA Results.** Aldrin, alpha-BHC, alpha-endosulfan, and heptachlor were detected in the effluent. Alpha-BHC, alpha-endosulfan, and heptachlor were detected once in the effluent on the same date, and aldrin was detected once in the effluent on a different date. Aldrin and heptachlor were reported as detected but not quantified (estimated) concentrations. The California Department of Pesticide Regulation does not list any registered products that contain heptachlor, aldrin, or BHC. Endosulfan uses are scheduled to end 31 July 2016, with a voluntary cancellation program that began on 31 July 2012. Endosulfan is used as a crop insecticide and has not been produced in the U.S. since 1982.

Section 1.2 of the SIP states, "*the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy.*" Based on the information available (most of the detections were on the same day, no other detections occurred, most uses have been cancelled), staff determined that the reported concentrations of the pesticides were likely false-positives and the results are not representative of the effluent discharge. Therefore, the Central Valley Water Board finds that the sample results are inappropriate and did not

use the data in conducting the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for pesticides with the annual priority pollutant monitoring event, and requires the Discharger to meet the lowest applicable minimum level in the State Implementation Policy.

x. **Selenium**

- (a) **WQO.** The CTR includes a maximum 4-day average criterion of 5.0 µg/L for total recoverable selenium for the protection of freshwater aquatic life.
- (b) **RPA Results.** The maximum effluent concentration (MEC) for selenium was 2.6 µg/L while the maximum observed upstream receiving water concentration was 2.9 µg/L. Section 1.2 of the SIP states, "*the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy.*" The highest reported concentration in the effluent was 7.7 µg/L but was reported as an estimated concentration. Two other effluent samples were also reported above the criterion but were also estimated concentrations. Estimated concentrations do not provide an adequate level of scientific certainty to use as evidence that the effluent selenium concentrations are above the criterion. Therefore, the Central Valley Water Board finds that the sample results are inappropriate and did not use the data in conducting the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for selenium with the annual priority pollutant monitoring event, and requires the Discharger to meet the lowest applicable minimum level in the State Implementation Policy.

xi. **Settleable Solids**

- (a) **WQO.** For inland surface waters, the Basin Plan states that "*[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.*" Order R5-2008-0033 established an AMEL of 0.1 mL/L and a MDEL of 0.2 mL/L at Discharge Point 001, based on the Basin Plan objective.
- (b) **RPA Results.** Settleable solids were not detected in the effluent based on 322 samples collected between January 2010 and December 2013. The effluent limitations for settleable solids have not been retained. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.E.3 of this Fact Sheet).

xii. **Silver**

- (a) **WQO.** The CTR includes a hardness-dependent criterion for the protection of freshwater aquatic life for silver. This criterion for silver is presented in dissolved concentration, as a short-term acute criterion. 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.
- (b) **RPA Results.** Section IV.C.2 of this Fact Sheet includes procedures for conducting the RPA for hardness-dependent CTR metals, such as silver. The table below shows the specific criteria used for the RPA.

	CTR Acute Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
<u>Upstream Receiving Water</u>	0.046 µg/L <sup>1</sup>	ND (<1.1 µg/L)	No <sup>3</sup>
<u>Effluent Design Ambient Hardness</u>	0.88 µg/L <sup>2</sup>	ND (<1.1 µg/L)	No <sup>3</sup>

<sup>1</sup> Based on lowest observed upstream receiving water hardness of 7.4 mg/L (as CaCO<sub>3</sub>)

<sup>2</sup> Based on lowest observed effluent the design ambient hardness of 85-41 mg/L (as CaCO<sub>3</sub>) and lowest observed upstream receiving water hardness of 7.4 mg/L (as CaCO<sub>3</sub>)

<sup>3</sup> See discussion below

ND = Non-detect

Section 1.2 of the SIP states, “the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy.” The highest reported concentration in the effluent was 1.1 µg/L but was reported as an estimated concentration. Estimated concentrations do not provide an adequate level of scientific certainty to use as evidence that the effluent exceeds the criterion. Therefore, the Central Valley Water Board finds that the sample results for the effluent and receiving water are inappropriate and did not use the data in conducting the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for silver with the annual priority pollutant monitoring event, and requires the Discharger to meet the lowest applicable minimum level in the State Implementation Policy.

#### xiii. Thallium

- (a) **WQO.** The CTR includes a criterion of 1.7 µg/L for thallium for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** The MEC for thallium was non-detect, and was also not detected in the upstream receiving water. Section 1.2 of the SIP states, “the RWQCB shall have discretion to consider if any data are inappropriate... for use in implementing this Policy.” The highest reported concentration in the effluent was 5.8 µg/L but was reported as an estimated concentration. Estimated concentrations do not provide an adequate level of scientific certainty to use as evidence that the effluent thallium concentrations are above the criterion. Therefore, the Central Valley Water Board finds that the sample results are inappropriate and did not use the data in conducting in the RPA. Based on the remaining data, the discharge does not have reasonable potential to cause or contribute to an exceedance of water quality criteria. However, this Order still requires the Discharger to monitor for thallium with the annual priority pollutant monitoring event, and requires the Discharger to meet the lowest applicable minimum level in the State Implementation Policy.

#### xiv. Total Dissolved Solids

- (a) **WQO.** The Secondary MCL – Consumer Acceptance Limit for total dissolved solids is 500 mg/L, which is used to implement the Basin Plan’s chemical constituent objective for the protection of municipal and domestic supply.



- (b) **RPA Results.** The MEC for total dissolved solids was 570 mg/L and the highest effluent calendar year average was 524 mg/L (based on seven samples), while the maximum observed upstream receiving water concentration was 54 mg/L and the highest receiving water calendar year average was 47 mg/L. This Order includes an effluent limitation for electrical conductivity, based on the Basin Plan effluent limitation. This Order also includes a requirement for the Discharger to evaluate the sources of salinity to the Facility. This Order does not include an effluent limitation for total dissolved solids because it includes an effluent limitation for electrical conductivity and a requirement to submit a salinity study.
- b. **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 aluminum, un-ionized ammonia (as N), copper, cyanide, nitrate and nitrite, BOD, TSS, total coliform, pH, acute toxicity, and chronic toxicity. 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. **Aluminum**

Aluminum is the third most abundant element in the earth's crust and is ubiquitous in both soils and aquatic sediments. When mobilized in surface waters, aluminum has been shown to be toxic to various fish species. However, the potential for aluminum toxicity in surface waters is directly related to the chemical form of aluminum present, and the chemical form is highly dependent on water quality characteristics that ultimately determine the mechanism of aluminum toxicity. Surface water characteristics, including pH, temperature, colloidal material, fluoride and sulfate concentrations, and total organic carbon, all influence aluminum speciation and its subsequent bioavailability to aquatic life. Calcium [hardness] concentrations in surface water may also reduce aluminum toxicity by competing with monomeric aluminum ( $Al^{3+}$ ) binding to negatively charged fish gills.

- (a) **WQO.** The California Department of Public Health (CDPH) has established Secondary Maximum Contaminant Levels (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  $\mu$ g/L for protection of the MUN beneficial use. Title 22 requires compliance with Secondary MCLs on an annual average basis.

The Code of Federal Regulations promulgated criteria for priority toxic pollutants for California's surface waters in 40 CFR 131.38 *Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (California Toxics Rule or CTR), including metals criteria. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, 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 Board, are relevant and appropriate to the situation at hand and, therefore, should be used

*in determining compliance with the narrative objective.* Relevant information includes, but is not limited to (1) U.S. EPA *Ambient Water Quality Criteria for Aluminum* (NAWQC) and subsequent Correction, (2) site-specific conditions of Central Canal, the receiving water, and (3) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, page IV-17.00; see also 40 CFR 122.44(d)(vi).)

**U.S. EPA NAWQC.** U.S. EPA recommended the NAWQC aluminum acute criterion at 750 µg/L based on test waters with a pH of 6.5 to 9.0. U.S. EPA also recommended the NAWQC aluminum chronic criterion at 87 µg/L based upon the following two toxicity tests. All test waters contained hardness at 12 mg/L as CaCO<sub>3</sub>.

- (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 U.S. EPA's basis for the 87 µg/L chronic criterion. The varied results draw into question this study and the applicability of the NAWQC chronic criterion of 87 µg/L.
- (2) Chronic toxicity effects on 60-day old brook trout were evaluated in circumneutral pH waters (pH 6.5-6.9) 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 U.S. EPA's chronic criteria. Though this test study shows chronic toxic effects of 4% reduction in weight after exposure for 60 days, the chronic criterion is based on 4-day exposure; so again, the applicability of the NAWQC chronic criterion of 87 µg/L is questionable.

**Site-specific Conditions.** U.S. EPA advises that a water-effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms when the pH and hardness conditions of the receiving water are not similar to that of the test conditions.<sup>9</sup> Effluent and receiving water monitoring data indicate that the pH and hardness values are not similar to the low pH and hardness conditions under which the chronic criterion for aluminum was developed, as shown in the table below, and therefore, the Central Valley Water Board does not expect aluminum to be as toxic in Central Canal as in the previously described toxicity tests. The pH of Central Canal, the receiving water, ranged from 6.8 to 10 with a median of 7.6 based on 506 monitoring results obtained between April 2008 and December 2013. These water conditions typically are circumneutral pH where aluminum is predominately in the form of Al(OH)<sub>3</sub> and non-toxic to aquatic life. The hardness of Central Canal ranged from 7.4 mg/L to 130 mg/L, based on 13 samples from April 2008 to December 2013,

<sup>9</sup> "The value of 87 µg/L is based on a toxicity test with the striped bass in water with pH = 6.5-6.6 and hardness <10 mg/L. Data in [a 1994 Study] indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time." U.S. EPA 1999 NAWQC Correction, Footnote L.

which is above the conditions, and thus less toxic than the tests used to develop the chronic criterion. Additionally, striped bass and brook trout have not been documented in Central Canal, nor are any self-sustaining populations of these fish species expected to exist.

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Receiving Water
pH	standard units	6.0-6.5	6.5-8.5	6.8-10
Hardness, Total (as CaCO <sub>3</sub> )	mg/L	12	85-180	7.4-130
Aluminum, Total Recoverable	µg/L	87.2-390	33-330	45-4600

**Local Environmental Conditions and Studies.** Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. The pH and hardness of Central Canal are similar, as shown in the table below, and thus the results of these site-specific aluminum toxicity tests are relevant and appropriate for Central Canal. As shown in the following table, all EC<sub>50</sub><sup>10</sup> toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Thus, the toxic effects of aluminum in these surface waters and in Central Canal, 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. This new information and a review of the toxicity tests U.S. EPA used to establish the chronic criterion, indicate that 87 µg/L is overly stringent and not applicable to Central Canal.

**Central Valley Region Site-Specific Aluminum Toxicity Data**

Discharger	Test Waters	Hardness Value	Total Aluminum EC <sub>50</sub> Value	pH	WER
<b><i>Oncorhynchus mykiss</i> (rainbow trout)</b>					
Manteca	Surface Water/Effluent	124	>8600	9.14	N/C
Auburn	Surface Water	16	>16500	7.44	N/C
Modesto	Surface Water/Effluent	120/156	>34250	8.96	>229
Yuba City	Surface Water/Effluent	114/164 <sup>1</sup>	>8000	7.60/7.46	>53.5
<b><i>Ceriodaphnia dubia</i> (water flea)</b>					
Auburn	Effluent	99	>5270	7.44	>19.3
"	Surface Water	16	>5160	7.44	>12.4
Manteca	Surface Water/Effluent	124	>8800	9.14	N/C
"	Effluent	117	>8700	7.21	>27.8
"	Surface Water	57	7823	7.58	25.0

<sup>10</sup> The effect concentration is a point estimate of the toxicant concentration that would cause an observable adverse effect (e.g., death, immobilization, or serious incapacitation) in a given percent of the test organisms, calculated from a continuous model (e.g., Probit Model). EC<sub>50</sub> is a point estimate of the toxicant concentration that would cause an observable adverse effect in 50 percent of the test organisms. The EC<sub>50</sub> is used in toxicity testing to determine the appropriate chronic criterion.

Discharger	Test Waters	Hardness Value	Total Aluminum EC <sub>50</sub> Value	pH	WER
"	Effluent	139	>9500	7.97	>21.2
"	Surface Water	104	>11000	8.28	>24.5
"	Effluent	128	>9700	7.78	>25.0
"	Surface Water	85	>9450	7.85	>25.7
"	Effluent	106	>11900	7.66	>15.3
"	Surface Water	146	>10650	7.81	>13.7
Modesto	Surface Water/Effluent	120/156	31604	8.96	211
Yuba City	Surface Water/Effluent	114/164 <sup>1</sup>	>8000	7.60/7.46	>53.5
Placer County (SMD 1)	Effluent	150	>5000	7.4-8.7	>13.7
<b><i>Daphnia magna</i> (water flea)</b>					
Manteca	Surface Water/Effluent	124	>8350	9.14	N/C
Modesto	Surface Water/Effluent	120/156	>11900	8.96	>79.6
Yuba City	Surface Water/Effluent	114/164 <sup>1</sup>	>8000	7.60/7.46	>53.5

<sup>1</sup> Hardness values may be biased high because the EDTA titrimetric method is subject to interferences that measure as hardness (barium, cadmium, lead, manganese, strontium, and zinc will be 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<sub>3</sub> between January 2008 and August 2011. Furthermore, the upstream receiving water hardness was 37 mg/L as CaCO<sub>3</sub> on 4 October 2005, 7 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.

<sup>2</sup> N/C = Not Calculated

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

**Applicable WQOs.** This Order implements the Secondary MCL of 200 µg/L as an annual average for the protection of the MUN beneficial use.

- (b) **RPA Results.** The maximum effluent concentration (MEC) for aluminum was 330 µg/L while the maximum observed upstream receiving water concentration was 4,600 µg/L. The maximum calendar year average in the effluent was 200 µg/L and in the receiving water was 4,600 µg/L (based on one sample during that year in the receiving water). There were two other years during which the

annual average exceeded 200 µg/L in the receiving water. Therefore, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL.

- (c) **WQBELs.** Due to no assimilative capacity, dilution credits are not allowed for development of the WQBELs for aluminum. This Order contains a final average monthly effluent limitation (AMEL) and a final average weekly effluent limitation (AWEL) for aluminum (total recoverable) of 341 µg/L and 761 µg/L, respectively. 40 CFR 122.45(d)(2) requires that for continuous discharges from POTWs, effluent limitations must be expressed in terms of average monthly and average weekly limitations, unless impracticable. The applicable aluminum WQO for this discharge is based on the California secondary MCL and aluminum is not a CTR constituent. Thus, the objective is not a human health or aquatic life criterion, and the Central Valley Water Board has discretion in calculating the effluent limitations. The AMEL and AWEL were calculated by generally using procedures in the State Implementation Policy, Section 1.4, Step 5. Table 2 of the State Implementation Policy was used to calculate AMEL and MDEL multipliers, and the long-term average was set as 200 µg/L. The AWEL was calculated from the MDEL multiplier, as there is no AWEL multiplier in the State Implementation Policy.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 330 µg/L is not greater than the applicable WQBELs. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ii. **Ammonia**

(a) **WQO.**

- (1) **Total Ammonia as N.** In August 2013, U.S. EPA published new NAWQC for the protection of freshwater aquatic life for total ammonia.<sup>11</sup> 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 *Oncorhynchus* (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 are determined primarily by the effects on mussels.

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<sup>11</sup> *Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater*, published August 2013 [EPA 822-R-13-001]

The NAWQC document states "*unionid mussel species are not prevalent in some waters, such as in 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.

A report prepared by The Nature Conservancy, *Sensitive Freshwater Mussel Surveys in the Pacific Southwest Region: Assessment of Conservation Status* (published August 2010), demonstrates the results of a strategic mussel study and survey conducted during 2008-2009. The study does not contain any survey information for Central Canal in the vicinity of the Facility discharge. The Central Valley Water Board is currently in the process of determining the best way to evaluate receiving waters within the Central Valley for the presence of mussels. Therefore, since the Central Valley Water Board is not aware of any documentation recording the presence of mussels in Central Canal, the site-specific ammonia criteria for waters where mussels are not present were used. Central Canal does not have a beneficial use of cold freshwater habitat (COLD) and the presence of salmonids and early fish life stages in Central Canal is not documented, therefore, the recommended ammonia criteria for waters where salmonids and early life stages are absent were used.

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

- (2) **Un-ionized Ammonia (as N).** The Basin Plan includes an objective that states "*[w]aters shall not contain un-ionized ammonia in amounts which adversely affect beneficial uses. In no case shall the discharge of wastes cause concentrations of un-ionized ammonia (NH<sub>3</sub>) to exceed 0.025 mg/L (as N) in receiving waters.*"

(b) **RPA Results.**

- (1) **Total Ammonia (as N) and Un-ionized Ammonia (as N).** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that, without treatment, would be harmful to fish and would violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore exists and effluent limitations are required.

Federal regulations at 40 CFR 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA.

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 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 and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBELs are required.

(c) **WQBELs.**

- (1) **Total Ammonia (as N).** The Central Valley Water Board calculates WQBELs in accordance with SIP procedures for total ammonia. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). 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 LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the AMEL and the MDEL. The

remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. The WQBELs were calculated as 0.47 mg/L (AMEL) and 0.81 (MDEL) between May through October, and 0.16 mg/L (AMEL) and 0.38 mg/L (MDEL) between November through April, based on the 2013 NAWQC. However, this Order does not contain WQBELs for total ammonia (as N) because the proposed WQBEL for un-ionized ammonia (as N) is more protective of the beneficial uses.

(2) **Un-ionized Ammonia (as N).** This Order includes a final MDEL of 0.025 mg/L for un-ionized ammonia (as N) that is based on the Basin Plan objective.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the calculated MEC of 0.018 mg/L is less than the applicable WQBEL. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

iii. **Copper, Total Recoverable**

(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 short-term acute 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.

(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 table below shows the specific criteria used for the RPA.

	CTR Acute Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
<u>Upstream Receiving Water</u>	1.0 µg/L <sup>1</sup>	22	Yes <sup>3</sup>
<u>Effluent Design Ambient Hardness</u>	8.1 µg/L <sup>2</sup>	41	Yes <sup>3</sup>

<sup>1</sup> Based on lowest observed upstream receiving water hardness of 7.4 mg/L (as CaCO<sub>3</sub>)

<sup>2</sup> Based on lowest observed effluent the design ambient hardness of 85 mg/L (as CaCO<sub>3</sub>)

<sup>3</sup> See discussion below

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

(c) **WQBELs.** No dilution credits are allowed for the development of WQBELs for total recoverable copper due to periods of no flow in the receiving water. This Order contains a final AMEL and MDEL for copper of 6.5 µg/L and 12 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 that the MEC of 41 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate



non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for copper are a new regulatory requirement within this Order, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a time schedule for compliance with the copper effluent limitations is established in Cease and Desist Order (CDO) R5-2014-XXXX in accordance with Water Code section 13301, and requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

iv. **Cyanide**

- (a) **WQO.** The CTR includes maximum short-term average and 4-day average criteria of 22 µg/L and 5.2 µg/L, respectively, for cyanide for the protection of freshwater aquatic life.
- (b) **RPA Results.** The MEC for cyanide was 6.6 µg/L, while cyanide was not detected in the receiving water. Therefore, cyanide 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.** No dilution credits are allowed for the development of WQBELs for cyanide due to periods of no flow in the receiving water. This Order contains a final AMEL and MDEL for cyanide of 4.2 µg/L and 8.7 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 that the MEC of 6.6 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for cyanide are a new regulatory requirement within this Order, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a time schedule for compliance with the cyanide effluent limitations is established in CDO R5-2014-XXXX in accordance with Water Code section 13301, and requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

v. **Nitrate and Nitrite**

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

- (b) **RPA Results.** The Facility is a POTW 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 nitrate and nitrite, and will result in effluent nitrate concentrations above the primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the primary MCL threaten 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 CFR 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA. 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 these non-priority pollutant constituents.

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.*" 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 nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limitation for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the primary MCL would violate the Basin Plan narrative chemical constituents objective. Inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the primary MCL. Therefore, the

Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBELs are required.

- (c) **WQBELs.** This Order contains a final AMEL for nitrate plus nitrite of 10 mg/L (total as N), based on the California Primary MCL. This effluent limitation is included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MECs of 20 mg/L for nitrate (as N) and 2.6 for nitrite (as N) combined are greater than the applicable WQBEL. Based on the sample results for the effluent, the limitation appears to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitation, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitation for nitrate plus nitrite (as N) is a new regulatory requirement within this Order, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a time schedule for compliance with the nitrate plus nitrite (as N) effluent limitation is established in CDO R5-2014-XXXX in accordance with Water Code section 13301, and requires preparation and implementation of a pollution prevention plan in compliance with Water Code section 13263.3.

vi. **Pathogens**

- (a) **WQO.** CDPH has developed reclamation criteria at Title 22, 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-sample 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 CDPH's reclamation criteria because the receiving water is used for irrigation of agricultural land and has a beneficial use for contact recreation. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens.

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

Federal regulations at 40 CFR 122.44(d)(1)(i) 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, "*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 beneficial uses of Central Canal include municipal and domestic supply, water contact recreation, and agricultural irrigation supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the Central Valley Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBELs are required.

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

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity of 2 nephelometric turbidity units (NTU). Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the required level of disinfection (based on Title 22 disinfection criteria), weekly average specifications are impracticable for turbidity. This Order includes operational specifications for turbidity that vary depending on whether the Discharger is using coagulation.

Final WQBELs for BOD<sub>5</sub> 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<sub>5</sub> is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD<sub>5</sub> and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD<sub>5</sub> 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<sub>5</sub> and TSS than the secondary standards currently prescribed. Therefore, this Order requires AMELs for BOD<sub>5</sub> and TSS of 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, daily maximum effluent limitations for BOD<sub>5</sub> and TSS are included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. This Order also includes an average monthly effluent limitation requiring at least 90% removal of BOD<sub>5</sub> and TSS compared to influent concentrations.

This Order contains effluent limitations for BOD<sub>5</sub>, total coliform, and TSS and requires a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. The Central Valley Water Board has previously considered the factors in Water Code section 13241 in establishing these requirements, and previously established these limitations in Order R5-2008-0033.

- (d) **Plant Performance and Attainability.** The Facility is designed to provide tertiary treatment and disinfection to achieve compliance with the effluent limitations for BOD<sub>5</sub>, total coliform, TSS, and BOD<sub>5</sub> and TSS percent removal. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. **pH**

- (a) **WQO.** The Basin Plan includes a water quality objective for surface waters that the *"pH of water shall not be depressed below 6.5, raised above 8.3, or changed at any time more than 0.3 units from normal ambient pH."*
- (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 CFR 122.44(d)(1)(i) requires that, *"Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."* For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

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 POTW that treats domestic wastewater. Based on 332 samples taken from January 2010 through December 2013, the maximum pH reported was 8.5 and the minimum was 6.5. The Facility exceeded the instantaneous maximum effluent limitation one time on 2 July 2013. Since 3 July 2013, the maximum pH reported was 7.9. Although the Discharger has proper pH controls in place, the pH for the Facility's influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

- (c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.3 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 332 samples taken between January 2010 and December 2013, the effluent pH exceeded the instantaneous maximum effluent limitation once and was never reported below the instantaneous minimum effluent limitations. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

#### 4. WQBELs Calculations

- a. This Order includes WQBELs for aluminum, un-ionized ammonia (as N), copper, cyanide, nitrate and nitrite, BOD, TSS, total coliform, pH, acute toxicity, and chronic toxicity. 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 WQBELs calculations. Calculations for the aluminum effluent limitations are discussed in section IV.C.3.b.i.(c) of this Fact Sheet.
- b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

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

where:

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

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

- c. **Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.
- d. **Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e.,  $LTA_{acute}$  and  $LTA_{chronic}$ ) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.
- e. **Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

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

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

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

where:

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

**Summary of Water Quality-Based Effluent Limitations  
Discharge Point 001**

**Table F-16. Summary of Water Quality-Based Effluent Limitations**

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand 5-day @ 20°C (BOD <sub>5</sub> )	mg/L	10	15	30	--	--
	lbs/day	38	56	113	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
	% removal	(see below)				
Total Suspended Solids (TSS)	mg/L	10	15	30	--	--
	lbs/day	38	56	113	--	--
	% removal	(see below)				
pH	standard units	--	--	--	6.5	8.3
Copper, Total Recoverable	µg/L	6.5	--	12	--	--
Cyanide, Total (as CN)	µg/L	4.2	--	8.7	--	--
Aluminum, Total Recoverable	µg/L	341	761	--	--	--
Ammonia, Un-ionized (as N)	mg/L	--	--	0.025	--	--
Nitrate plus Nitrite (as N)	mg/L	10.	--	--	--	--
Acute Toxicity	% survival	(see below)				
Chronic Toxicity	TUc	(see below)				
Total Coliform	MPN/100 mL	(see below)				

- a. **Percent Removal.** The average monthly percent removal of BOD<sub>5</sub> and TSS shall not be less than 90 percent.
- b. **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.
- c. **Chronic Whole Effluent Toxicity.** There shall be no chronic toxicity in the effluent discharge.
- d. **Total Coliform.** Effluent total coliform shall not exceed:
  - i. 2.2 most probable number (MPN) per 100 mL, as a 7-sample median;
  - ii. 23 MPN/100 mL, more than once in any 30-day period; and
  - iii. 240 MPN/100 mL, at any time.

**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-6) 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. 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)."

Although the discharge has been consistently in compliance with the acute effluent limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent 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." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

Minimum for any one bioassay ----- 70%

Median for any three consecutive bioassays ----- 90%

- b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-6) Based on chronic WET testing performed by the Discharger from January 2010 through December 2013, the discharge has 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-17 below.

**Table F-17. Whole Effluent Chronic Toxicity Testing Results**

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
3/15/2010	1.0	1.0	1.0	1.0	1.0
9/20/2010	2.0	1.0	1.0	1.0	1.0
10/19/2010	--	--	--	--	1.0
11/2/2010	--	--	--	--	1.0
11/16/2010	--	--	--	--	1.0
11/30/2010	--	--	--	--	1.0
3/21/2011	1.0	1.0	1.0	1.0	1.3
2/7/2012	--	--	--	--	1.0
3/13/2012	--	--	--	--	1.3

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
3/11/2013	1.0	1.0	1.0	1.0	1.0
6/3/2013	1.0	1.0	1.0	1.0	1.0
9/9/2013	1.0	1.0	1.0	1.0	1.0

No dilution has been granted for the chronic condition. Therefore, chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective.

The Monitoring and Reporting Program of this Order requires quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective and effluent limitation. In addition to WET monitoring, Special Provision VI.C.2.a of this Order requires the Discharger to submit to the Central Valley Water Board a TRE Work Plan. The provision also includes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and requirements for TRE initiation if toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limitations. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region<sup>12</sup> that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-0012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-0012, *"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 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E, section V.). Furthermore, Special Provision VI.C.2.a of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates

<sup>12</sup> 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).

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. Basin Plan Effluent Limitations.**

1. The Basin Plan at page IV-10 includes effluent limitations for discharges to navigable waters. The Basin Plan requires at a minimum, discharges to surface waters, including stream channels, to comply with the following effluent limitations:
  - a. The maximum electrical conductivity of a discharge shall not exceed the quality of the source water plus 500  $\mu\text{mhos/cm}$ , or 1,000  $\mu\text{mhos/cm}$ , whichever is more stringent.
  - b. Discharges shall not exceed an electrical conductivity of 1,000  $\mu\text{mhos/cm}$ , a chloride content of 175 mg/L, or a boron content of 1.0 mg/L.
2. This Order carries over the chloride and boron effluent limitations in Order R5-2008-0033, which are based on the Basin Plan effluent limitations. This Order also carries over an effluent limitation for electrical conductivity, based on the Basin Plan, but establishes the averaging period as a 12-month rolling average instead of a monthly average.

#### **E. Final Effluent Limitation Considerations**

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

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations were calculated based upon the flow permitted in section IV.B.1.a of this Order.

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

40 CFR 122.45(d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, U.S. EPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. *"First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed."* (TSD, pg. 96) This Order uses maximum daily effluent limitations in lieu of average weekly effluent limitations for copper and cyanide as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for copper and cyanide, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for

using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

For effluent limitations based on Primary and Secondary MCLs, except nitrate and nitrite, this Order includes annual average effluent limitations. The Primary and Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis (except for nitrate and nitrite), when sampling at least quarterly. Since it is necessary to determine compliance on an annual average basis, it is impracticable to calculate average weekly and average monthly effluent limitations.

### 3. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 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 bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, settleable solids, and turbidity. The effluent limitations for these pollutants are less stringent than those in Order R5-2008-0033. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

- a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits *"except in compliance with Section 303(d)(4)."* CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.
  - i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limitation based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limitations 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.

Central Canal is considered an attainment water for bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids because the receiving water is not listed as impaired on the 303(d) list for these constituents.<sup>13</sup> As discussed in section IV.E.4, below, removal of the effluent limitations complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids from Order R5-2008-0033 meets the exception in CWA section 303(d)(4)(B).

- b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised

<sup>13</sup> "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.

regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.a of this Fact Sheet, updated information that was not available at the time Order R5-2008-0033 was issued indicates that bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Additionally, updated information that was not available at the time Order R5-2008-0033 was issued indicates that less stringent effluent limitations for bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids satisfy requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

- i. **Bromoform.** Bromoform is a chlorine disinfection byproduct and the Discharger no longer uses chlorine for disinfection. Effluent and receiving water monitoring data collected between January 2010 and December 2013 for bromoform indicate that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criterion for the consumption of water and organisms.
- ii. **Chlorine Residual.** The Discharger converted from chlorine disinfection to ultraviolet light disinfection in December 2009. Total residual chlorine was not detected in the effluent between January 2010 and December 2013. Therefore, there is no reasonable potential to cause or contribute to an exceedance of the NAWQC criterion for chlorine.
- iii. **Chlorodibromomethane.** Chlorodibromomethane is a chlorine disinfection byproduct and the Discharger no longer uses chlorine for disinfection. Effluent and receiving water monitoring data collected between January 2010 and December 2013 for chlorodibromomethane indicate that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criterion for the consumption of water and organisms.
- iv. **Dichlorobromomethane.** Dichlorobromomethane is a chlorine disinfection byproduct and the Discharger no longer uses chlorine for disinfection. Effluent and receiving water monitoring data collected between January 2010 and December 2013 for dichlorobromomethane indicate that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criterion for the consumption of water and organisms.
- v. **Settleable Solids.** Effluent and receiving water monitoring data collected between January 2010 and December 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.

Thus, removal or relaxation of the effluent limitations for bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids from Order R5-2008-0033 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal of effluent limitations based on information that was not available at the time of permit issuance.

Effluent and receiving water monitoring data collected between January 2010 and December 2013 indicate that bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids in the discharge do not exhibit reasonable potential to cause or contribute to an exceedance of the applicable water quality

objectives. Therefore, the effluent limitations for bromoform, total residual chlorine, chlorodibromomethane, dichlorobromomethane, and settleable solids have not been continued. Removal of the effluent limitations meets the exceptions to backsliding in CWA section 402(o)(2).

- c. **Turbidity.** Order R5-2008-0033 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 limitations 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. 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 R5-2008-0033. These revisions are consistent with State regulations implementing recycled water requirements. The revision in the turbidity limitation is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16 because this Order imposes equivalent or more stringent requirements than Order R5-2008-0033 and therefore does not allow degradation.

#### 4. Antidegradation Policies

- a. **Surface Water.** This Order does not authorize an increase in flow or mass of pollutants to Central Canal from that allowed in Order R5-2008-0033. Thus, the permitted surface water discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.
- b. **Groundwater.** The Discharger utilizes evaporation/percolation ponds for effluent disposal. Domestic wastewater contains constituents such as total dissolved solids (TDS), electrical conductivity, pathogens, nitrates, organics, metals and oxygen demanding substances (BOD). Percolation from the ponds may result in an increase in the concentration of these constituents in groundwater. The increase in the concentration of these constituents in groundwater must be consistent with Resolution 68-16. Any increase in pollutant concentrations in groundwater must be shown to be necessary to allow wastewater utility service necessary to accommodate housing and economic expansion in the area and must be consistent with maximum benefit to the people of the State of California. Some degradation of groundwater by the Discharger is consistent with Resolution 68-16 provided that:
- i. the degradation is limited in extent;
  - ii. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the groundwater limitations in this Order;
  - iii. the Discharger minimizes the degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment or control (BPTC) measures; and
  - iv. the degradation does not result in water quality less than that prescribed in the Basin Plan.

Adequate background groundwater quality data are not available for comparing to downgradient groundwater monitoring data. This Order requires the Discharger to monitor groundwater.

**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 limitation consists of restrictions on flow. Restrictions on flow are discussed in IV.B and II.B.3 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. These limitations are not more stringent than required by the CWA.

Water quality-based effluent limitations have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. Most 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 CWA" pursuant to 40 CFR 131.21(c)(1). The remaining water quality objectives and beneficial uses implemented by this Order were approved by U.S. EPA and are applicable water quality standards pursuant to 40 CFR 131.21(c)(2). 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 Point 001**

**Table F-18. Summary of Final Effluent Limitations**

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	mgd	0.45	--	--	--	--	PO, DC
Biochemical Oxygen Demand 5-day @ 20°C (BOD <sub>5</sub> )	mg/L	10	15	30	--	--	PO, DC, TTC
	lbs/day	38	56	113	--	--	PO, DC, TTC
	% removal	(see below)	--	--	--	--	PO, DC, TTC
Total Suspended Solids (TSS)	mg/L	10	15	30	--	--	PO, DC, TTC
	lbs/day	38	56	113	--	--	PO, DC, TTC
	% removal	(see below)	--	--	--	--	PO, DC, TTC
pH	standard units	--	--	--	6.5	8.3	PO, BP

Parameter	Units	Effluent Limitations					Basis
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Copper, Total Recoverable	µg/L	6.5	--	12	--	--	CTR
Cyanide, Total (as CN)	µg/L	4.2	--	8.7	--	--	CTR
Aluminum, Total Recoverable	µg/L	341	761	--	--	--	SMCL
Ammonia, un-ionized (as N)	mg/L	--	--	0.025	--	--	BP
Boron	mg/L	--	--	1.0	--	--	PO, BPL
Chloride	mg/L	--	--	175	--	--	PO, BPL
Electrical Conductivity @ 25°C	µmhos/cm	(see below)					BPL
Nitrate plus Nitrite (as N)	mg/L	10.	--	--	--	--	PMCL
Total Coliform	MPN/100 mL	(see below)					PO, T22
Acute Toxicity	% survival	(see below)					PO, BP
Chronic Toxicity	--	(see below)					BP

PO – Carried over from previous Order (R5-2008-0033)

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

SMCL – Based on the Secondary Maximum Contaminant Level.

BPL – Based on limitations in the Basin Plan, applicable to all surface waters

PMCL – Based on the Primary Maximum Contaminant Level.

T22 – Based on California Department of Public Health Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).

- a. **Percent Removal.** The average monthly percent removal of BOD<sub>5</sub> and TSS shall not be less than 90 percent.
- b. **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.
- c. **Chronic Whole Effluent Toxicity.** There shall be no chronic toxicity in the effluent discharge.
- d. **Total Coliform.** Effluent total coliform shall not exceed:
  - i. 2.2 most probable number (MPN) per 100 mL, as a 7-sample median;
  - ii. 23 MPN/100 mL, more than once in any 30-day period; and
  - iii. 240 MPN/100 mL, at any time.



- e. **Electrical Conductivity @ 25°C (EC).** The 12-month rolling average effluent EC shall not exceed 1,000 µmhos/cm or the monthly flow-weighted average EC of the source water plus 500 µmhos/cm, whichever is more stringent.

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

**G. Land Discharge Specifications**

The Land Discharge Specifications for the onsite disposal ponds are necessary to ensure proper operation of the ponds and to protect the beneficial uses of the groundwater.

1. **BOD and TSS.** This Order carries over the BOD and TSS effluent limitations from Order R5-2008-0033 for discharge to the onsite disposal ponds.
2. **pH.** This Order carries over the pH effluent limitations from Order R5-2008-0033 for discharge to the onsite disposal ponds.
3. **Settleable Solids.** This Order carries over the settleable solids effluent limitations from Order R5-2008-0033 for discharge to the onsite disposal ponds.
4. **Basin Plan Effluent Limitations.** This Order carries over the effluent limitations for EC and chloride, which were applicable to both discharge locations in Order R5-2008-0033, and which are based on the Basin Plan limitations. This Order includes a boron effluent limitation based on the Basin Plan limitation.
5. **Flow.** As discussed in section II.B.3 of this Fact Sheet, the Discharger has had ongoing disposal capacity issues with the onsite disposal ponds for a number of years. This Order limits the flow to the onsite disposal ponds to 0.49 mgd, as a monthly average, and gives the Discharger an opportunity to request to increase the flow to the ponds up to 0.85 mgd if it can demonstrate to the satisfaction of the Executive Officer that the ponds have enough capacity to accommodate those flows.

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

**B. Groundwater**

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, agricultural supply, industrial service supply, industrial process supply, contact recreation, and non-contact recreation.
2. Basin Plan water quality objectives include narrative objectives for bacteria, chemical constituents, pesticides, radioactivity, salinity, tastes and odors, and toxicity of groundwater. The bacteria objective prohibits total coliform at or above 2.2 MPN/100 mL for waters

designated MUN. The chemical constituents objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The pesticide objective states that no individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses. The radioactivity objective prohibits radionuclides to be present in concentrations that are deleterious to human, plant, animal or aquatic life, or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life. The salinity objective includes maximum average annual increases in salinity for specific groundwater basins. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

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

## VI. RATIONALE FOR PROVISIONS

### A. Standard Provisions

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

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

### B. Special Provisions

#### 1. Reopener Provisions

- a. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity effluent limitation, new acute toxicity effluent limitations, and/or effluent limitations for specific toxicant(s) 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. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper. If the Discharger performs studies to determine site-

specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituent(s).

- c. **Drinking Water Policy.** The Central Valley Water Board adopted a Drinking Water Policy. This Order may be reopened to incorporate monitoring of constituents to implement the Drinking Water Policy.
- d. **Ultraviolet (UV) Disinfection Operating Specifications.** UV disinfection system operating specifications are required to ensure that the UV system is operated to achieve the required pathogen removal. UV disinfection system specifications and monitoring and reporting requirements are required to ensure that adequate UV dosage is applied to the wastewater to inactivate pathogens (e.g., viruses) in the wastewater. UV dosage is dependent on several factors such as UV transmittance, UV power setting, wastewater turbidity, and wastewater flow through the UV disinfection system. The UV specifications in this Order are based on the NWRI guidelines. If the Discharger conducts a site-specific UV engineering study that identifies site-specific UV operating specifications that will achieve the virus inactivation required by Title 22 for disinfected tertiary recycled water, this Order may be reopened to modify the UV specifications.
- e. **Beneficial Use Dedications.** If the Discharger pursues a dedesignation study by providing all necessary information for a Basin Plan amendment to dedesignate beneficial uses for Central Canal, and those efforts result in a Basin Plan amendment, this Order shall be reopened to implement the necessary changes.

## 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-6) Based on whole effluent chronic toxicity testing performed by the Discharger from January 2010 through December 2013, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision requires the Discharger to develop a TRE Work Plan in accordance with U.S. EPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if toxicity has been demonstrated.

**Monitoring Trigger.** A numeric toxicity monitoring trigger of  $>1$  TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

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

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is*

*repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e., toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

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

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

- i. *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, EPA/833-B-99/002, August 1999.
- ii. *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs)*, EPA/600/2-88/070, April 1989.
- iii. *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures*, Second Edition, EPA 600/6-91/003, February 1991.
- iv. *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA/600/6-91/005F, May 1992.
- v. *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.
- vi. *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.
- vii. *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.
- viii. *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.
- ix. *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991.