CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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ORDER R5-2019-XXXX
NPDES NO. CA0077691

WASTE DISCHARGE REQUIREMENTS FOR THE CITY OF VACAVILLE EASTERLY WASTEWATER TREATMENT PLANT SOLANO COUNTY

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

Table 1. Discharger Information

Discharger	City of Vacaville
Name of Facility	Easterly Wastewater Treatment Plant
Facility Address	6040 Vaca Station Road
	Elmira, CA 95625
	Solano County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Treated Wastewater	38° 20' 48"	121° 54' 06"	Old Alamo Creek

Table 3. Administrative Information

This Order was adopted on:	**<Adoption Date>**
This Order shall become effective on:	**<Effective Date>**
This Order shall expire on:	**<Expiration Date>**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**[Choose: 1-year prior to the Order expiration date OR <insert date>]**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	Major

I, Patrick Pulupa, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **[DATE]**.

_____
PATRICK PULUPA, Executive Officer

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I. FACILITY INFORMATION

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

II. FINDINGS

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

A. Legal Authorities. This Order serves as waste discharge requirements (WDR's) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (U.S. EPA) and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as a National Pollutant Discharge Elimination System (NPDES) permit authorizing the Discharger to discharge into waters of the United States at the discharge locations described in Table 2 subject to the WDR's in this Order.

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

C. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections V.B, VI.C.4, and VI.C.6 are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

D. Monitoring and Reporting. 40 C.F.R. section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement federal and state requirements. The MRP is provided in Attachment E.

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

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

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

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

G. California Environmental Quality Act (CEQA). Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of CEQA, (commencing with section 21100) of Division 13 of the Public Resources Code. Additionally, the adoption of Title 22 water reclamation requirements for the Facility constitutes permitting of an existing facility that is categorically exempt from the provisions of CEQA pursuant to California Code of Regulations, title 14, section 15301.

THEREFORE, IT IS HEREBY ORDERED that Order R5-2014-0072-01 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for violations of the previous Order.

III. DISCHARGE PROHIBITIONS

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

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

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

D. Discharge of waste classified as 'hazardous,' as defined in the California Code of Regulations (CCR), Title 22, section 66261.1 et seq., is prohibited.

E. Average Dry Weather Flow. Discharges exceeding an average dry weather flow of 15 million gallons per day (MGD) are prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001. Unless otherwise specified, compliance shall be measured at Monitoring Location EFF-001, as described in the MRP, Attachment E:

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

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L[1]	10	15	--	--	--
	mg/L[2]	20	25	--	--	--
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids	mg/L[1]	10	15	--	--	--
	mg/L[2]	30	45	--	--	--
Priority Pollutants						
Chlorodibromomethane	µg/L	34	--	74	--	--
Dichlorobromomethane	µg/L	46	--	74	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	1.4	2.1	--	--	--
Nitrate Plus Nitrite, Total (as N)	mg/L	14	17	--	--	--

1 Effluent limitations applicable from 1 May through 31 October.
2 Effluent limitations applicable from 1 November through 30 April.

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

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

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

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

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

e. **Total Coliform Organisms:**

i. From **1 May through 31 October**, effluent total coliform organisms shall not exceed the following with compliance measured immediately after disinfection:

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

ii. From **1 November through 30 April**, effluent total coliform organisms shall not exceed the following with compliance measured immediately after disinfection:

(a) 23 MPN/100 mL, as a 7-day median; and
(b) 240 MPN/100 mL, more than once in any 30-day period.

f. **Electrical Conductivity @ 25°C.** The effluent calendar year annual average electrical conductivity shall not exceed 1,320 µmhos/cm.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Not Applicable

C. Recycling Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in the immediate receiving waters (Old Alamo Creek and New Alamo Creek):

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.
2. **Biostimulatory Substances.** Water to contain biostimulatory substances that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
5. **Dissolved Oxygen:**
   a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
   b. The 95th percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
   c. The dissolved oxygen concentration to be reduced below 5.0 mg/L within Old Alamo Creek and below 7.0 mg/L within New Alamo Creek, at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.
9. **Pesticides:**
   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
   b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
   c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by U.S. EPA or the Executive Officer;
   d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution 68-16 and 40 C.F.R section 131.12);
   e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;

f. Pesticides to be present within New Alamo Creek in concentrations in excess of the maximum contaminant levels (MCL's) set forth in CCR, Title 22, division 4, chapter 15; nor

g. Thiobencarb to be present in excess of 1.0 µg/L within New Alamo Creek.

10. **Radioactivity:**

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

    b. For New Alamo Creek only, radionuclides to be present in excess of the MCL's specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the CCR.

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

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

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

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

15. **Temperature:**

    a. The temperature within Old Alamo Creek, as measured at Monitoring Location RSW-002, to rise above 83°F at any time;

    b. The annual average temperature within New Alamo Creek, as measured at Monitoring Location RSW-004, to increase more than 5°F compared to the annual average background temperature, as measured at Monitoring Location RSW-003; and

    c. New Alamo Creek temperatures, as measured at Monitoring Location RSW-004, to exceed the following:

        i. 5°F over the ambient background temperature, as a monthly average, from 1 March through 31 August;

        ii. 72°F, as a period average, from 1 September through 14 October;

        iii. 70°F, as a period average, from 15 October through 31 October;

        iv. 66°F, as a monthly average for November; and

        v. 60°F, as a monthly average, from 1 December through 28 February.

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

17. **Turbidity:**

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

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

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

d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTU; and

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

B. Groundwater Limitations

1. Release of waste constituents from any portion of the Facility shall not cause groundwater to:

a. Contain any of the following constituents in concentrations greater than listed or greater than natural background quality, whichever is greater.

Table 5. Groundwater Limitations

Constituent	Units	Limitation
Total Coliform Organisms	MPN/100 mL	<2.2
Electrical Conductivity @ 25°C[1]	µmhos/cm	700
Total Dissolved Solids[1]	mg/L	450
Nitrate Nitrogen, Total (as N)	mg/L	10

[1] A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

b. Exhibit a pH of less than 6.5 or greater than 8.4 standard units.

c. Impart taste, odor, chemical constituents, toxicity, or color that creates nuisance or impairs beneficial uses.

VI. PROVISIONS

A. Standard Provisions

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

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

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

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

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

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

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

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

The causes for modification include:

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

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

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

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

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

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

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

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

ii. Controls any pollutant limited in the Order.

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

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

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

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

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

i. Safeguard to electric power failure:

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

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

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

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

   The technical report shall:

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

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

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

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

k. A publicly owned treatment works (POTW) whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and

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

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

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

n. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

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

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

p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such non-compliance, and

shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of non-compliance, and shall describe the measures being taken to remedy the current non-compliance and prevent recurrence including, where applicable, a schedule of implementation. Other non-compliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

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

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

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

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

c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and an effluent limitation shall be imposed. If the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the need for a mercury offset program for the Discharger.

d. **Pollution Prevention.** This Order requires the Discharger to update and implement pollution prevention plans following Water Code section 13263.3(d)(3) for mercury and salinity. Based on a review of the pollution prevention plans, this Order may be reopened for addition and/or modification of effluent limitations and requirements for these constituents.

e. **Whole Effluent Toxicity (WET).** As a result of a Toxicity Reduction Evaluation (TRE) or Toxicity Evaluation Study (TES), this Order may be reopened to include a new chronic toxicity effluent limitation, a revised acute toxicity effluent limitation, and/or an effluent limitation for a specific toxicant identified in a TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions, this Order may be reopened to implement the new provisions.

f. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WER's and/or site-specific dissolved-to-

total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

g. **Drinking Water Policy.** On 26 July 2013, the Central Valley Water Board adopted Resolution R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

h. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 31 May 2018, as part of the CV-SALTS initiative, the Central Valley Water Board approved Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley. If approved by the State Water Board, the Office of Administrative Law, and U.S. EPA, the Amendments would impose certain new requirements on salt and nitrate discharges. More information regarding these Amendments can be found at the following link:

https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/

If the Amendments ultimately go into effect, this Order may be amended or modified to incorporate any newly-applicable requirements.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Toxicity Reduction Evaluation (TRE) Requirements.** This provision requires the Discharger to investigate the causes of and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the chronic toxicity thresholds defined in this Special Provision, the Discharger is required to initiate a TRE in accordance with an approved TRE Work Plan and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a step-wise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TRE's are designed to identify the causative agents and sources of WET, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. Alternatively, under certain conditions, as described below, the Discharger may participate in an approved TES in lieu of conducting a site-specific TRE.

i. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger is 1 chronic toxicity unit (TUc) (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to initiate additional actions to evaluate effluent toxicity as specified in subsection ii, below.

ii. **Chronic Toxicity Monitoring Trigger Exceeded.** When a chronic WET result during routine monitoring exceeds the chronic toxicity monitoring trigger, the Discharger shall proceed as follows:

(a) **Initial Toxicity Check**. If the result is less than or equal to 1.3 TUc (as $100/EC_{25}$) AND/OR the percent effect is less than 25 percent at 100 percent effluent, check for any operation or sample collection issues and return to routine chronic toxicity monitoring. Otherwise, proceed to step (b).

(b) **Evaluate 6-Week Median**. The Discharger may take two additional samples within 6 weeks of the initial routine sampling event exceeding the chronic toxicity monitoring trigger to evaluate compliance using a 6-week median. If the 6-week median is greater than 1.3 TUc (as $100/EC_{25}$) and

the percent effect is greater than 25 percent at 100 percent effluent, proceed with subsection (c). Otherwise, the Discharger shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring. See Compliance Determination Section VII.K for procedures for calculating the 6-week median.

(c) **Toxicity Source Easily Identified.** If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the Facility and shall resume routine chronic toxicity monitoring. If the source of toxicity is not easily identified, the Discharger shall conduct a site-specific TRE or participate in an approved TES as described in the following subsections.

(d) **Toxicity Evaluation Study (TES).** If the percent effect is ≤ 50 percent at 100 percent effluent, as the median of up to three consecutive chronic toxicity tests within a 6-week period, the Discharger may participate in an approved TES in lieu of a site-specific TRE. The TES may be conducted individually or as part of a coordinated group effort with other similar dischargers. If the Discharger chooses not to participate in an approved TES, a site-specific TRE shall be initiated in accordance with subsection (e)(1), below. Nevertheless, the Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a site-specific TRE within the past 12 months and has been unsuccessful in identifying the toxicant.

(e) **Toxicity Reduction Evaluation (TRE).** If the percent effect is > 50 percent at 100 percent effluent, as the median of three consecutive chronic toxicity tests within a 6-week period, the Discharger shall initiate a site-specific TRE as follows:

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

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

3. Best Management Practices and Pollution Prevention

a. **Pollutant Evaluation and Minimization Plans for Mercury and Salinity.** The Discharger shall continue to implement pollutant evaluation and minimization plans for mercury and salinity. The Discharger shall submit a progress report on salinity and mercury minimization activities over the course of the permit term with the Report of Waste Discharge, by the due date in the Technical Reports Table. The progress reports shall discuss the effectiveness of the pollutant evaluation and minimization plans in the reduction of mercury and salinity in the discharge and include a summary of monitoring results.

4. Construction, Operation and Maintenance Specifications

a. **Filtration System Operating Specifications.** To ensure the filtration system is operating properly to provide adequate disinfection of the wastewater, from 1 May through 31 October, the turbidity of the filter effluent measured at Monitoring Location FIL-001 shall not exceed:

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

b. **Emergency Storage Pond Operating Requirements**

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

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

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

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

(b) Weeds shall be minimized; and

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

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

v. The discharge of waste classified as “hazardous,” as defined in CCR, Title 23, section 2521(a), or “designated,” as defined in section 13173 of the Water Code, to the treatment ponds is prohibited.

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

5. Special Provisions for Publicly-Owned Treatment Works (POTW’s)

a. **Pretreatment Requirements**

i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 C.F.R. part 403, including any subsequent regulatory revisions to 40 C.F.R. part 403. Where 40 C.F.R. part 403 or subsequent revision places mandatory actions upon the Discharger as Control Authority but does not specify a timetable for completion of the actions, the Discharger shall complete the required actions within 6 months from the issuance date of this permit or the effective date of the 40 C.F.R. part 403 revisions, whichever comes later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies by U.S. EPA or other appropriate parties, as provided in the CWA. U.S. EPA may initiate enforcement action against a non-domestic user for non-compliance with applicable standards and requirements as provided in the CWA.

ii. The Discharger shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate and effective enforcement actions. The Discharger shall cause all non-

domestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new non-domestic user, upon commencement of the discharge.

iii. The Discharger shall perform the pretreatment functions as required in 40 C.F.R. part 403 including, but not limited to:

(a) Implement the necessary legal authorities as provided in 40 C.F.R. section 403.8(f)(1);

(b) Enforce the pretreatment requirements under 40 C.F.R. section 403.5 and 403.6;

(c) Implement the programmatic functions as provided in 40 C.F.R. section 403.8(f)(2); and

(d) Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 C.F.R. section 403.8(f)(3).

iv. **Pretreatment Reporting Requirements.** Pretreatment reporting requirements are included in the MRP, section X.D.2 of Attachment E.

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

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

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

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

ii. The use, disposal, storage, and transportation of biosolids shall comply with existing federal and state laws and regulations, including permitting requirements and technical standards included in 40 C.F.R. part 503. If the State Water Board and the Central Valley Water Board are given the authority

to implement regulations contained in 40 C.F.R. part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 C.F.R. part 503 whether or not they have been incorporated into this Order.

iii. The Discharger shall comply with biosolids monitoring requirements in section IX.A of the MRP, Attachment E.

iv. The on-site sludge/biosolids treatment, processing, and storage for the Facility is described in the Fact Sheet (Attachment F, section II.A). Any proposed change in the on-site treatment, processing, or storage of sludge/biosolids shall be reported to the Executive Officer at least **90 days** in advance of the change and shall not be implemented until written approval by the Executive Officer.

6. Other Special Provisions

a. **Title 22, or Equivalent, Disinfection Requirements.** From 1 May through 31 October, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to DDW reclamation criteria, Title 22, or equivalent.

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

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

B. Average Dry Weather Flow Prohibition (Section III.E). The average dry weather discharge flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the average dry weather flow discharge prohibition will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

C. Total Coliform Organisms Effluent Limitations (Section IV.A.1.e). For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last 7 days. For example, if a sample is collected on a Wednesday, the result from that sampling event and all results from the previous 6 days (i.e., Tuesday, Monday, Sunday, Saturday, Friday, and Thursday) are used to calculate the 7-day median. If the 7-day median of total coliform organisms exceeds an MPN of 2.2 per 100 milliliters from 1 May through 31 October or 23 per 100 milliliters from 1 November through 30 April, the Discharger will be considered out of compliance.

D. Total Residual Chlorine Effluent Limitations (Section IV.A.1.d). Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent

limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

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

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

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

If the effluent flow exceeds the permitted average dry weather flow during wet weather seasons, the effluent mass limitations contained in section IV.A.1.a shall not apply.

F. Priority Pollutant Effluent Limitations. Compliance with effluent limitations for priority pollutants shall be determined in accordance with section 2.4.5 of the SIP, as follows:

1. Dischargers shall be deemed out of compliance with an effluent limitation if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).
2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:
   a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or
   b. A sample result is reported as ND and the effluent limitation is less than the method detection limit (MDL).
3. When determining compliance with an AMEL and more than one sample result is available in a month or with an AWEL and more than one sample result is available in a week, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
   a. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the Discharger conducts a PMP (as described in section 2.4.5.1), the Discharger shall <u>not</u> be deemed out of compliance.

G. Dissolved Oxygen Receiving Water Limitation (Section V.A.5.a-c). Weekly receiving water monitoring is required in the MRP (Attachment E) and is sufficient to evaluate the impacts of the discharge and compliance with this Order. Weekly receiving water monitoring data, measured at Monitoring Locations RSW-002 and RSW-004, will be used to determine compliance with the dissolved oxygen receiving water limitations to ensure the discharge does not cause the dissolved oxygen concentrations in Old Alamo Creek to be reduced below 5.0 mg/L at any time and the dissolved oxygen concentrations in New Alamo Creek to be reduced below 7.0 mg/L at any time. However, should more frequent dissolved oxygen and temperature receiving water monitoring be conducted, Central Valley Water Board staff may evaluate compliance with parts “a” and “b”.

H. Temperature Receiving Water Limitations (Section V.A.15). Compliance with the temperature receiving water limitations will be determined based on the difference in the temperature measured at Monitoring Location RSW-003 compared to the downstream temperature measured at Monitoring Location RSW-004 for the averaging periods specified in section.V.A.15.b and V.A.15.c of the Waste Discharge Requirements.

I. Turbidity Receiving Water Limitations (Section V.A.17.a-e). Compliance with the turbidity receiving water limitations will be determined based on the change in turbidity measured at Monitoring Location RSW-001 compared to the downstream turbidity measured at Monitoring Location RSW-002.

J. Use of Delta Regional Monitoring Program and Other Receiving Water Data to Determine Compliance with Receiving Water Limitations. Delta Regional Monitoring Program data and other receiving water monitoring data that is not specifically required to be conducted by the Discharger under this Order will not be used directly to determine that the discharge is in violation of this Order. The Discharger may, however, conduct any site-specific receiving water monitoring deemed appropriate by the Discharger that is not conducted by the Delta Regional Monitoring Program and submit that monitoring data. As described in section VIII of Attachment E, such data may be used, if scientifically defensible, in conjunction with other receiving water data, effluent data, receiving water flow data, and other pertinent information to determine whether or not a discharge is in compliance with this Order.

K. Chronic Whole Effluent Toxicity Effluent Trigger (Section VI.C.2.a.ii). To evaluate compliance with the chronic whole effluent toxicity effluent trigger, the median chronic toxicity units (TUc) shall be the median of up to three consecutive chronic toxicity bioassays during a six week period. This includes a routine chronic toxicity monitoring event and two subsequent optional compliance monitoring events. If additional compliance monitoring events are not conducted the median is equal to the result for routine chronic toxicity monitoring event. If only one additional compliance monitoring event is conducted, the median will be established as the arithmetic mean of the routine monitoring event and compliance monitoring event.

Where the median chronic toxicity units exceed 1 TUc (as 100/NOEC) for any end point, the Discharger will be deemed out of compliance with the chronic toxicity effluent trigger if the median chronic toxicity units for any endpoint also exceed a reporting level of 1.3 TUc (as $100/EC_{25}$) <u>AND</u> the percent effect at 100% effluent exceeds 25 percent. The percent effect used to evaluate compliance with the chronic toxicity effluent trigger shall be based on the chronic toxicity bioassay result(s) from the sample(s) used to establish the median TUc result. If the median TUc is based on two equal chronic toxicity bioassay results, the percent effect of the sample with the greatest percent effect shall be used to evaluate compliance with the chronic toxicity effluent trigger.

ATTACHMENT A – DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the

dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

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

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

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

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

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

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

Inhibition Concentration
Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth), calculated from a continuous model (i.e., Interpolation Method). IC25 is a point estimate of the toxic concentration that would cause a 25-percent reduction in a non-lethal biological measurement.

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

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

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

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

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

Method Detection Limit (MDL)
MDL is the minimum measured concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results, as defined in in 40 C.F.R. part 136, Attachment B.

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

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

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

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

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

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

$$\text{Percent Effect of the Sample} = \frac{\text{Mean Control Response} - \text{Mean Sample Response}}{\text{Mean Control Response}} \bullet 100$$

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

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

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

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

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

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

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

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

Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – MAP

Figure B-1. Easterly Wastewater Treatment Plant Site Map

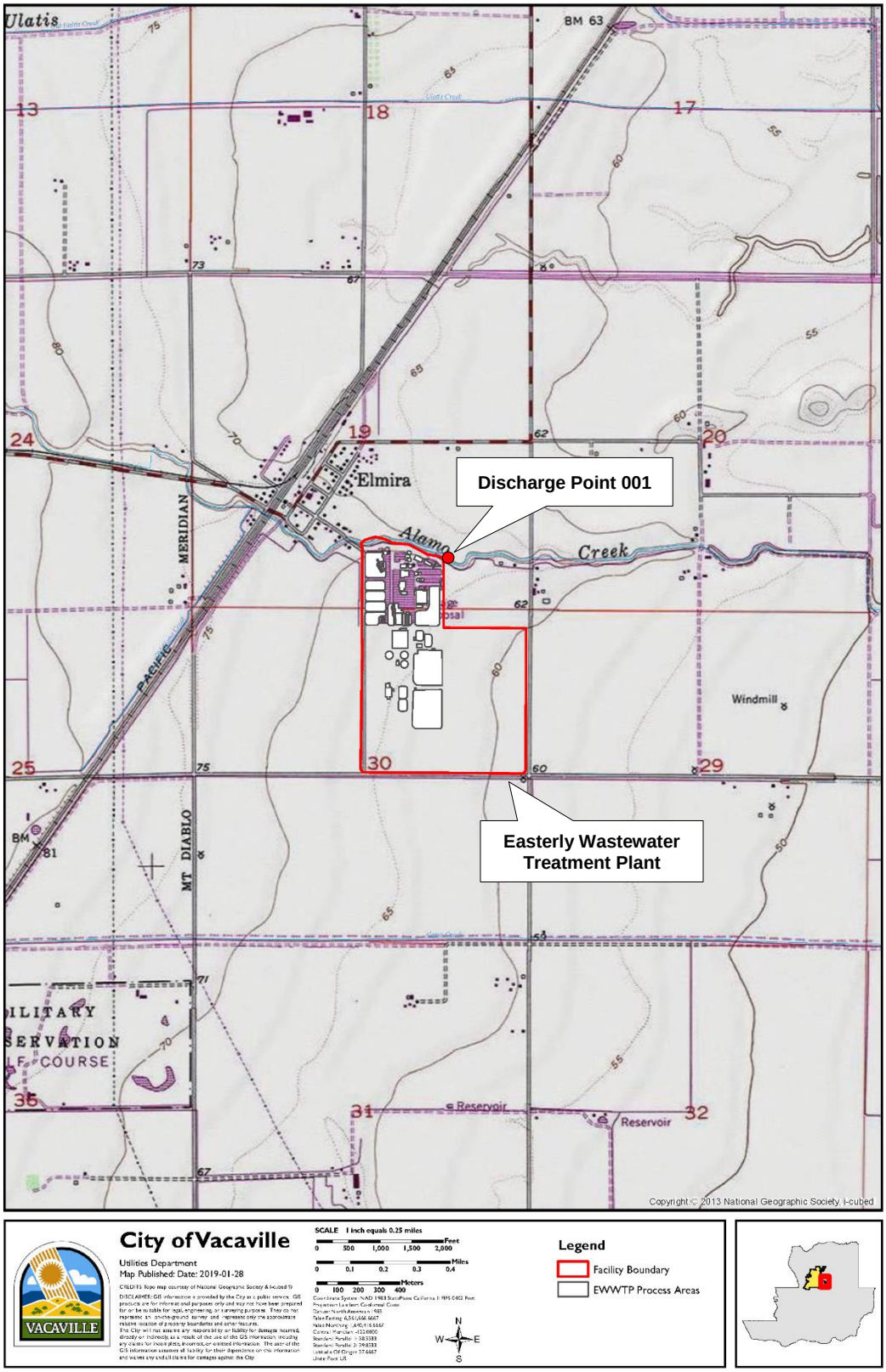
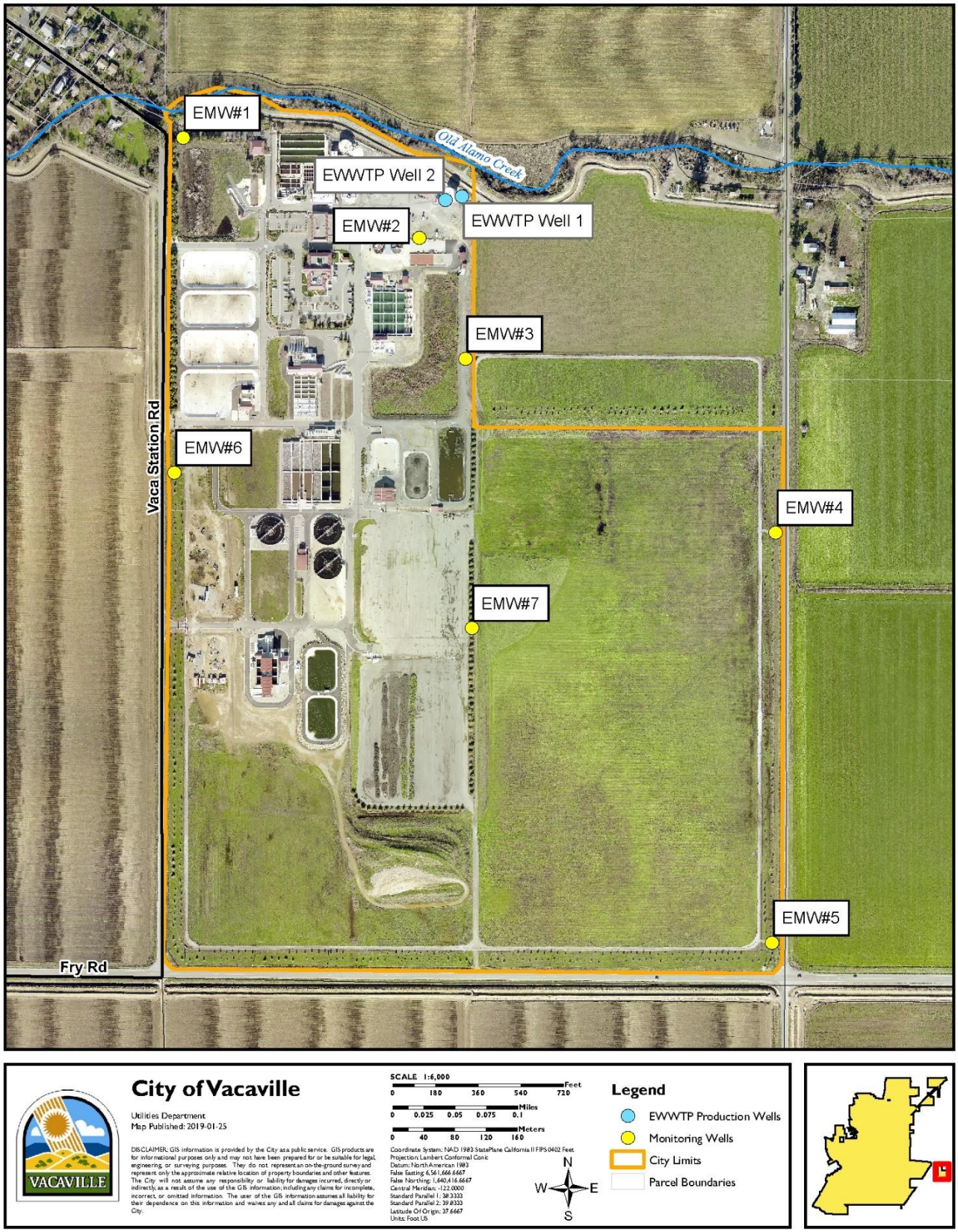
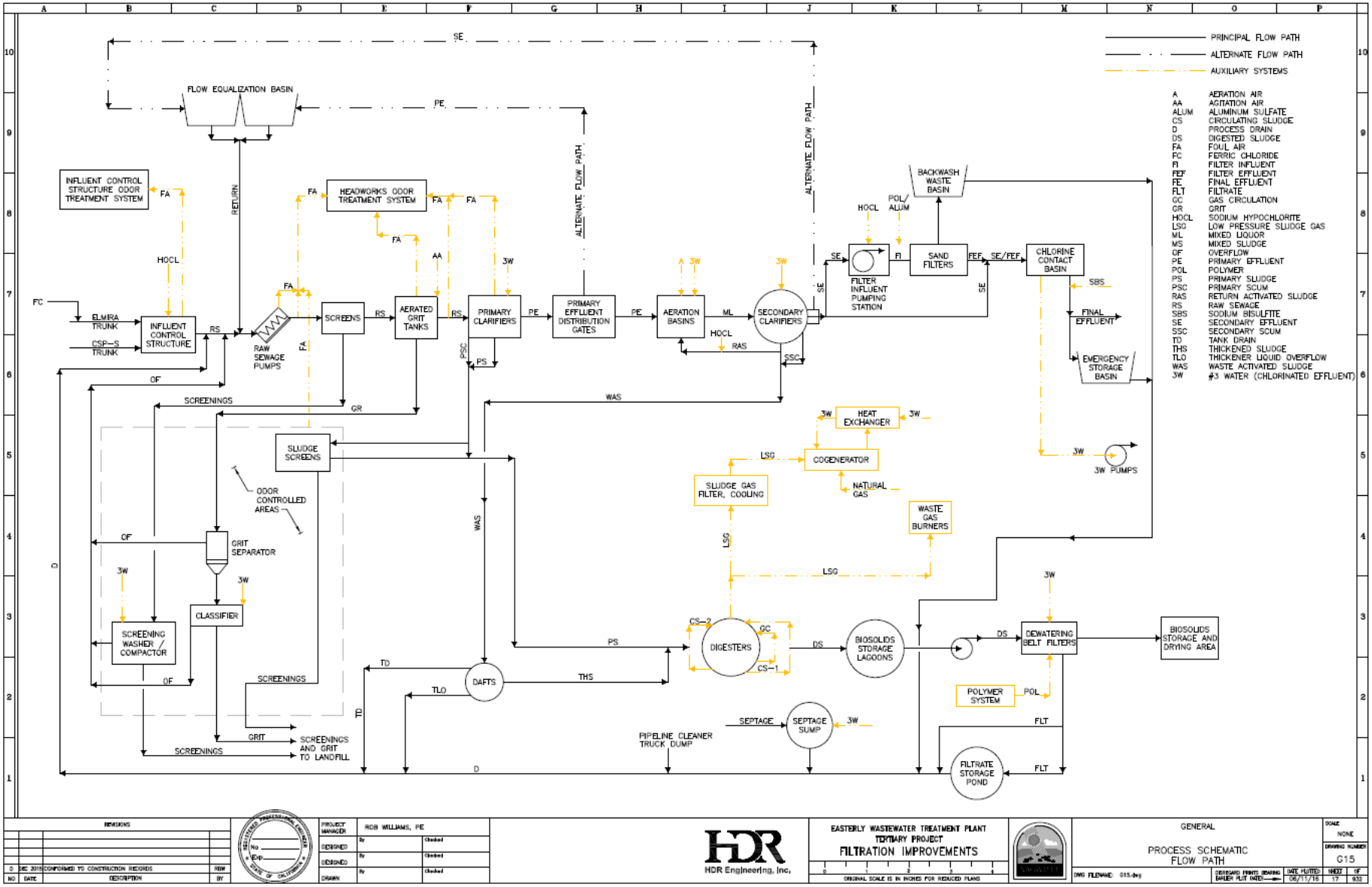


Figure B-2. Easterly Wastewater Treatment Plant Monitoring Wells



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the terms, requirements, and conditions of this Order. Any non-compliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; denial of a permit renewal application; or a combination thereof. (40 C.F.R. § 122.41(a); Wat. Code, §§ 13261, 13263, 13265, 13268, 13000, 13001, 13304, 13350, 13385)

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

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

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

G. Bypass

1. Definitions
   a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i))
   b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii))
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2))
3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):
   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and
   c. The Discharger submitted notice to the Central Valley Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C))
4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii))

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass. The notice shall be sent to the Central Valley Water Board. As of 21 December 2020, all notices shall be submitted electronically to the initial recipient (State Water Board), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(i))

   b. Unanticipated bypass. The Discharger shall submit a notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). The notice shall be sent to the Central Valley Water Board. As of 21 December 2020, all notices shall be submitted electronically to the initial recipient (State Water Board), defined in Standard Provisions – Reporting V.J below. Notices shall comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(m)(3)(ii))

H. Upset

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

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

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):

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

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

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

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

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

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

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

III. STANDARD PROVISIONS – MONITORING

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

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

1. The method minimum level (ML) is at or below the level of the most stringent effluent limitation established in the permit for the measured pollutant or pollutant parameter, and:

    a. The method ML is at or below the level of the most stringent applicable water quality criterion for the measured pollutant or pollutant parameter, or;

    b. The method ML is above the applicable water quality criterion but the amount of the pollutant or pollutant parameter in the facility's discharge is high enough that the method detects and quantifies the level of the pollutant or pollutant parameter in the discharge;

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

IV. STANDARD PROVISIONS – RECORDS

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

B. Records of monitoring information shall include:

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

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

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

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

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

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, V.B.5, and V.B.6 below. (40 C.F.R. § 122.41(k))
2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3))

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

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

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

   c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3))

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

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

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

6. Any person providing the electronic signature for such documents described in Standard Provision – V.B.1, V.B.2, or V.B.3 that are submitted electronically shall meet all relevant requirements of Standard Provisions – Reporting V.B and shall ensure that all of the relevant requirements of 40 C.F.R. part 3 (Cross-Media Electronic Reporting) and 40 C.F.R. part 127 (NPDES Electronic Reporting Requirements) are met for that submission. (40 C.F.R § 122.22(e))

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 C.F.R. § 122.41(l)(4))

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for reporting the results of monitoring, sludge use, or disposal practices. As of 21 December 2016, all reports and forms must be submitted electronically to the initial recipient, defined in Standard Provisions – Reporting V.J, and comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(l)(4)(i))

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Valley Water Board. (40 C.F.R. § 122.41(l)(4)(ii))

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

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

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

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

F. Planned Changes

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

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

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

   The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of

permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R.§ 122.41(l)(1)(iii))

G. Anticipated Non-compliance

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

H. Other Non-compliance

The Discharger shall report all instances of non-compliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. For non-compliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in Standard Provision – Reporting V.E and the applicable required data in appendix A to 40 C.F.R. part 127. The Central Valley Water Board may also require the Discharger to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section. (40 C.F.R. § 122.41(l)(7))

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Central Valley Water Board**,** State Water Board, or U.S. EPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8))

J. Initial Recipient for Electronic Reporting Data

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

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

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

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

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 122.42(b)(1)); and
2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 C.F.R. § 122.42(b)(2))

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

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (40 C.F.R. § 122.48) requires that all National Pollutant Discharge Elimination System (NPDES) permits specify monitoring and reporting requirements. Water Code sections 13267 and 13383 also authorize the Central Valley Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements that implement federal and California regulations.

I. GENERAL MONITORING PROVISIONS

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

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

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

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

E. Monitoring results, including non-compliance, shall be reported at intervals and in a manner specified in this MRP.

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

G. The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation Study are submitted annually to the State Water Board at the following address:

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

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

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INF-001	A location where a representative sample of the influent into the Facility can be collected prior to any plant return flows or treatment processes.
001	EFF-001	A location where a representative sample of the effluent from the Facility can be collected from the last connection through which wastes can be admitted to the outfall at Discharge Point 001 (Latitude: 38° 20’ 43” N, Longitude: 121° 54’ 05” W) and at the end of the chlorine contact basin (Latitude: 38° 20’ 43” N, Longitude: 121° 54’ 10” W) for disinfection efficiency (i.e., total coliform organisms)
--	RSW-001	Old Alamo Creek, approximately 1,050 feet upstream of Discharge Point 001
--	RSW-002	Old Alamo Creek, approximately 1,200 feet downstream of Discharge Point 001 (on the east side of Lewis Road).
--	RSW-003	New Alamo Creek, approximately 6,000 feet upstream of the confluence with Old Alamo Creek.
--	RSW-004	New Alamo Creek, approximately 2,000 feet downstream of the confluence with Old Alamo Creek, at the Brown-Alamo Dam.
--	RSW-005	Old Alamo Creek at the terminus, prior to entering New Alamo Creek.
--	RGW-001	Groundwater Monitoring Well 1
--	RGW-002	Groundwater Monitoring Well 2
--	RGW-003	Groundwater Monitoring Well 3
--	RGW-004	Groundwater Monitoring Well 4
--	RGW-005	Groundwater Monitoring Well 5
--	RGW-006	Groundwater Monitoring Well 6
--	RGW-007	Groundwater Monitoring Well 7
--	BIO-001	A location where a representative sample of biosolids can be obtained.
--	PND-001	A location where a representative sample of wastewater within the emergency storage pond can be collected.
--	SPL-001	A location where a representative sample of the municipal water supply can be obtained.

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

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

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

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	24-hr Composite[1]	1/Week	[2]
pH	standard units	Grab	1/Week[3,4]	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	1/Week	[2]
Non-Conventional Pollutants				
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month[3]	[2]
Total Dissolved Solids	mg/L	Grab	1/Month[3]	[2]

[1] 24-hour flow proportional composite.

[2] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

[3] Grab samples shall not be collected at the same time each to in order to get a complete representation of variations in the influent.

[4] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this MRP shall be maintained at the Facility.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

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

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
Biochemical Oxygen Demand (5-day @ 20° C)	mg/L	24-hr Composite[1]	3/Week	[2]
pH	standard units	Meter	Continuous[3]	[2]
Total Suspended Solids	mg/L	24-hr Composite[1]	3/Week	[2]
Priority Pollutants				
Bromoform	µg/L	Grab	1/Month	[2,5]
Carbon Tetrachloride	µg/L	Grab	1/Month	[2,5]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Chlorodibromomethane	µg/L	Grab	1/Month[4]	[2,5]
Chloroform	µg/L	Grab	1/Month[4]	[2,5]
Dichlorobromomethane	µg/L	Grab	1/Month[4]	[2,5]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Week[3,6]	[2]
Chlorine, Total Residual	mg/L	Meter	Continuous[8]	[2]
Dissolved Organic Carbon	mg/L	Grab	1/Month	[2]
Electrical Conductivity @ 25°C	µmhos/cm	24-hr Composite[1]	1/Month	[2]
Hardness, Total (as $CaCO_3$)	mg/L	24-hr Composite[1]	1/Month	[2]
Nitrate, Total (as N)	mg/L	Grab	1/Month	[2]
Nitrite, Total (as N)	mg/L	Grab	1/Month	[2]
Nitrate Plus Nitrite, Total (as N)	mg/L	Calculate	1/Month	[2]
Temperature	°C	Meter	Continuous[3]	[2]
Total Coliform Organisms	MPN/100 mL	Grab	5/Week[7]	[2]
Total Dissolved Solids	mg/L	24-hr Composite[1]	1/Month	[2]
Turbidity	NTU	Meter[9]	Continuous[11,12]	[2]
	NTU	Grab[10]	1/Week	[2]

1 24-hour flow proportional composite.

2 Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

3 pH and temperature shall be recorded at the time of ammonia sample collection.

4 Monitoring is required once per month from 1 April through 31 October

5 For priority pollutant constituents, the reporting level (RL) shall be consistent with sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment E, section IX.E).

6 Concurrent with whole effluent toxicity (WET) monitoring.

7 Samples for total coliform organisms may be collected at any point following disinfection.

8 Total residual chlorine must be monitored using an analytical method that is sufficiently sensitive to measure at the permitted level of 0.01 mg/L.

9 Monitoring requirements applicable from 1 May through 31 October

10 Monitoring requirements applicable from 1 November through 30 April

11 For continuous analyzers, the Discharger shall report documented routine meter maintenance activities including date, time of day, and duration, in which the analyzer(s) is not in operation. If analyzer(s) fail to provide continuous monitoring for more than 2 hours and influent and/or effluent from the disinfection process is not diverted for retreatment, the Discharger shall obtain and report hourly manual and/or grab sample results.

12 Report daily average and maximum turbidity from 1 May through 31 October.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

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

1. *Monitoring Frequency* – The Discharger shall perform quarterly acute toxicity testing, concurrent with effluent ammonia sampling.
2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.
3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).
4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency –* The Discharger shall perform routine quarterly chronic toxicity testing. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by a result greater than 1.3 chronic toxicity units (TUc) (as $100/EC_{25}$) AND a percent effect greater than 25 percent at 100 percent effluent, the Discharger has the option of conducting two additional compliance monitoring events and performing chronic toxicity testing using the species that exhibited toxicity in order to calculate a median. The optional compliance monitoring events shall occur at least 1 week apart and the final monitoring event shall be initiated no later than 6 weeks from the routine monitoring event that exhibited toxicity. See Compliance Determination Section VII.K for procedures for calculating the 6-week median.
2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this MRP.
3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
4. *Test Species* – The testing shall be conducted using the most sensitive species. The Discharger shall conduct chronic toxicity tests with *Ceriodaphnia dubia*, unless otherwise specified in writing by the Executive Officer.
5. *Methods* – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual).
6. *Reference Toxicant* – As required by the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP), all chronic toxicity tests shall be conducted with

concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* –For routine and compliance chronic toxicity monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. For Toxicity Reduction Evaluation (TRE) monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

Table E-4.Chronic Toxicity Testing Dilution Series

Sample	Dilutions[1] (%)					Control
	100	75	50	25	6.25	
% Effluent	100	75	50	25	6.25	0
% Control Water	0	25	50	75	93.75	100

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

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

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

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in the Method Manual.

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

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

1. **Chronic WET Reporting.** Routine and compliance chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the monthly self-monitoring report (SMR), and shall contain, at minimum:

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

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the PMSD;

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

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

   Additionally, the monthly SMR's shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring type, i.e., routine, compliance, Toxicity Evaluation Study (TES), or TRE monitoring.

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly SMR's and reported as percent survival.

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

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

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

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

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

E. Most Sensitive Species Screening. The Discharger shall perform re-screening to re-evaluate the most sensitive species if there is a significant change in the nature of the discharge. If there are no significant changes during the permit term, a re-screening must be performed prior to permit re-issuance and results submitted with the Report of Waste Discharge (ROWD).

1. **Frequency of Testing for Species Sensitivity Screening.** Species sensitivity screening for chronic toxicity shall include, at a minimum, chronic WET testing four consecutive calendar quarters using the water flea (*Ceriodaphnia dubia*), fathead minnow (*Pimephales promelas*), and green alga (*Pseudokirchneriella subcapitata*). The tests shall be performed using 100 percent effluent and one control. If the first two species sensitivity re-screening events result in no change in the most sensitive species, the Discharger may cease the species sensitivity re-screening testing and the most sensitive species will remain unchanged.

2. **Determination of Most Sensitive Species.** If a single test in the species sensitivity screening testing exceeds 1 TUc (as 100/NOEC), then the species used in that test shall be established as the most sensitive species. If there is more than a single test that exceeds 1 TUc (as 100/NOEC), then the species exceeding 1 TUc (as 100/NOEC) that exhibits the highest percent effect shall be established as the most sensitive species. If none of the tests in the species sensitivity screening exceeds 1 TUc (as 100/NOEC), but at least one of the species exhibits a percent effect greater than 10 percent, then the single species that exhibits the highest percent effect shall be established as the most sensitive species. In all other circumstances, the Executive Officer shall have discretion to determine which single species is the most sensitive considering the test results from the species sensitivity screening.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

The Discharger is required to participate in the Delta Regional Monitoring Program. [1]

[1] While participating in the Delta Regional Monitoring Program, the Discharger shall continue to submit receiving water data for temperature. At a minimum, one representative upstream receiving water temperature sample shall be submitted annually for the month of January. The temperature data shall be submitted in the January

Delta Regional Monitoring Program data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Order. Delta Regional Monitoring Program monitoring stations are established generally as "integrator sites" to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta Regional Monitoring Program monitoring stations would not normally be able to identify the source of any specific constituent but would be used to identify water quality issues needing further evaluation. Delta Regional Monitoring Program monitoring data, along with the individual Discharger data, may be used to help establish background receiving water quality for reasonable potential analyses (RPA's) in an NPDES permit after evaluation of the applicability of the data for that purpose. Delta Regional Monitoring Program data, as with all environmental monitoring data, can provide an assessment of water quality at a specific place and time that can be used in conjunction with other information, such as other receiving water monitoring data, spatial and temporal distribution and trends of receiving water data, effluent data from the Discharger's discharge and other point and non-point source discharges, receiving water flow volume, speed and direction, and other information to determine the likely source or sources of a constituent that resulted in the exceedance of a water quality objective.

A. Receiving Water Monitoring

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

The Discharger shall monitor Old Alamo Creek at Monitoring Locations RSW-001 and RSW-002 and New Alamo Creek at Monitoring Locations RSW-003 and RSW-004 as follows:

Table E-5. Receiving Water Monitoring – Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	cfs	Meter	1/Month[1]	--
Conventional Pollutants				
pH	standard units	Grab	1/Month	[3]
Non-Conventional Pollutants				
Dissolved Organic Carbon	mg/L	Grab	1/Month	[3]
Dissolved Oxygen	mg/L	Grab	1/Month	[3]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	2/Year[2]	[3]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[3]
Temperature	°F (°C)	Grab	1/Month	[3]
Total Dissolved Solids	mg/L	Grab	2/Year[2]	[3]
Turbidity	NTU	Grab	1/Month	[3]

[1] The Discharger shall use a flow meter or nearby gauging station, if available, to estimate flow within New Alamo Creek. Flow estimates shall be recorded for each day of sample collection.

[2] One sample to be taken during wet weather (1 November through 30 April), one sample to be taken during dry weather (1 May through 31 October).

[3] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

SMR and will be used to determine compliance with the temperature effluent limitation. Temperature data may be collected by the Discharger for this purpose or the Discharger may submit representative temperature data from the Delta RMP or other appropriate monitoring programs (e.g., Department of Water Resources, United States Geological Survey, etc.).

B. Groundwater Monitoring

1. **Monitoring Locations RGW-001, RGW-002, RGW-003, RGW-004, RGW-005, RGW-006, and RGW-007**

   Prior to construction and beginning a sampling program of any new groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Locations RGW-001, RGW-002, RGW-003, RGW-004, RGW-005, RGW-006, and RGW-007) and shall be sampled using U.S. EPA-approved methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

2. Prior to sampling, the groundwater elevations shall be measured, and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring at Monitoring Locations RGW-001, RGW-002, RGW-003, RGW-004, RGW-005, RGW-006, and RGW-007, and any new groundwater monitoring wells shall include, at a minimum, the following:

Table E-6. Groundwater Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	±0.01 feet	Measurement	1/Year	--
Groundwater Elevation[1]	±0.01 feet	Calculated	1/Year	--
Gradient	feet/feet	Calculated	1/Year	--
Gradient Direction	degrees	Calculated	1/Year	--
Conventional Pollutants				
pH	standard units	Grab	1/Year	[2]
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Year	[2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Year	[2]
Nitrate Plus Nitrite Nitrogen, Total (as N)	mg/L	Grab	1/Year	[2]
Standard Minerals[3]	µg/L	Grab	1/Year	[2]
Total Coliform Organisms	mg/L	Grab	1/Year	[2]
Total Dissolved Solids	mg/L	Grab	1/Year	[2]
Total Kjeldahl Nitrogen	mg/L	Grab	1/Year	[2]

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

2 Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

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

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids

1. Monitoring Location BIO-001

a. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for priority pollutants (excluding asbestos).

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

B. Municipal Water Supply

1. Monitoring Location SPL-001

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

Table E-7. Municipal Water Supply Monitoring

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

[1] If the water supply is from more than one source, electrical conductivity and total dissolved solids shall be reported as weighted averages and copies of supporting calculations shall be included.

[2] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

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

C. Emergency Storage Pond

1. Monitoring Location PND-001

a. The Discharger shall keep a log related to the use of the emergency storage pond. In particular, the Discharger shall record the following when any type of wastewater is directed to the emergency storage pond:

i. The date(s) when the wastewater is directed to the emergency storage pond;

ii. The type(s) of wastewater (e.g., untreated due to plant upset, tertiary treated) directed to the emergency storage pond;

iii. The total estimated volume of wastewater directed to the emergency storage pond (gallons); and

iv. The freeboard available in the emergency storage pond.

b. The emergency storage pond log shall be submitted with the monthly SMR's required in section X.B of the MRP.

D. Basin Plan Site-Specific Water Quality Objectives

1. Monitoring Locations EFF-001 and RSW-005

Resolution No. R5-2010-0047 approved a Basin Plan amendment to establish site-specific water quality objectives for chloroform, chlorodibromomethane, and dichlorobromomethane for New Alamo and Ulatis Creeks. The Discharger shall monitor concurrently at Monitoring Locations EFF-001 and RSW-005 from 1 November through 31 March, annually, to determine compliance with the site-specific objectives as follows:

Table E-8. Effluent and Receiving Water Monitoring – EFF-001 and RSW-005

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Priority Pollutants				
Chlorodibromomethane	µg/L	Grab	2/Month	[1,2]
Chloroform	µg/L	Grab	2/Month	[1,2]
Dichlorobromomethane	µg/L	Grab	2/Month	[1,2]

[1] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. part 136 or by methods requested by the Discharger that have been approved by the Central Valley Water Board or the State Water Board.

[2] For priority pollutant constituents, the RL shall be consistent with sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment E, section IX.E).

E. Effluent and Receiving Water Characterization

If the Discharger is participating in the Delta Regional Monitoring Program, as described in Attachment E, section VIII, this section only requires effluent characterization monitoring. However, the ROWD for the next permit renewal shall include, at minimum, one representative ambient background characterization monitoring event for priority pollutant constituents[1] during the term of the permit. The ambient background characterization monitoring event shall be conducted at Monitoring Location RSW-003. Data from the Delta Regional Monitoring Program may be utilized to characterize the receiving water in the permit renewal. Alternatively, the Discharger may conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with the ROWD. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point.

1. **Monthly Monitoring.** Monthly samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-003) and analyzed for the constituents listed in Table E-10, below. Bi-monthly monitoring (every other month) shall be conducted for one year beginning August 2020 and the results of such monitoring shall be submitted to the Central Valley Water Board with the monthly SMR's. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

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

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

[1] Appendix A to 40 C.F.R. part 423.

4. **Analytical Methods Report.** The Discharger shall submit a report electronically via CIWQS submittal outlining RL's, method detection limits (MDL's), and analytical methods for all constituents to be monitored in the influent, effluent, receiving water, and characterization monitoring by the due date shown in the Technical Reports Table. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in sections 2.3 and 2.4 of the SIP. The maximum required RL's for priority pollutant constituents shall be based on the ML's contained in Appendix 4 of the SIP, determined in accordance with sections 2.4.2 and 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 RL's, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table E-10, below, provides required maximum RL's in accordance with the SIP.

Table E-9. Effluent and Receiving Water Characterization Monitoring

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
2- Chloroethyl vinyl ether	µg/L	Grab	1
Acrolein	µg/L	Grab	2
Acrylonitrile	µg/L	Grab	2
Benzene	µg/L	Grab	0.5
Bromoform	µg/L	Grab	0.5
Carbon Tetrachloride	µg/L	Grab	0.5
Chlorobenzene	µg/L	Grab	0.5
Chloroethane	µg/L	Grab	0.5
Chloroform[2]	µg/L	Grab	2
Chloromethane	µg/L	Grab	2
Dibromochloromethane[2]	µg/L	Grab	0.5
Dichlorobromomethane[2]	µg/L	Grab	0.5
Dichloromethane	µg/L	Grab	2
Ethylbenzene	µg/L	Grab	2
Hexachlorobenzene	µg/L	Grab	1
Hexachlorobutadiene	µg/L	Grab	1
Hexachloroethane	µg/L	Grab	1
Methyl bromide (Bromomethane)	µg/L	Grab	1
Naphthalene	µg/L	Grab	10
3-Methyl-4-Chlorophenol	µg/L	Grab	
Tetrachloroethene	µg/L	Grab	0.5
Toluene	µg/L	Grab	2
trans-1,2-Dichloroethylene	µg/L	Grab	1
Trichloroethene	µg/L	Grab	2
Vinyl chloride	µg/L	Grab	0.5
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	
Trichlorofluoromethane	µg/L	Grab	
1,1,1-Trichloroethane	µg/L	Grab	0.5
1,1,2- Trichloroethane	µg/L	Grab	0.5
1,1-dichloroethane	µg/L	Grab	0.5
1,1-dichloroethylene	µg/L	Grab	0.5
1,2-dichloropropane	µg/L	Grab	0.5

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
1,3-dichloropropylene	µg/L	Grab	0.5
1,1,2,2-tetrachloroethane	µg/L	Grab	0.5
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	0.5
1,2,4-trichlorobenzene	µg/L	Grab	1
1,2-dichloroethane	µg/L	Grab	0.5
1,2-dichlorobenzene	µg/L	Grab	0.5
1,3-dichlorobenzene	µg/L	Grab	0.5
1,4-dichlorobenzene	µg/L	Grab	0.5
Styrene	µg/L	Grab	
Xylenes	µg/L	Grab	
1,2-Benzanthracene	µg/L	Grab	5
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate[3]	µg/L	Grab	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum	µg/L	24-hr Composite[4]	
Antimony	µg/L	24-hr Composite[4]	5
Arsenic	µg/L	24-hr Composite[4]	10
Asbestos	MFL	24-hr Composite[4]	
Barium	µg/L	24-hr Composite[4]	
Beryllium	µg/L	24-hr Composite[4]	2
Cadmium, Total Recoverable	µg/L	24-hr Composite[4]	0.5
Chromium (Total), Total Recoverable	µg/L	24-hr Composite[4]	10
Chromium (VI), Total Recoverable	µg/L	24-hr Composite[4]	10
Copper, Total Recoverable	µg/L	24-hr Composite[4]	0.5
Cyanide	µg/L	Grab	5
Fluoride	µg/L	24-hr Composite[4]	
Iron	µg/L	24-hr Composite[4]	
Lead, Total Recoverable	µg/L	24-hr Composite[4]	0.5
Mercury	µg/L	Grab	0.5
Manganese	µg/L	24-hr Composite[4]	
Molybdenum	µg/L	24-hr Composite[4]	
Nickel, Total Recoverable	µg/L	24-hr Composite[4]	20
Selenium, Total Recoverable	µg/L	24-hr Composite[4]	5
Silver, Total Recoverable	µg/L	24-hr Composite[4]	0.25
Thallium	µg/L	24-hr Composite[4]	1
Tributyltin	µg/L	24-hr Composite[4]	
Zinc, Total Recoverable	µg/L	24-hr Composite[4]	20
4,4'-DDD	µg/L	Grab	0.05
4,4'-DDE	µg/L	Grab	0.05
4,4'-DDT	µg/L	Grab	0.01
alpha-Endosulfan	µg/L	Grab	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	Grab	0.01
Alachlor	µg/L	Grab	
Aldrin	µg/L	Grab	0.005
beta-Endosulfan	µg/L	Grab	0.01
beta-Hexachlorocyclohexane	µg/L	Grab	0.005
Chlordane	µg/L	Grab	0.1
delta-Hexachlorocyclohexane	µg/L	Grab	0.005
Dieldrin	µg/L	Grab	0.01
Endosulfan sulfate	µg/L	Grab	0.01
Endrin	µg/L	Grab	0.01
Endrin Aldehyde	µg/L	Grab	0.01
Heptachlor	µg/L	Grab	0.01
Heptachlor Epoxide	µg/L	Grab	0.02

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Lindane (gamma-Hexachlorocyclohexane)	µg/L	Grab	0.5
PCB-1016	µg/L	Grab	0.5
PCB-1221	µg/L	Grab	0.5
PCB-1232	µg/L	Grab	0.5
PCB-1242	µg/L	Grab	0.5
PCB-1248	µg/L	Grab	0.5
PCB-1254	µg/L	Grab	0.5
PCB-1260	µg/L	Grab	0.5
Toxaphene	µg/L	Grab	
Atrazine	µg/L	Grab	
Bentazon	µg/L	Grab	
Carbofuran	µg/L	Grab	
2,4-D	µg/L	Grab	
Dalapon	µg/L	Grab	
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	Grab	
Di(2-ethylhexyl)adipate	µg/L	Grab	
Dinoseb	µg/L	Grab	
Diquat	µg/L	Grab	
Endothal	µg/L	Grab	
Ethylene Dibromide	µg/L	Grab	
Methoxychlor	µg/L	Grab	
Molinate (Ordram)	µg/L	Grab	
Oxamyl	µg/L	Grab	
Picloram	µg/L	Grab	
Simazine (Princep)	µg/L	Grab	
Thiobencarb	µg/L	Grab	
2,3,7,8-TCDD (Dioxin) [5]	µg/L	Grab	
2,4,5-TP (Silvex)	µg/L	Grab	
Diazinon	µg/L	Grab	
Chlorpyrifos	µg/L	Grab	
Ammonia (as N) [2]	mg/L	Grab	
Boron	µg/L	24-hr Composite[4]	
Chloride	mg/L	24-hr Composite[4]	
Flow[2]	MGD	Meter	
Hardness (as $CaCO_3$) [2]	mg/L	24-hr Composite[4]	
Foaming Agents (MBAS)	µg/L	24-hr Composite[4]	
Mercury, Methyl	ng/L	Grab	
Nitrate (as N) [2]	mg/L	Grab	
Nitrite (as N) [2]	mg/L	Grab	
pH[2]	Std Units	Grab	
Phosphorus, Total (as P)	mg/L	24-hr Composite[4]	
Specific conductance (EC) [2]	µmhos/cm	24-hr Composite[4]	
Sulfate	mg/L	24-hr Composite[4]	
Sulfide (as S)	mg/L	24-hr Composite[4]	
Sulfite (as SO_3)	mg/L	24-hr Composite[4]	
Temperature[2]	°C	Grab	
Total Dissolved Solids (TDS) [2]	mg/L	24-hr Composite[4]	

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

[2] In order to verify if bis (2-ethylhexyl) phthalate is truly present, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.
[3] The Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given month, as required in Table E-3, except for hardness, pH, and temperature, which shall be conducted concurrently with the effluent sampling.
[4] 24-hour flow proportional composite.
[5] Two samples: once during wet weather and once during dry weather during the 12-month period

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

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

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or non-compliance with the specific date and task. If non-compliance is reported, the Discharger shall state the reasons for non-compliance 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 (SMR's)

1. The Discharger shall electronically submit SMR's using the State Water Board's California Integrated Water Quality System (CIWQS) Program website http://www.waterboards.ca.gov/water_issues/programs/ciwqs/. The CIWQS website will provide additional information for SMR submittal in the event there will be a planned service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit monthly SMR's including the results of all required monitoring using U.S. EPA-approved test methods or other test methods specified in this Order. SMR's are to include all new monitoring results obtained since the last SMR was submitted. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. Monthly SMR's are required even if there is no discharge. If no discharge occurs during the month, the monitoring report must be submitted stating that there has been no discharge.

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

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	Submit with monthly SMR
5/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
3/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
2/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February of following year
1/Year	Permit effective date	1 January through 31 December	1 February of following year

4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable RL and the current laboratory's MDL, as determined by the procedure in 40 C.F.R. part 136.

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

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

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

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

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

   d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger

to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. **Multiple Sample Data.** When determining compliance with an average monthly effluent limitation (AMEL), average weekly effluent limitation (AWEL), or maximum daily effluent limitation (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 DNQ or ND. In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

6. The Discharger shall submit SMRs in accordance with the following requirements:

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

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

   c. The Discharger shall attach all final laboratory reports from all contracted commercial laboratories, including quality assurance/quality control information, with all SMR's for which sample analyses were performed.

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

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

   b. **Removal Efficiency (BOD_5 and TSS).** The Discharger shall calculate and report the percent removal of BOD_5 and TSS in the SMR's. The percent removal shall be calculated as specified in section VII.A of the Waste Discharge Requirements.

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

d. **Dissolved Oxygen Receiving Water Limitations**. The Discharger shall report monthly in the SMR's the dissolved oxygen concentrations in the receiving water (Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004).

e. **Turbidity Receiving Water Limitations**. The Discharger shall calculate and report the turbidity increase in the receiving waters applicable to the natural turbidity conditions specified in section V.A.17.a-e of the Waste Discharge Requirements.

f. **Temperature Receiving Water Limitations**. The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at Monitoring Locations RSW-003 and RSW-004 for the averaging periods specified in section V.A.15.b and V.A.15.c of the Waste Discharge Requirements.

C. Discharge Monitoring Reports (DMR's)

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

D. Other Reports

1. **Annual Operations Report.** The Discharger shall submit a written report to the Central Valley Water Board, electronically via CIWQS submittal, containing the following by the due date in the Technical Reports Table:

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

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

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

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

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

2. **Annual Pretreatment Reporting Requirements**. The Discharger shall submit annually 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 the Discharger is not in compliance with any conditions or requirements of this Order, including non-compliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for non-compliance and state how and when the Discharger shall comply with such conditions and requirements.

An annual report shall be submitted by the due date shown in the Technical Reports Table and shall include at least the following items:

a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants U.S. EPA has identified under section 307(a) of the CWA that are known or suspected to be discharged by non-domestic 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 C.F.R. part 136 and amendments thereto.

b. A discussion of upset, interference, or pass-through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by non-domestic users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the non-domestic 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 non-compliance with sludge disposal requirements.

c. The cumulative number of non-domestic users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of non-domestic user responses.

d. An updated list of the Discharger's significant industrial users (SIU's) 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 SIU's subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall indicate which SIU's, 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 C.F.R. section 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 summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the SIU's. The summary shall include:

i. The names and addresses of the SIU's 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.

g. The Discharger shall characterize the compliance status of each SIU by providing a list or table that 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 POTW 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 the facility is in significant non-compliance (SNC) as defined at 40 C.F.R. section 403.8(f)(2)(viii) at any time during the year;

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 POTW; and

xi. Disconnection from discharge to the POTW.

h. A brief description of any programs the POTW implements to reduce pollutants from non-domestic users that are not classified as SIU's;

i. 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;

j. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and

k. 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 C.F.R. section 403.8(f)(2)(viii).

Pretreatment program reports shall be submitted electronically to the Central Valley Water Board via CIWQS submittal and the:

State Water Resources Control Board

NPDES_wastewater@waterboards.ca.gov

and the

U.S. EPA Region 9 Pretreatment Coordinator

R9Pretreatment@epa.gov

3. **Technical Report Submittals**. This Order includes requirements to submit a ROWD, special study technical reports, progress reports, and other reports identified in the MRP (hereafter referred to collectively as "technical reports"). The Technical Reports Table, below, summarizes all technical reports required by this Order and the due dates for submittal. All technical reports shall be submitted electronically via CIWQS submittal. Technical reports should be uploaded as PDF, Microsoft Word, or Microsoft Excel file attachments.

Table E-11. Technical Reports

Report #	Technical Report	Due Date	CIWQS Report Name
Standard Reporting Requirements			
1	Report of Waste Discharge	**<1 year prior to permit expiration date >**	ROWD
2	Analytical Methods Report	6 August 2019	MRP IX.D.4
3	Annual Operations Report	1 February 2020	MRP X.D.1
4		1 February 2021	MRP X.D.1
5		1 February 2022	MRP X.D.1
6		1 February 2023	MRP X.D.1
7		1 February 2024	MRP X.D.1
Other Reports			
8	Progress Report on Salinity and Mercury Pollution Minimization Activities	**<1 year prior to permit expiration date >**	WDR VI.C.3.a
9	Annual Pretreatment Report	1 February 2020	MRP X.D.2
10		1 February 2021	MRP X.D.2
11		1 February 2022	MRP X.D.2
12		1 February 2023	MRP X.D.2
13		1 February 2024	MRP X.D.2

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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 discusses the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

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

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	5A480105002
CIWQS Facility Place ID	222057
Discharger	City of Vacaville
Name of Facility	Easterly Wastewater Treatment Plant
Facility Address	6040 Vaca Station Road
	Elmira, CA 95625
	Solano County
Facility Contact, Title and Phone	Curtis Paxton, Director of Utilities, (707) 469-6400
Authorized Person to Sign and Submit Reports	Curtis Paxton, Director of Utilities, (707) 469-6400
Mailing Address	650 Merchant Street, Vacaville, CA 95688
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Yes
Recycling Requirements	Not Applicable
Facility Permitted Flow	15 million gallons per day (MGD), average dry weather flow
Facility Design Flow	15 MGD, average dry weather flow
Watershed	Cache Slough
Receiving Water	Old Alamo Creek
Receiving Water Type	Inland Surface Water

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

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

B. The Facility discharges wastewater to Old Alamo Creek, a water of the United States and tributary of New Alamo Creek, Ulatis Creek, Cache Creek Slough, and the Sacramento-San Joaquin Delta within the Cache Slough watershed. The Discharger was previously regulated

by Order R5-2014-0072-01 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0077691 adopted on 6 June 2014 and amended on 9 October 2014 with an expiration date of 31 July 2019. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

C. When applicable, state law requires dischargers to file a petition with the State Water Resources Control Board (State Water Board), Division of Water Rights and receive approval for any change in the point of discharge, place of use, or purpose of use of treated wastewater that decreases the flow in any portion of a watercourse. The State Water Board retains separate jurisdictional authority to enforce any applicable requirements under Water Code section 1211. This is not an NPDES permit requirement.

D. The Discharger filed a Report of Waste Discharge (ROWD) and submitted an application for reissuance of its Waste Discharge Requirements (WDR's) and NPDES permit on 30 January 2019. The application was deemed complete on 7 March 2019. A site visit was conducted on 14 December 2018 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.

E. Regulations at 40 C.F.R. section 122.46 limit the duration of NPDES permits to a fixed term not to exceed 5 years. Accordingly, Table 3 of this Order limits the duration of the discharge authorization. Under 40 C.F.R. section 122.6(d), states authorized to administer the NPDES program may administratively continue state-issued permits beyond their expiration dates until the effective date of the new permits, if state law allows it. Pursuant to California Code of Regulations (CCR), Title 23, section 2235.4, the terms and conditions of an expired permit are automatically continued pending reissuance of the permit if the Discharger complies with all federal NPDES requirements for continuation of expired permits.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Vacaville and community of Elmira, and serves a population of approximately 100,220. The design average dry weather flow capacity of the Facility is 15 MGD.

A. Description of Wastewater and Biosolids Treatment and Controls

The Discharger completed and commissioned a tertiary filtration unit in early 2015 to comply with CCR, Title 22, division 4, chapter 3 (Title 22) disinfection requirements, which are applicable during the dry season. The current treatment system at the Facility consists of headworks, primary sedimentation basins, aeration basins (nitrification and denitrification), secondary circular clarifiers, tertiary filtration via sand filters, a chlorination contact chamber, dechlorination facilities, a concrete-lined emergency storage basin, and flow equalization basins.

Sludge is anaerobically digested, dewatered using a belt filter press, then air-dried to produce biosolids, which are subsequently hauled to the Recology Landfill. The Facility produces an approximate average of 1,240 dry metric tons of dried biosolids annually. Transportation and disposal/reuse of the biosolids is regulated by U.S. EPA under 40 C.F.R. part 503.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 19, T6N, R1E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point 001 to Old Alamo Creek, a water of the United States and tributary of New Alamo Creek, Ulatis Creek, Cache Creek Slough, and the Sacramento-San Joaquin Delta, at a point latitude 38° 20' 48" N and longitude 121° 54' 06" W.

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

Effluent limitations contained in Order R5-2014-0072-01 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2014-0072-01 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (October 2015 – September 2018)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	--	--	15[1]	--	--	30.5[2]
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L[3]	20	25	30	[4]	[4]	[4]
	mg/L[5,6]	10	15	20	7.0	10	13
	mg/L[5,7]	20	25	30	5.0	7.0	10
	lbs/day[3,8]	2,504	3,129	3,755	[4]	[4]	[4]
	lbs/day[5,6,8]	1,252	1,878	2,504	413	558	672
	lbs/day[5,7,8]	2,504	3,129	3,755	430	669	1,055
	% Removal	85	--	--	97.6[9]	--	--
pH	standard units	--	--	6.5 – 8.5	--	--	6.7 – 8.2
Total Suspended Solids	mg/L[3]	30	45	50	[4]	[4]	[4]
	mg/L[5,6]	10	15	20	1.6	2.5	6.5
	mg/L[5,7]	30	45	50	1.8	3.9	11
	lbs/day[3,8]	3,755	5,633	6,259	[4]	[4]	[4]
	lbs/day[5,6,8]	1,252	1,878	2,504	104	165	468
	lbs/day[5,7,8]	3,755	5,633	6,259	145	336	1,042
	% Removal	85	--	--	99.3[9]	--	--
Non-Conventional Pollutants							
Ammonia, Total (as N)	mg/L	1.4	--	2.3	0.070	--	0.11
	lbs/day[8]	175	--	288	4.0	--	6.3
Chlorine, Total Residual	mg/L	--	0.011[10]	0.019[11]	--	--	3.33[20]
Electrical Conductivity @ 25°C	µmhos/cm	1,320[12]	--	--	1,043[13]	--	--
Nitrate Plus Nitrite, Total (as N)	mg/L	13.6	--	--	13.5	--	--
Settleable Solids	mg/L[7]	0.10	--	0.20	ND	--	ND
Total Coliform Organisms	MPN/100 mL[3]	23[14]	240[15]	--	--	--	[4]
	MPN/100 mL[5,6]	2.2[14]	23[15]	240[16]	--	--	49
	MPN/100 mL[5,7]	23[14]	240[15]	--	--	--	170
Acute Toxicity	% Survival	--	--	70[17]/90[18]	--	--	90[19]

Parameter	Units	Effluent Limitation			Monitoring Data (October 2015 – September 2018)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge

ND – Non-Detect
[1] Applied as an average dry weather flow effluent limitation.
[2] Represents the maximum observed daily discharge.
[3] Interim effluent limitations effective until 30 April 2015.
[4] Interim effluent limitations were not applicable from October 2015 through September 2018.
[5] Final effluent limitations effective 1 May 2015.
[6] Effluent limitations applicable from 1 May through 31 October.
[7] Effluent limitations applicable from 1 November through 30 April.
[8] Based on an average dry weather flow of 15 MGD.
[9] Represents the minimum reported percent removal.
[10] Applied as a 4-day average effluent limitation.
[11] Applied as a 1-hour average effluent limitation.
[12] Applied as an annual average effluent limitation.
[13] Represents the maximum observed annual average concentration.
[14] Applied as a 7-day median effluent limitation.
[15] Not to be exceeded more than once in any 30-day period.
[16] Applied as an instantaneous maximum effluent limitation.
[17] Minimum percent survival for any one bioassay.
[18] Median percent survival of three consecutive acute bioassays.
[19] Represents the minimum observed percent survival.
[20] Stipulated Administrative Civil Liability Order R5-2016-0553 was issued for the violation.

D. Compliance Summary

1. The Central Valley Water Board issued Administrative Civil Liability (ACL) Complaint R5-2015-0514 on 9 March 2015, which proposed to assess a civil liability of $6,000 against the Discharger for effluent violations for ammonia that occurred on 11 August 2014 under Order R5-2014-0072. ACL Complaint R5-2015-0514 also identified non-serious effluent violations for total trihalomethanes that occurred on 8 July 2014 under Order R5-2008-0055-01; however, these violations were not subject to mandatory minimum penalties. The Discharger paid the mandatory minimum penalty of $6,000.

2. The Discharger entered into a settlement agreement and issued Stipulated Order R5-2016-0553 on 9 June 2016 for discharging approximately 211,880 gallons of chlorinated wastewater to Old Alamo Creek on 9 October 2015. The Discharger settled the Stipulated Order partially through payment and partially through the completion of a Supplemental Environmental Project (SEP). The SEP consisted of lining the Facility's emergency storage pond with concrete to protect groundwater, demolishing a decommissioned portion of the Facility, completing pavement repairs to the biosolids drying beds, constructing an equipment storage building, and constructing an acetic acid chemical feed system. The lining of the emergency storage basin was completed in March 2018 and the remaining components of the SEP are expected to be completed in the spring of 2019.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

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

A. Legal Authorities

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

B. California Environmental Quality Act (CEQA)

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

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

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

   a. **Basin Plan.** The Central Valley Water Board adopted a Water Quality Control Plan for the Sacramento and San Joaquin River Basins, Fifth Edition, May 2018 (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

   The Basin Plan in Table 2-1, section 2, does not specifically identify beneficial uses for Old Alamo Creek, but does identify present and potential uses for the Sacramento-San Joaquin Delta, to which Old Alamo Creek, via New Alamo Creek, Ulatis Creek, and Cache Creek Slough, are tributary. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). On 28 April 2005, the Central Valley Water Board adopted an amendment to the Basin Plan to de-designate four beneficial uses of Old Alamo Creek. Based on the amendment, and as stated in section 2.1 of the Basin Plan, the MUN; cold freshwater habitat (COLD); migration of aquatic organisms (MIGR); and spawning, reproduction, and/or early development (SPWN) beneficial uses do not apply to Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek. Thus, beneficial uses applicable to Old Alamo Creek and New Alamo Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

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

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

4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16 ("*Statement of Policy with Respect to Maintaining High Quality of Waters in California*") (State Antidegradation Policy). The State Antidegradation Policy is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. The State Antidegradation Policy requires that existing water quality be maintained unless degradation is justified based on specific findings. The Basin Plan implements, and incorporates by reference, both the state and

federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and the State Antidegradation Policy. The Central Valley Water Board finds this Order is consistent with the federal and State Water Board antidegradation regulations and policy.

5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. section 122.44(l) restrict backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

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 (MCL's) designed to protect human health and ensure that water is safe for domestic use.

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

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

   The most recent toxic chemical data report indicates that copper and lead compounds were discharged to the Facility. The Central Valley Water Board has adopted numeric water quality objectives for copper and lead in the Basin Plan. As detailed elsewhere in this Order, available effluent quality data indicate that neither of these constituents have a reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to Water Code section 13263.6(a).

9. **Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 C.F.R. parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Discharger has submitted a Notice of Intent (NOI) and has been approved for coverage under the State Water Board Water Quality Order 2014-0057-DWQ, General Permit for Strom Water Discharges Associated with Industrial Activities (NPDES General Permit No. CAS000001). Therefore, this Order does not regulate storm water.

10. **Statewide General Waste Discharge Requirements for Sanitary Sewer Systems.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order 2006-0003-DWQ (General Order) on 2 May 2006. The State Water Board amended the MRP for the General Order through Order WQ 2013-0058-EXEC on 6 August 2013. The General Order requires public agencies that own or operate sanitary sewer systems with greater than 1 mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMP's) and report all sanitary sewer overflows (SSO's), among other requirements and prohibitions.

    The Discharger is subject to the requirements of, and must comply with the General Order, as amended by State Water Board Order WQ 2013-0058-EXEC and any subsequent Order.

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 (WQLS's). 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 6 April 2016, U.S. EPA gave final approval to California's 2014 and 2016 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of WQLS's, which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 C.F.R. part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLS's]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." Old Alamo Creek and New Alamo Creek are not listed as impaired on the 2014 and 2016 303(d) list.
2. **Total Maximum Daily Loads (TMDL's).** At the time of this permit renewal, there are no approved TMDL's with waste load allocations (WLA's) that apply to this Facility.
3. The 303(d) listings and TMDL's have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3 of this Fact Sheet.

E. Other Plans, Policies and Regulations

1. **Title 27.** The discharge authorized herein, and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, CCR, section 20005 *et seq* (hereafter Title 27). The exemption, pursuant to Title 27, CCR, section 20090(a), is based on the following:
    a. The waste consists primarily of domestic sewage and treated effluent;
    b. The WDR's are consistent with water quality objectives; and
    c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations),

304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

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

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations (WQBEL's) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page 4-27 contains an implementation policy, "*Policy for Application of Water Quality Objectives*," which specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This policy complies with 40 C.F.R. section 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) U.S. EPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "*Policy for Application of Water Quality Objectives*")(40 C.F.R. § 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at section 3.1.20) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCL's)*" in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCL's. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

A. Discharge Prohibitions

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

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

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

4. **Prohibition III.D (No discharge of hazardous waste).** This prohibition is based on CCR, Title 22, section 66261.1 et seq. that prohibits discharge of hazardous waste.

5. **Prohibition III.E (Average dry weather flow).** This prohibition is based on the design average dry weather flow treatment capacity rating for the Facility and ensures the Facility is operated within its treatment capacity. Order R5-2014-0072-01 included flow as an effluent limit based on the Facility design flow. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

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

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

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

Based on this statutory requirement, U.S. EPA developed secondary treatment regulations, which are specified in 40 C.F.R. part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of 5-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal regulations at 40 C.F.R. part 133 establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. In addition, 40 C.F.R. section 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month. This Order requires WQBEL's that are equal to or more stringent than the secondary technology-based treatment described in 40 C.F.R. part 133 (see section IV.C.3.c of the Fact Sheet for a discussion on pathogens, which includes WQBEL's for BOD_5 and TSS).

b. **pH.** The secondary treatment regulations at 40 C.F.R. part 133 also require that pH be maintained between 6.0 and 9.0 standard units. This Order, however, requires more stringent WQBEL's for pH to comply with the Basin Plan's water quality objectives for pH.

Summary of Technology-based Effluent Limitations
Discharge Point 001
Table F-4. Summary of Technology-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	30[1]	45[1]	--	--	--
	% Removal	85	--	--	--	--
pH	standard units	--	--	--	6.0[1]	9.0[1]
Total Suspended Solids	mg/L	30[1,2]	45[1,2]	--	--	--
	% Removal	85	--	--	--	--

[1] More stringent WQBEL's are applicable to the discharge and are included in this Order, as described further in section IV.C.3.c of this Fact Sheet.
[2] Effluent limitations applicable from 1 November through 30 April.

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

1. Scope and Authority

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

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

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

Finally, 40 C.F.R. section 122.44(d)(1)(vii) requires effluent limits to be developed consistent with any available WLA's developed and approved for the discharge.

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 MUN.

The Basin Plan on page 2-1 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning*…" and with respect to disposal of wastewaters states that "...*disposal of wastewaters is [not] a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*"

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

a. Receiving Water and Beneficial Uses

Alamo Creek originates in the Vaca Mountains and flows east-southeast through the City of Vacaville, ultimately joining Ulatis Creek on the Sacramento Valley floor. In the early 1960's, the Solano County Flood Control and Water Conservation District

and the U.S. Department of Agriculture, Soil Conservation Service built the Ulatis Creek Watershed Protection and Flood Prevention Project. As part of this project, portions of Alamo Creek were realigned to form a new channel bypassing the City of Vacaville.

Part of the original Alamo Creek channel was left in place and renamed Old Alamo Creek. The realignment of the creek cut off flows from the upper watershed to Old Alamo Creek, leaving it dry with the exception of discharges from the Facility, Kinder-Morgan groundwater remediation project, storm water runoff, and agricultural runoff. Old Alamo Creek discharges into New Alamo Creek.

New Alamo Creek is an engineered earthen channel that conveys all of Alamo Creek's flows from just above Leisure Town Road to the confluence of Ulatis Creek. Overall, New Alamo Creek travels roughly 20 miles before joining Ulatis Creek. The Alamo/New Alamo Creek watershed encompasses agricultural, natural/forest, and urban land uses.

Refer to III.C.1 above for a complete description of the 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 October 2015 through September 2018, which includes effluent and ambient background data submitted in SMR's.

c. **Assimilative Capacity/Mixing Zone**

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

For non-priority pollutant constituents, the allowance of mixing zones by the Central Valley Water Board is discussed in the Basin Plan, *Policy for Application of Water Quality Objectives*, which states in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives, depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the* [TSD]*. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.*"

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

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

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

A: A mixing zone shall not:

1. *compromise the integrity of the entire water body;*
2. *cause acutely toxic conditions to aquatic life passing through the mixing zone;*
3. *restrict the passage of aquatic life;*
4. *adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;*
5. *produce undesirable or nuisance aquatic life;*
6. *result in floating debris, oil, or scum;*
7. *produce objectionable color, odor, taste, or turbidity;*
8. *cause objectionable bottom deposits;*
9. *cause nuisance;*
10. *dominate the receiving water body or overlap a mixing zone from different outfalls; or*
11. *be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution 88-63), this SIP supersedes the provisions of that policy.*"

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

"*The dilution credit, D, is a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution*

credit is a value used in the calculation of effluent limitations (described in section 1.4). ***Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some, or no priority pollutants in the discharge.***" [emphasis added]

The mixing zone is thus an administrative construct defined as an area around the outfall that may exceed water quality objectives but is otherwise protective of the beneficial uses. Dilution is defined as the amount of mixing that has occurred at the edge of this mixing zone under critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required.

ii. **Dilution/Mixing Zone Study Results.** The Discharger and Robertson-Bryan, Inc. developed a December 2012 mixing zone study titled *City of Vacaville Easterly Wastewater Treatment Plant Nitrate Dilution Credit and Mixing Zone Assessment* (Mixing Zone Study). The Mixing Zone Study evaluated assimilative capacity for nitrate and the available dilution within New Alamo Creek. The SIP's mixing zone requirements and the potential far-field nutrient enrichment impacts that could occur due to discharges of nitrate were evaluated for the proposed mixing zone. The Mixing Zone Study demonstrated that a mixing zone of 50 feet from the confluence with Old Alamo Creek meets the SIP's mixing zone requirements and the far-field nutrient enrichment effects would be immeasurable. Based on the harmonic mean flow within New Alamo Creek and the Discharger's Mixing Zone Study, Order R5-2014-0072-01 allowed for a dilution credit of 0.49:1 in calculating effluent limitations for nitrate plus nitrite.

iii. **Evaluation of Available Dilution for Human Health Criteria.** Section 1.4.2.2 of the SIP provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for the protection of human health, the TSD states that, "…*the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes.*"

There are no drinking water intakes in New Alamo Creek and based on a Use Attainability Analysis (UAA) conducted by the Discharger, MUN is neither an existing nor an attainable use. As stated in the Final Staff Report for the May 2010 Basin Plan Amendments to Establish Site-Specific Water Quality Objectives for Chloroform, Chlorodibromomethane, and Dichlorobromomethane for New Alamo and Ulatis Creeks (2010 Basin Plan Amendments), "*The UAA documented that no drinking water use of segment waters has occurred in the past or is occurring presently. The UAA concluded that MUN is neither an existing nor an attainable use in these water body segments and that no form of MUN use is reasonably expected to occur in the future in these water body segments based on system hydrologic and water quality characteristics, as well as the availability of higher quality water sources in the area."*

The Discharger has requested a human health mixing zone for compliance with water quality criteria for nitrate plus nitrite. Based on the Discharger's Mixing Zone Study, a dilution credit of 0.49:1 is justified. The human health mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire water body* – The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a water body (such as a river segment), then mixing zones are likely to have little effect on the integrity of the water body as a whole, provided that the mixing zone does not impinge on unique or critical habitats*."[1] The human health mixing zone is not applicable to aquatic life criteria. The human health mixing zone does not compromise the integrity of the entire water body.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, acutely toxic conditions will not occur in the mixing zone.

(c) *Shall not restrict the passage of aquatic life* – The human health mixing zone is not applicable to aquatic life criteria. Therefore, the mixing zone will not restrict the passage of aquatic life.

(d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws* – The human health mixing zone is not applicable to aquatic life criteria. The mixing zone will not impact biologically sensitive or critical habitats.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance. This Order requires end-of-pipe limitations for individual constituents and discharge prohibitions to prevent these conditions from occurring, which will ensure continued compliance with these mixing zone requirements. Additionally, the Discharger's Mixing Zone Study demonstrated that there are no nutrient enrichment impacts of the discharge, both in the near-field and the far-field. Therefore, the allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits, or cause nuisance.

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The human health mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – The human health mixing zone is not near a drinking water intake. There are no drinking water intakes in New Alamo Creek or in the lower reach of Ulatis Creek or Cache Creek Slough downstream of New Alamo Creek.

[1] TSD, pg. 33

The human health mixing zone, therefore, complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board considered the procedures and guidelines in U.S. EPA's *Water Quality Standards Handbook, 2nd Edition* (updated July 2007), section 5.1, and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

iv. **Evaluation of Available Dilution for Nitrate Plus Nitrite.** As discussed in section IV.C.3 of this Fact Sheet, based on existing effluent data, it appears the Facility cannot meet the end-of-pipe (no dilution) WQBEL's for nitrate plus nitrite.

The allowance of a mixing zone and dilution credits is a discretionary act by the Central Valley Water Board. When determining the appropriate dilution credits for a specific pollutant, several factors must be considered, such as available assimilative capacity, Facility performance, and best practicable treatment or control (BPTC).

The receiving water contains assimilative capacity for nitrate plus nitrite. As discussed above, a human health mixing zone with an associated dilution credit of 0.49:1 meets the mixing zone conditions specified in section 1.4.2.2.A of the SIP. However, an overarching mixing zone condition is that "*A mixing zone shall be as small as practicable,*" and section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.*"

Based on the current dataset, the maximum nitrate plus nitrite concentration is 13.8 mg/L, which indicates that the Facility would be unable to achieve more stringent effluent limitations calculated based on Facility performance, however, is capable of meeting the effluent limitations with the allowed dilution credits. This Order maintains the maximum human health dilution credit of 0.49 allowed in Order R5-2014-0072-01, resulting in an average monthly effluent limit (AMEL) of 14 mg/L, and establishes an average weekly effluent limit (AWEL) of 17 mg/L. Since this Order retains the current effluent limits calculated with updated background nitrate plus nitrite data and a new effluent coefficient of variation (CV), the dilution credit for nitrate plus nitrite permitted in this Order does not result in an increase in percent assimilative capacity used. The mixing zone for nitrate plus nitrite is considered as small as practicable and fully complies with the SIP and the Basin Plan.

Table F-5. Nitrate Plus Nitrite Mixing Zone Specifications

Length	Width	Mean Background Nitrate+Nitrite Concentration	Dilution Credit
50 feet	~30 feet[1]	2.3 mg/L (as N)	0.49:1

[1] Comprises entire width of New Alamo Creek, which varies depending on stream flow.

v. **Regulatory Compliance for Dilution Credits and Mixing Zones.** To fully comply with all applicable laws, regulations and policies of the state, the

Central Valley Water Board-approved mixing zones and the associated dilution credits are based on the following:

(a) Mixing zones are allowed under the SIP provided all elements contained in section 1.4.2.2 are met. The Central Valley Water Board has determined that these factors are met.

(b) Section 1.4.2.2 of the SIP requires mixing zones to be as small as practicable. The Central Valley Water Board has determined the mixing zone is as small as practicable.

(c) In accordance with section 1.4.2.2 of the SIP, the Central Valley Water Board has determined the mixing zone is as small as practicable and will not compromise the integrity of the entire water body, restrict the passage of aquatic life, dominate the water body, or overlap existing mixing zones from different outfalls. The mixing zone is small relative to the large size of the receiving water, is not at or near a drinking water intake, and does not overlap a mixing zone from a different outfall.

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

(e) The Central Valley Water Board has determined the discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under the federal or state endangered species laws, because the mixing zone is relatively small and acutely toxic conditions will not occur in the mixing zone. The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because the Order establishes end-of-pipe effluent limitations (e.g., for BOD_5 and TSS) and discharge prohibitions to prevent these conditions from occurring.

(f) As required by the SIP, in determining the extent of or whether to allow mixing zones and dilution credits, the Central Valley Water Board has considered the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded that the allowance of the mixing zone and dilution credits are adequately protective of the beneficial uses of the receiving water.

(g) The Central Valley Water Board has determined the mixing zone complies with the SIP for priority pollutants.

(h) Section 1.4.2.2.B of the SIP, in part states, *"The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements."* The Central Valley Water Board has determined full allowance of dilution is necessary for the Discharger to achieve compliance with this Order.

(i) The Central Valley Water Board has determined the mixing zones comply with the Basin Plan for non-priority pollutants. The Basin Plan requires a mixing zone not adversely impact beneficial uses. Beneficial uses will not

be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Central Valley Water Board has considered the procedures and guidelines in section 5.1 of U.S. EPA's *Water Quality Standards Handbook*, 2nd Edition (updated July 2007) and section 2.2.2 of the TSD. The SIP incorporates the same guidelines.

(j) The Central Valley Water Board has determined that allowing dilution factors that exceed those proposed by this Order would not comply with the State Antidegradation Policy for receiving waters outside the allowable mixing zone for nitrate plus nitrite. The State Antidegradation Policy incorporates the federal Antidegradation Policy and requires that existing quality of waters be maintained unless degradation is justified based on specific findings. Item 2 of the State Antidegradation Policy states:

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

The Central Valley Water Board has determined the effluent limitations required by this Order will result in the Discharger implementing BPTC of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the state will be maintained.

Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for nitrate plus nitrite, which have been adjusted for dilution credits, are appropriate and necessary to comply with the Basin Plan, SIP, federal antidegradation regulations, and the State Antidegradation Policy.

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

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

This Order has established the criteria for hardness-dependent metals based on the hardness of the receiving water (actual ambient hardness) as required by the SIP[1] and the CTR.[2] The SIP and the CTR require the use of "receiving water" or "actual

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

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used (40 C.F.R. § 131.38(c)(4)).

ambient" hardness, respectively, to determine effluent limitations for these metals. The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones.[1] Design flows for aquatic life criteria include the lowest 1-day flow with an average reoccurrence frequency of once in 10 years (1Q10) and the lowest average 7 consecutive day flow with an average reoccurrence frequency of once in 10 years (7Q10).[2] This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a 3-year period, on average.[3] The CTR requires that when mixing zones are allowed, the CTR criteria apply at the edge of the mixing zone; otherwise, the criteria apply throughout the water body including at the point of discharge.[4] The CTR does not define the term "ambient," as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully comply with the CTR and SIP.

i. **Summary Findings**

At design discharge conditions, Old Alamo Creek is effluent-dominated. Under these regularly occurring critical conditions, the effluent is the receiving water that is used to define the ambient receiving water conditions to define the appropriate water quality criteria in accordance with the CTR and SIP. Otherwise, if ambient downstream hardness was collected on the same day as effluent hardness, the downstream ambient hardness value is used. The Sacramento Superior Court has previously upheld the Central Valley Water Board's use of effluent hardness levels in effluent-dominated streams when developing effluent limitations for hardness-dependent metals. (*California Sportsfishing Protection Alliance v. California Regional Water Quality Control Board, Central Valley Region,* Super. Ct. Sacramento County, 2012, No. 34-2009-80000309) (Order Denying Petitioners' Motion to Strike Respondent's Return of Writ of Mandate and Granting Discharge of the Writ).

The Discharger did not collect hardness samples within Old Alamo Creek over the term of Order R5-2014-0072-01; however, hardness monitoring was conducted within New Alamo Creek, upstream of the confluence with Old Alamo Creek, at Monitoring Location RSW-003. For the purposes or this Order, the ambient hardness for Old Alamo Creek is represented by hardness data collected in the effluent, at Monitoring Location EFF-001, and within New Alamo Creek, at Monitoring Location RSW-003, from October 2015 through September 2018. The ambient hardness for Old Alamo Creek is represented by the data in Figure F-1, below, which shows ambient hardness ranging from 100 mg/L to 320 mg/L based on applicable ambient data collected from October 2015 through September 2018. Given the high variability in ambient hardness values, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum). Because of this variability, staff has determined that based on the ambient hardness concentrations measured in the receiving water, the Central Valley Water Board has discretion to select ambient hardness values within the range of 100 mg/L (minimum) up to 320 mg/L (maximum). Staff recommends that the

[1] 40 C.F.R. §131.38(c)(4)(ii)
[2] 40 C.F.R. §131.38(c)(2)(iii) Table 4
[3] 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2
[4] 40 C.F.R. §131.38(c)(2)(i)

Central Valley Water Board use the ambient hardness values shown in Table F-6 for the following reasons.

(a) The ambient receiving water hardness values shown in Table F-6 are consistent with design discharge conditions and will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.

(b) The Water Code mandates that the Central Valley Water Board establish permit terms that will ensure the reasonable protection of beneficial uses. In this case, using the lowest measured ambient hardness to calculate effluent limitations is not required to protect beneficial uses. Calculating effluent limitations based on the lowest measured ambient hardness is not required by the CTR or SIP and is not reasonable as it would result in overly conservative limits that will impart substantial costs to the Discharger and ratepayers without providing any additional protection of beneficial uses. In compliance with applicable state and federal regulatory requirements, after considering the entire range of ambient hardness values, Central Valley Water Board staff has used the ambient hardness values shown in Table F-6 to calculate the proposed effluent limitations for hardness-dependent metals. The proposed effluent limitations are protective of beneficial uses under all flow conditions.

(c) Using an ambient hardness that is higher than the minimum observed ambient hardness will result in limits that may allow increased metals to be discharged to Old Alamo Creek, but such discharge is allowed under the State Antidegradation Policy (State Water Board Resolution 68-16). The Central Valley Water Board finds that this degradation is consistent with the Antidegradation Policy (see antidegradation findings in section IV.D.4 of the Fact Sheet). The State Antidegradation Policy requires the Discharger to meet WDR's that will result in the BPTC of the discharge necessary to assure that: a) a pollution or nuisance will not occur, and b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.

(d) Using the ambient hardness values shown in Table F-6 is consistent with the CTR and SIP's requirements for developing metals criteria.

Table F-6. Summary of CTR Criteria for Hardness-Dependent Metals

CTR Metals	Ambient Hardness (mg/L)[2]	CTR Criteria (µg/L, total recoverable)[1]	
		Acute	Chronic
Copper	130	18	12
Chromium III	130	2,200	260
Cadmium	100 (acute) 130 (chronic)	4.5	3.0
Lead	100	82	3.2
Nickel	130	590	65
Silver	100	4.1	--
Zinc	130	150	150

CTR Metals	Ambient Hardness (mg/L)[2]	CTR Criteria (µg/L, total recoverable)[1]	
		Acute	Chronic

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

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

ii. **Background**

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

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

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

Where:

H = ambient hardness (as $CaCO_3$) [1]

WER = water-effect ratio

m, b = metal- and criterion-specific constants

The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected "design" hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a 3-year period.[2] Design flows for aquatic life criteria include the 1Q10 and the 7Q10. Since Old Alamo Creek is considered an effluent-dominated water body, the critical design flow is zero.

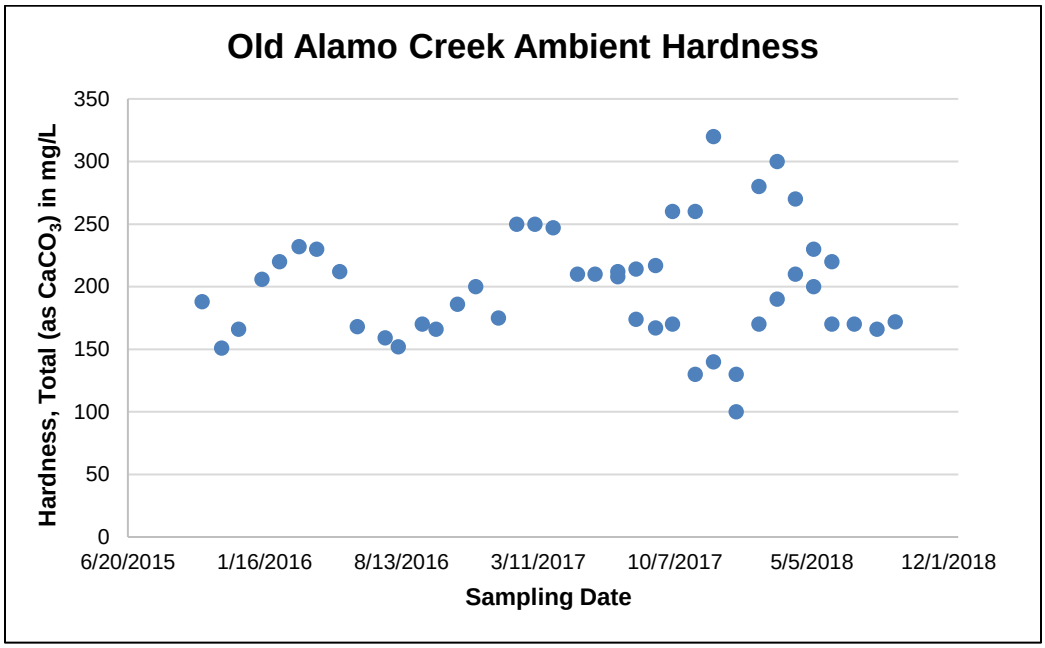
[1] For this discussion, all hardness values are expressed in mg/L as $CaCO_3$.

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

iii. **Ambient Conditions**

The ambient receiving water hardness varied from 100 mg/L to 320 mg/L based on 48 samples collected from October 2015 through September 2018 (see Figure F-1).

Figure F-1. Observed Ambient Hardness Concentrations 100 mg/L – 320 mg/L



In this analysis, the entire range of ambient hardness concentrations shown in Figure F-1 were considered to determine the appropriate ambient hardness to calculate the CTR criteria and effluent limitations that are protective under all discharge conditions.

iv. **Approach to Derivation of Criteria**

As shown above, ambient hardness is variable. Because of the variation, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum, mid-point). While the hardness selected must be hardness of the ambient receiving water, selection of an ambient receiving water hardness that is too high would result in effluent limitations that do not protect beneficial uses. Also, the use of minimum ambient hardness would result in criteria that may not be representative considering the wide range of ambient conditions.

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

Reasonable worst-case ambient conditions:

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

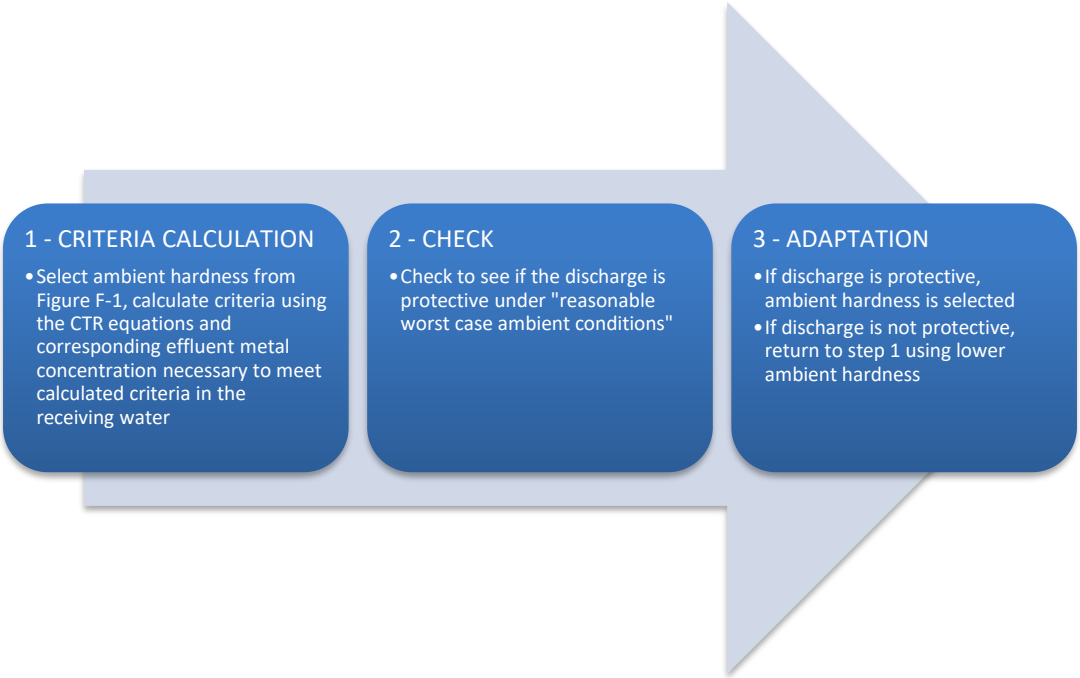
(b) "High receiving water flow (maximum receiving water flow)." This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.

(c) "Low receiving water hardness." The minimum receiving water hardness condition of 100 mg/L was selected to represent the reasonable worst-case receiving water hardness.

(d) "Background ambient metal concentration at criteria." This condition assumes that the metal concentration in the background receiving water is equal to CTR criteria (upstream of the Facility's discharge). Based on data in the record, this is a design condition that does not regularly occur in the receiving water and is used in this analysis to ensure that limits are protective of beneficial uses even in the situation where there is no assimilative capacity.

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

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



(a) CRITERIA CALCULATION. CTR criteria are calculated using the CTR equations based on actual measured ambient hardness sample results, starting with the maximum observed ambient hardness of 320 mg/L.

Effluent metal concentrations necessary to meet the above calculated CTR criteria in the receiving water are calculated in accordance with the SIP.[1] This should not be confused with an effluent limit. Rather, it is the Effluent Concentration Allowance (ECA), which is synonymous with the WLA defined by U.S. EPA as "*a definition of effluent water quality that is necessary to meet the water quality standards in the receiving water*."[2] If effluent limits are found to be needed, the limits are calculated to enforce the ECA considering effluent variability and the probability basis of the limit.

(b) CHECK. U.S. EPA's simple mass balance equation[3] is used to evaluate if discharge at the computed ECA is protective. Resultant downstream metal concentrations are compared with downstream calculated CTR criteria under reasonable worst-case ambient conditions.

(c) ADAPT. If step b results in:

(1) Receiving water metal concentration that complies with CTR criteria under reasonable worst-case ambient conditions, then the hardness value is selected.

(2) Receiving water metal concentration greater than CTR criteria, then return to step a, selecting a lower ambient hardness value.

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

v. **Results of Iterative Analysis**

The above iterative analysis for each CTR hardness-dependent metal results in the selected ambient hardness values shown in Table F-6, above. Using these hardness values to calculate criteria, which are actual sample results collected in the receiving water, will result in effluent limitations that are protective under all ambient flow conditions. Copper and lead are used as examples below to illustrate the results of the analysis. Tables F-7 and F-8, below, summarize the numeric results of the three-step iterative approach for copper and lead. As shown in the example tables, ambient hardness values of 130 mg/L and 100 mg/L are used in the CTR equations to derive criteria and effluent limitations for copper and lead, respectively. Then, under the "check" step, worst-case ambient receiving water conditions are used to test whether discharge results in compliance with CTR criteria and protection of beneficial uses.

The results of the above analysis, summarized in the tables below, show that the ambient hardness values selected using the three-step iterative process result in protective effluent limitations that achieve CTR criteria under all flow conditions. Tables F-7 and F-8, below, summarize the critical flow conditions; however, the analysis evaluated all flow conditions to ensure compliance with the CTR criteria at all times.

[1] SIP section 1.4.B, Step 2, provides direction for calculating the Effluent Concentration Allowance.
[2] U.S. EPA Technical Support Document for Water Quality-Based Toxics Control (TSD), pg. 96.
[3] U.S. EPA NPDES Permit Writers' Handbook (EPA 833-K-10-001 September 2010, pg. 6-24)

Table F-7. Verification of CTR Compliance for Copper

Receiving water hardness used to compute effluent limitations				130 mg/L
Effluent Concentration Allowance (ECA) for Copper[1]				12 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Copper Concentration[2] (µg/L)	
1Q10	130	12	12	**Yes**
7Q10	130	12	12	**Yes**
Max receiving water flow	105	9.7	9.7	**Yes**

1 The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There are no effluent limitations for copper as it demonstrates no reasonable potential.

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

Table F-8. Verification of CTR Compliance for Lead

Receiving water hardness used to compute effluent limitations				100 mg/L
Effluent Concentration Allowance (ECA) for Lead[1]				3.2 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Lead Concentration[2] (µg/L)	
1Q10	130	4.4	3.2	**Yes**
7Q10	130	4.4	3.2	**Yes**
Max receiving water flow	105	3.4	3.2	**Yes**

1 The ECA defines effluent quality necessary to meet the CTR criteria in the receiving water. There are no effluent limitations for lead as it demonstrates no reasonable potential.

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

3. Determining the Need for WQBEL's

Clean Water Act section 301(b)(1)(C) requires effluent limitations necessary to meet water quality standards, and 40 C.F.R. section 122.44(d) requires NPDES permits to include conditions that are necessary to achieve water quality standards established under section 303 of the CWA, including state narrative criteria for water quality. Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) state, "*Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality*." Additionally, 40 C.F.R. section 122.44(d)(1)(vii) requires effluent limits to be developed consistent with any available WLA's developed and approved for the discharge. The process to determine whether a WQBEL is required as described in 40 C.F.R. section 122.44(d)(1)(i) is referred to as an RPA. Central Valley Water Board

staff conducted RPA's for nearly 200 constituents, including the 126 U.S. EPA priority toxic pollutants. This section includes details of the RPA's for constituents of concern for the Facility. The entire RPA is included in the administrative record and a summary of the constituents of concern is provided in Attachment G. For priority pollutants, the SIP dictates the procedures for conducting the RPA. For non-priority pollutants the Central Valley Water Board is not restricted to one particular RPA method; therefore, the RPA's have been conducted based on U.S. EPA guidance considering multiple lines of evidence and the site-specific conditions of the discharge.

a. **Constituents with No Reasonable Potential.** WQBEL's are not included in this Order for constituents that do not demonstrate reasonable potential to cause or contribute to an in-stream excursion of an applicable water quality objective; however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. This section only provides the rationale for the RPA's for the following constituents of concern that were found to have no reasonable potential after assessment of the data:

i. **Cyanide**

(a) **WQO.** The CTR includes a chronic criterion of 5.2 µg/L for cyanide for the protection of freshwater aquatic life.

(b) **RPA Results.** Out of 12 cyanide samples collected between October 2015 and September 2018, two results are equal to or greater than the CTR chronic criterion. One cyanide result of 5.7 µg/L was collected on 7 September 2017. The Discharger also collected an effluent cyanide sample on 8 May 2018 that returned a result of 5.2 µg/L. The maximum observed receiving water cyanide concentration was 2.2 µg/L based on sampling conducted from October 2015 through September 2018.

The Discharger split the effluent cyanide samples collected on 7 September 2017 and 8 May 2018 and compared the split sample results to the initial results. As shown in Table F-9, below, cyanide concentrations in the split samples were significantly lower (and below the applicable CTR criterion) compared to the initial sample results, which is indicative of a lab quality assurance issue (QA) impacting the initial sample results.

Table F-9. Effluent Cyanide Split Sample Analysis Results

Sample Date	Initial Effluent Cyanide Result (µg/L)	Split Sample Result (µg/L)
7 September 2017	5.7	4.7
8 May 2018	5.2	2.1

Section 1.2 of the SIP states, "*The RWQCB shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy.*" Based on the results of the split sample analyses and following discussions between the Central Valley Water Board and the Discharger, lab QA issues may have impacted the results of the initial effluent cyanide samples from 7 September 2017 and 8 May 2018. Therefore, the Central Valley Water Board concludes that the

effluent cyanide samples collected on these dates are insufficient for use in the RPA. The MEC without considering the two unrepresentative data points is 4.4 µg/L.

Section 1.3, step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Instead of effluent limitations, monitoring for cyanide will be required monthly for one year, beginning August 2020, as part of the effluent and receiving water characterization. Should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order may be reopened and modified by adding an appropriate effluent limitation.

ii. **Mercury**

(a) **WQO.** The CTR contains a human health criterion of 50 ng/L for total mercury for waters from which both water and aquatic organisms are consumed. However, in 40 C.F.R. part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through the use of the State's narrative criterion.*" In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The State Water Board adopted Resolution 2017-0027 on 2 May 2017, which approved *Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (Statewide Mercury Provisions). The Statewide Mercury Provisions establish a Sport Fish Water Quality Objective of an average 0.2 mg/kg methylmercury fish tissue concentration within a calendar year for waters with the beneficial uses of commercial and sport fishing (COMM), tribal tradition and culture (CUL), wildlife habitat (WILD), and marine habitat (MAR). This fish tissue objective corresponds to a water column concentration of 12 ng/L of total mercury for flowing water bodies (e.g., rivers, creeks, streams, and waters with tidal mixing). As shown in Table F-3, the beneficial uses of Old Alamo Creek include WILD; therefore, the Sport Fish Water Quality Objective is applicable.

(b) **RPA Results.** The Statewide Mercury Provisions specify that the RPA shall be conducted using the maximum annual average effluent and background mercury concentrations for comparison with the Sport Fish Water Quality Objective. The MEC for mercury was 2.5 ng/L, with a maximum annual average of 1.8 ng/L, based on 20 samples collected from October 2015 through September 2018. The maximum annual average background concentration for mercury was 4.2 ng/L based on 12 samples collected from October 2015 through September 2018. Therefore, the discharge does not exhibit reasonable potential to exceed the Sport Fish Water Quality Objective.

iii. **Molybdenum**

(a) **WQO.** An Agricultural Water Quality Goal for molybdenum of 10 µg/L may be used as a threshold to interpret the narrative chemical constituents

Basin Plan objective and ensure protection of the agricultural beneficial use, which is applicable to Old Alamo Creek.

(b) **RPA Results.** Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, 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. Molybdenum 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.

Based on monitoring data collected from October 2015 through September 2018, the maximum observed effluent molybdenum concentration was 12 µg/L. However, since the Agricultural Water Quality Goal is used as a threshold to ensure protection of the agricultural beneficial use, the Central Valley Water Board has conducted the RPA based on the average of all effluent molybdenum concentrations observed over the irrigation season. Based on effluent monitoring data collected during the irrigation/dry season (1 May through 31 October) from October 2015 through September 2018, the average molybdenum concentration was 7.1 µg/L, which is below the Agricultural Water Quality Goal. Therefore, the Central Valley Water Board has determined that molybdenum in the discharge does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the Agricultural Water Quality Goal.

iv. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCL's, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. As described in section III.C.1.a of this Fact Sheet, the MUN beneficial use does not apply to Old Alamo Creek; however, since the MUN beneficial use applies downstream within New Alamo Creek, the Secondary MCL's must be considered in the RPA. The U.S. EPA NAWQC for chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, or sulfate. Additionally, there are no U.S. EPA numeric water quality criteria for the protection of agricultural, livestock, and industrial uses. Numeric values for the protection of these uses are typically based on site-specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply.

Table F-10. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[2]	U.S. EPA NAWQC	Effluent	
				Average[3]	Max
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	117	128
Electrical Conductivity (µmhos/cm) or Total Dissolved Solids (mg/L)	Varies	900, 1,600, 2,200 or 500, 1,000, 1,500	N/A	1,043 or 637	1,200 or 684
Sulfate (mg/L)	Varies	250, 500, 600	N/A	71	93

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

2 The Secondary MCL's are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level. The Secondary MCL's are for protection of the MUN beneficial use in New Alamo Creek.

3 Maximum calendar annual average.

(1) **Chloride.** The Secondary MCL for chloride is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The NAWQC acute criterion for the protection of freshwater aquatic life for chloride is 860 mg/L and the chronic criterion is 230 mg/L. Additionally, the Bay-Delta Plan contains a site-specific chloride limit of 250 mg/L from October through September for Cache Slough at the City of Vallejo Intake.

(2) **Electrical Conductivity or Total Dissolved Solids.** The Secondary MCL for electrical conductivity is 900 µmhos/cm as a recommended level, 1,600 µmhos/cm as an upper level, and 2,200 µmhos/cm as a short-term maximum, or when expressed as total dissolved solids is 500 mg/L as a recommended level, 1,000 mg/L as an upper level, and 1,500 mg/L as a short-term maximum.

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

(b) **RPA Results**

(1) **Chloride.** Chloride concentrations in the effluent ranged from 83 mg/L to 128 mg/L, with a maximum annual average of 117 mg/L, based on 11 samples collected between October 2015 and September 2018. The maximum observed upstream receiving water chloride concentration was 53 mg/L based on 12 samples collected between October 2015 and September 2018. Based on this data the discharge does not have reasonable potential to cause or contribute to the applicable objectives for chloride.

(2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows a maximum observed annual average electrical conductivity of 1,043 µmhos/cm, with a range from 688 µmhos/cm to 1,200 µmhos/cm. The maximum annual average receiving water electrical conductivity downstream of the discharge at RSW-004 in New Alamo Creek was 800 µmhos/cm, based on 36 samples collected between October 2015 and September 2018, which does not exceed the Secondary MCL recommended level.

Total dissolved solids concentrations in the effluent ranged from 476 mg/L to 684 mg/L, with a maximum annual average of 637 mg/L, based on 36 samples collected between October 2015 and September 2018. The maximum annual average receiving water total dissolved solids concentration downstream of the discharge at RSW-004 in New Alamo Creek was 500 mg/L, based on 36 samples collected between October 2015 and September 2018, which does not exceed the Secondary MCL recommended level. This demonstrates the discharge does not cause or contribute to an exceedance of the Secondary MCL in New Alamo Creek.

(3) **Sulfate.** Sulfate concentrations in the effluent ranged from 68 mg/L to 93 mg/L, with a maximum annual average of 71 mg/L, based on 11 samples collected between October 2015 and September 2018.The maximum observed receiving water sulfate concentration was 95 mg/L based on 12 samples collected between October 2015 and September 2018. Based on this data the discharge does not have reasonable potential to cause or contribute to the applicable objectives for sulfate.

The discharge does not have reasonable potential to cause or contribute to an in-stream excursion above water quality objectives for salinity. However, due to region-wide concerns regarding salinity this Order retains the performance-based annual average effluent limitation of 1,320 µmhos/cm for electrical conductivity from Order R5-2014-0072-01. Analysis of the effluent data shows that the maximum observed effluent annual average electrical conductivity is 1,043 µmhos/cm, which is less than the applicable effluent limitation. Therefore, based on the sample results for electrical conductivity in the effluent, it appears the Discharger can consistently comply with the effluent limit.

This Order also requires the Discharger to implement minimization measures to reduce the salinity in its discharge to Old Alamo Creek. Specifically, the Special Provision contained in section VI.C.3.a of this Order requires the Discharger to continue to implement its salinity evaluation and minimization plan . Implementation measures to reduce salt loading may include source control, mineralization reduction, chemical addition reductions, changing to water supplies with lower salinity, and limiting the salt load from domestic and industrial dischargers.

v. **Settleable Solids**

(a) **WQO.** The Basin Plan states that waters shall not contain substances in concentrations that result in deposition of material that causes nuisance or adversely affects beneficial uses. To ensure compliance with the Basin Plan objectives, Order R5-2014-0072-01 included an average monthly

effluent limit (AMEL) and maximum daily effluent limit (MDEL) for settleable solids of 0.10 ml/L and 0.20 ml/L, respectively.

(b) **RPA Results.** Settleable solids were not detected in the effluent based on 79 samples collected from October 2015 through September 2018; therefore, the discharge does not exhibit reasonable potential to cause or contribute to an exceedance above the Basin Plan objective and effluent limits for settleable solids have not been retained in this Order. Removal of these effluent limitations is in accordance with the federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

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 ammonia, BOD_5, chlorine residual, chlorodibromomethane, dichlorobromomethane, electrical conductivity, nitrate plus nitrite, pH, total coliform organisms, and TSS. WQBEL's for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

(a) **WQO.** The 1999 U.S. EPA National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia (the "1999 Criteria"), recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC.

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

The Central Valley Water Board issued a 3 April 2014 *California Water Code section 13267 Order for Information: 2013 Final Ammonia Criteria for Protection of Freshwater Aquatic Life* (13267 Order) requiring the Discharger to either participate in an individual or group study to determine the presence of mussels or submit a method of compliance for complying with effluent limitations calculated assuming mussels present

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

using the 2013 Criteria. The Discharger submitted a letter to the Central Valley Water Board indicating their participation in the Central Valley Clean Water Association (CVCWA) Freshwater Collaborative Mussel Study. Studies are currently underway to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria can be implemented in the Central Valley Region as part of a Basin Planning effort to adopt nutrient and ammonia objectives. Until the Basin Planning process is completed, the Central Valley Water Board will continue to implement the 1999 Criteria to interpret the Basin Plan's narrative toxicity objective. The 1999 Criteria recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. U.S. EPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because Old Alamo Creek does not have a beneficial use of cold freshwater habitat, the recommended criteria for waters where salmonids are absent were used. However, since it is likely that early fish life stages are present in Old Alamo Creek, the recommended criteria for waters where early life stages are present were used.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 3.20 mg/L.

A chronic criterion was calculated for each day when paired pH and temperature data were measured using downstream receiving water data for pH and temperature. Rolling 30-day average criteria were calculated from downstream receiving water data using the criteria calculated for each day and the minimum observed 30-day average criterion was established as the applicable 30-day average chronic criterion, or 30-day CCC. The most stringent 30-day CCC was 2.17 mg/L (as N). The 4-day average concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 2.17 mg/L (as N), the 4-day average concentration that should not be exceeded is 5.43 mg/L (as N).

(b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that are harmful to aquatic life and exceed the Basin Plan narrative toxicity objective. Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)*." 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 POTW's, U.S. EPA recommends that, "*POTW's should also be characterized for the possibility of chlorine and ammonia problems*." (TSD, p. 50)

Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. 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's 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 WQBEL's are required.

(c) **WQBEL's.** The Central Valley Water Board calculates WQBEL's in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, U.S. EPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC and specifies that "…*the value of "n" (assumed monitoring frequency) used in the AML*

calculation should not be less than the averaging period upon which the criterion value is based". [1] Therefore, while the LTA's corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA and AMEL multiplier corresponding to the 30-day CCC were calculated assuming a 30-day averaging period and a monthly sampling frequency (n) of 30. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the AMEL and the average weekly effluent limitation (AWEL). The remainder of the WQBEL calculations for ammonia was performed according to the SIP procedures.

The resulting AMEL of 1.6 mg/L was calculated using the 1999 Criteria based on the 30-day CCC and effluent ammonia data collected from October 2015 through September 2018 and is less stringent than the current AMEL of 1.4 mg/L which was established in Order R5-2014-0072-01. Therefore, considering the ammonia criteria based on updated pH and temperature, the existing effluent limitations are protective and are being carried forward from the previous Order. In accordance with 40 C.F.R. section 122.45(d), which requires AMEL's and AWEL's for POTW's unless impracticable, this Order replaces the MDEL with an AWEL of 2.1 mg/L.

(d) **Plant Performance and Attainability.** The Facility is designed to provide tertiary treatment and fully nitrify the wastewater. Therefore, the Central Valley Water Board finds that immediate compliance with the ammonia limits is feasible.

ii. **Chlorine Residual**

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

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

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

[1] 64 FR 71974

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

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

(c) **WQBEL's.** The TSD contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to AMEL's and MDEL's based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, based on U.S. EPA's NAWQC, which implements the Basin Plan's narrative toxicity objective for the protection of aquatic life.

(d) **Plant Performance and Attainability.** The Discharger uses sodium bisulfite to dechlorinate the effluent prior to discharge to Old Alamo Creek. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. **Chlorodibromomethane**

(a) **WQO.** As described in section III.C.1.a of this Fact Sheet, the MUN beneficial use does not apply to Old Alamo Creek; therefore, the CTR human health criterion for chlorodibromomethane of 34 µg/L for fish consumption-only applies. For New Alamo Creek, where MUN does apply, the Central Valley Water Board amended the Basin Plan to include a site-specific water quality objective of 4.9 µg/L for chlorodibromomethane for

the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for chlorodibromomethane was 43 µg/L based on 41 samples collected between October 2015 and September 2018. Chlorodibromomethane was not detected in the upstream receiving water based on 12 samples collected between October 2015 and September 2018. Therefore, chlorodibromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion for fish consumption-only, which is applicable to Old Alamo Creek.

The 2010 Basin Plan Amendments include implementation procedures for conducting the RPA for the site-specific water quality objective for chlorodibromomethane in New Alamo Creek. The 2010 Basin Plan Amendments require the use of the maximum Old Alamo Creek concentration at the terminus of Old Alamo Creek before entering New Alamo Creek. The maximum concentration of chlorodibromomethane measured at the terminus of Old Alamo Creek (Monitoring Location RSW-005) from October 2015 through September 2018 was 3.5 µg/L, which does not exceed the site-specific objective. Therefore, chlorodibromomethane does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the site-specific water quality objective for New Alamo Creek. However, because chlorodibromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion for fish consumption-only, which is applicable to Old Alamo Creek, WQBEL's are required.

(c) **WQBEL's.** This Order contains a final AMEL and MDEL for chlorodibromomethane of 34 µg/L and 74 µg/L, respectively, based on the CTR human health criterion for fish consumption-only.

(d) **Plant Performance and Attainability.** Analysis of the effluent data for chlorodibromomethane shows that the MEC of 43 µg/L is greater than the applicable WQBEL's. The Discharger submitted a 15 February 2019 Infeasibility Analysis documenting the compliance strategy for meeting final effluent limits for chlorodibromomethane. Therefore, the Discharger is subject to Time Schedule Order (TSO) R5-2019-**XXXX**, which provides a compliance schedule to achieve compliance with the final effluent limitations for chlorodibromomethane by **7 June 2024**.

iv. **Dichlorobromomethane**

(a) **WQO.** As described in section III.C.1.a of this Fact Sheet, the MUN beneficial use does not apply to Old Alamo Creek; therefore, the CTR human health criterion for dichlorobromomethane of 46 µg/L for fish consumption-only applies. For New Alamo Creek, where MUN does apply, the Central Valley Water Board amended the Basin Plan to include a site-specific water quality objective of 16 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.

(b) **RPA Results.** The MEC for dichlorobromomethane was 64 µg/L based on 41 samples collected between October 2015 and September 2018.

Dichlorobromomethane was not detected in the upstream receiving water based on 12 samples collected between October 2015 and September 2018. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion for fish consumption-only, which is applicable to Old Alamo Creek.

The 2010 Basin Plan Amendments include implementation procedures for conducting the RPA for the site-specific water quality objective for dichlorobromomethane in New Alamo Creek. The 2010 Basin Plan Amendments require the use of the maximum Old Alamo Creek concentration at the terminus of Old Alamo Creek before entering New Alamo Creek. The maximum concentration of dichlorobromomethane measured at the terminus of Old Alamo Creek (Monitoring Location RSW-005) from October 2015 through September 2018 was 7.9 µg/L, which does not exceed the site-specific objective. Therefore, dichlorobromomethane does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the site-specific water quality objective for New Alamo Creek. However, because dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion for fish consumption-only, which is applicable to Old Alamo Creek, WQBEL's are required.

(c) **WQBEL's.** This Order contains a final AMEL and MDEL for dichlorobromomethane of 46 µg/L and 74 µg/L, respectively, based on the CTR human health criterion for fish consumption-only.

(d) **Plant Performance and Attainability.** Analysis of the effluent data for dichlorobromomethane shows that the MEC of 64 µg/L is greater than the applicable WQBEL's. The Discharger submitted a 15 February 2019 Infeasibility Analysis documenting the compliance strategy for meeting final effluent limits for dichlorobromomethane. Therefore, the Discharger is subject to TSO R5-2019-**XXXX**, which provides a compliance schedule to achieve compliance with the final effluent limitations for dichlorobromomethane by **7 June 2024**.

v. **Nitrate and Nitrite**

(a) **WQO.** The State Water Board, Division of Drinking Water (DDW) has adopted Primary MCL's for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (as N), respectively. DDW has also adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite (as N).

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 a Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

As described in section III.C.1.a of this Fact Sheet, the MUN beneficial use does not apply to Old Alamo Creek; however, since the MUN beneficial use applies downstream within New Alamo Creek, the Primary MCL's are applicable in New Alamo Creek and must be considered for this discharge.

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

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)*." 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 POTW's, U.S. EPA recommends that, "*POTW's should also be characterized for the possibility of chlorine and ammonia problems*." (TSD, p. 50)

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threaten to exceed the Primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification/denitrification to remove ammonia, nitrite, and

nitrate 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's narrative chemical constituents objective. Although the Discharger denitrifies the discharge, 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 WQBEL's are required.

(c) **WQBEL's.** The downstream receiving water (New Alamo Creek) contains assimilative capacity for nitrate plus nitrite; therefore, as discussed in section IV.C.2.c, a human health dilution credit of 0.49:1 was allowed in the development of WQBEL's for nitrate plus nitrite. Based on the allowable dilution credits, this Order contains an AMEL of 14 mg/L and an AWEL of 17 mg/L based on the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use in New Alamo Creek downstream of Discharge Point 001.

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the maximum observed concentration for nitrate plus nitrite in the effluent of 13.8 mg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vi. **Pathogens**

(a) **WQO.** The Discharger evaluated the public health risks of its wastewater effluent and presented the revised final report, titled *Evaluation of Public Health Risks Concerning Infectious Disease Agents Associated with Exposure to Treated Wastewater Discharged by the City of Vacaville, Easterly Wastewater Treatment Plant*, August 2001 (revised January 2002) (Public Health Risks Report). Based on a review of the Public Health Risks Report, the DDW, North Coastal Region, Drinking Water Field Operations Branch, Division of Drinking Water and Environmental Management, in a letter dated 22 March 2002, concluded that tertiary filtration is appropriate and necessary during the dry weather period for the protection of public health. However, during winter months, when the beneficial uses of agricultural irrigation and contact recreational activities do not occur, secondary treatment with disinfection to a most probable number (MPN) of 23 per 100 mL is adequate for public health protection. Therefore, Title 22 disinfection criteria for a peak hourly dry weather flow (27 MGD) is required to protect agricultural irrigation and contact recreation during the dry weather period. DDW determined the dry months for the Vacaville area are 1 May through 31 October. From 1 November through 30 April, secondary treatment to a 7-day median of 23 MPN/100 mL is adequate for protection of the receiving water beneficial uses.

(b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life and constitute a threatened pollution and nuisance under California Water Code section 13050 if

discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBEL's are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) requires that, "*Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, 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 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)*." 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 Old Alamo Creek include 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 and provides the basis for the discharge to have a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBEL's are required.

(c) **WQBEL's.** In accordance with DDW recommendations, this Order includes seasonal effluent limitations for total coliform organisms. From 1 May through 31 October, the total coliform organism effluent limits are 2.2 MPN/100 mL as a 7-day median; 23 MPN/100 mL, not to be exceeded more than once in a 30-day period; and 240 MPN/100 mL as an instantaneous maximum. From 1 November through 30 April, the total coliform organism effluent limits are 23 MPN/100 mL as a 7-day median

and 240 MPN/100 mL, not to be exceeded more than once in a 30-day period.

The tertiary treatment process, or equivalent, is capable of reliably treating wastewater to a turbidity level of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DDW-recommended Title 22 disinfection criteria during the dry weather season, weekly average specifications are impracticable for turbidity. From 1 May through 31 October, this Order includes operational specifications for turbidity of 2 NTU as a daily average; 5 NTU, not to be exceeded more than 5 percent of the time within a 24-hour period; and 10 NTU as an instantaneous maximum. The turbidity specifications do not apply the remainder of the year.

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

From 1 May through 31 October, this Order includes final WQBEL's for BOD_5 and TSS based on the technical capability of the tertiary process, which is necessary to protect the beneficial uses of the receiving water. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the tertiary treatment process. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. The application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed. Therefore, from 1 May through 31 October, this Order requires AMEL's and AWEL's for BOD_5 and TSS of 10 mg/L and 15 mg/L, respectively, which are technically based on the capability of a tertiary system. Additionally, from 1 November through 30 April, this Order requires an AMEL and AWEL for BOD_5 of 20 mg/L and 25 mg/L, respectively, which are retained from Order R5-2014-0072-01.

(d) **Plant Performance and Attainability.** The Facility is designed to provide tertiary treatment with chlorine disinfection to remove pathogens. 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 (except for Goose Lake) that the *"…pH shall not be depressed below 6.5 nor raised above 8.5."*

(b) **RPA Results.** Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or

decrease wastewater pH, which if not properly controlled, would violate the Basin Plan's numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBEL's are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)*." 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 2,192 samples taken from October 2015 through September 2018, the maximum pH reported was 8.2 and the minimum was 6.7. 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, WQBEL's for pH are required in this Order.

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

(d) **Plant Performance and Attainability.** Analysis of effluent pH data shows that immediate compliance with the WQBEL's is feasible.

4. WQBEL Calculations

a. This Order includes WQBEL's for ammonia, BOD_5, chlorine residual, chlorodibromomethane, dichlorobromomethane, electrical conductivity, nitrate plus nitrite, pH, total coliform organisms, and TSS. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

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

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

where:

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

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

c. **Primary and Secondary MCL's.** For non-priority pollutants with Primary MCL's to protect human health (e.g., nitrate plus nitrite), the AMEL is set equal to the Primary MCL and the AWEL is calculated using an AWEL/AMEL multiplier, where the AWEL multiplier is based on a 98th percentile occurrence probability and the AMEL multiplier is from Table 2 of the SIP.

For non-priority pollutants with Secondary MCL's that protect public welfare (e.g., taste, odor, and staining), WQBEL's were calculated by setting the LTA equal to the Secondary MCL and using the AMEL multiplier to set the AMEL. The AWEL was calculated using the MDEL multiplier from Table 2 of the SIP.

d. **Aquatic Toxicity Criteria.** For priority pollutants with acute and chronic aquatic toxicity criteria, the WQBEL's are calculated in accordance with section 1.4 of the SIP. The ECA's are converted to equivalent LTA's (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers. For non-priority pollutants, WQBEL's are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98th percentile occurrence probability.

e. **Human Health Criteria.** For priority pollutants with human health criteria, the WQBEL's are calculated in accordance with section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP. For non-priority pollutants with human health criteria, WQBEL's are calculated using similar procedures, except that an AWEL is established using the MDEL/AMEL multiplier from Table 2 of the SIP.

LTA_{acute}

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

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

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

where:

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

Summary of Water Quality-Based Effluent Limitations
Discharge Point 001

Table F-11. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L[1]	10	15	--	--	--
	mg/L[2]	20	25	--	--	--
pH	standard units	--	--	--	6.5	8.5
Total Suspended Solids	mg/L[1]	10	15	--	--	--
Priority Pollutants						
Chlorodibromomethane	µg/L	34	--	74	--	--
Dichlorobromomethane	µg/L	46	--	74	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	1.4	2.1	--	--	--
Chlorine, Total Residual	mg/L	--	0.011[3]	0.019[4]	--	--
Electrical Conductivity @ 25°C	µmhos/cm	1,320[5]	--	--	--	--
Nitrate Plus Nitrite, Total (as N)	mg/L	14	17	--	--	--
Total Coliform Organisms	MPN/100 mL[1]	--	2.2[6]	23[7]	--	240
	MPN/100 mL[2]	--	23[6]	240[7]	--	--

1 Effluent limitations applicable from 1 May through 31 October.
2 Effluent limitations applicable from 1 November through 30 April.
3 Applied as a 4-day average effluent limitation.
4 Applied as a 1-hour average effluent limitation.
5 Applied as an annual average effluent limitation.
6 Applied as a 7-day median effluent limitation.
7 Not to be exceeded more than once in any 30-day period.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct WET testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (MRP) (Attachment E, section V). This Order also contains effluent limitations for acute and chronic 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 section 3.1.20) 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 WET 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 WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" Although the discharge has been consistently in compliance with the acute WET effluent limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Therefore, acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "*Guidance for NPDES Permit Issuance,*" dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*" Consistent with Order R5-2014-0072-01, 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 section 3.1.20). Table F-13, below, includes chronic WET testing performed by the Discharger from October 2015 through September 2018. This data was used to determine if the discharge at Discharge Point 001 has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

Table F-12. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow *Pimephales promelas* Survival (TUc)	Fathead Minnow *Pimephales promelas* Growth (TUc)	Water Flea *Ceriodaphnia dubia* Survival (TUc)	Water Flea *Ceriodaphnia dubia* Reproduction (TUc)	Green Algae *Selenastrum capricornutum* Growth (TUc)
13 October 2015	1	1	--	--	1
15 October 2015	--	--	1	1	--
4 January 2016	--	--	1	1	--
5 January 2016	1	1	--	--	1
5 April 2016[1]	1	1	1	>1	1
5 April 2016[2]	--	--	1	>1	--
12 July 2016[1]	1	1	1	>1	1
12 July 2016[2]	--	--	1	>1	--
4 October 2016	1	1	1	>1	--
8 October 2016	--	--	--	--	1
10 January 2017[1]	1	1	1	>1	1
10 January 2017[2]	--	--	1	>1	--
14 February 2017[1]	--	--	1	1	--
14 February 2017[2]	--	--	1	1	--
7 March 2017	--	--	1	1	--
4 April 2017	1	1	1	1	1
11 July 2017[1]	1	1	1	1	1
11 July 2017[2]	--	--	1	1	--
3 October 2017	1	1	1	>2[3]	1
24 October 2017	--	--	1	>2[3]	--
8 November 2017	--	--	1	2[3]	--
28 November 2017	--	--	1	>2[3]	--
9 January 2018	1	1	1	1.3[3]	1
13 February 2018	--	--	1	8[4]	--
13 March 2018[1]	--	--	1	1	--
13 March 2018[2]	--	--	1	1	--
10 April 2018[1]	1	1	1	1	1
10 April 2018[2]	--	--	1	1	--
8 May 2018	--	--	1	1	--
10 July 2018	1	1	1	2[5]	1
13 August 2018	--	--	1	1	--

1 *C. dubia* tests excluding outliers.
2 *C. dubia* tests including outliers.
3 During timeframe of concrete-lining of the earthen Emergency Storage Basin
4 Test result qualified due to anomalous flat-concentration response.
5 The laboratory control response for this test was unusually high at 2 standard deviations above the mean control response for the last 250 tests. Moreover, the percent reduction in the 100 percent effluent was <25 percent. Due to the relatively low level of effect and unusually high control reproduction, a retest was recommended. The retest on 13 August 2018 showed no significant reductions in reproduction.

i. **RPA.** No dilution has been granted for chronic WET. Chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) (as 100/NOEC) and a percent effect at 100 percent effluent exceeding 25 percent demonstrates the

discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Based on chronic toxicity testing conducted between October 2015 and September 2018, the maximum chronic toxicity result was 8 TUc on 13 February 2018 with a percent effect of 26.42 percent.

The Discharger contracted Pacific EcoRisk (PER) to identify the cause(s) of toxicity and to complete a Toxicity Reduction Evaluation (TRE) during the term of Order R5-2014-0072-01. The TRE, which was completed in August 2018, could not point to any definitive causes of the intermittent toxicity; however, a Facility Performance Evaluation summarized in the TRE report identifies two potential causes: electrical conductivity influent spiking and concluding phases of the Facility's tertiary treatment upgrade construction project. The completion phase of the tertiary treatment upgrade project included concrete-lining of the existing Emergency Storage Basin (ESB) to protect groundwater, which was complete and fully operational as of March 2018. The TRE was concluded due to the absence of toxicity in four consecutive chronic WET testing events in March, April, May, and August of 2018. Based on the findings of the 2018 TRE and the Discharger's ability to comply with the chronic toxicity monitoring trigger following completion of the ESB concrete lining construction project, the Central Valley Water Board finds that the current discharge does not have reasonable potential to cause or contribute to an in-stream exceedance of the Basin Plan's narrative toxicity objective.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

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

Mass-based effluent limitations have been established in this Order for ammonia because it is an oxygen-demanding substance. Except for ammonia, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design flow (average dry weather flow) in Prohibition III.E of this Order.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45(d) requires AMEL's and AWEL's for POTW's unless impracticable. For chlorodibromomethane and dichlorobromomethane, AWEL's have been replaced with MDEL's in accordance with section 1.4 of the SIP. Furthermore, for pH, chlorine residual, and total coliform organisms, AWEL's have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. section 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2014-0072-01, with the exception of effluent limitations for settleable solids, BOD_5, and TSS. The effluent limitations for these pollutants are less stringent than those in Order R5-2014-0072-01. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA sections 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent WQBEL's "*except in compliance with section 303(d)(4).*" CWA section 303(d)(4) has two parts: paragraph (A) which applies to non-attainment waters and paragraph (B) which applies to attainment waters.

   i. For waters where standards are not attained, CWA section 303(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL's or WLA's 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.

   Old Alamo Creek is considered an attainment water for settleable solids, BOD_5, and TSS because the receiving water is not listed as impaired on the 303(d) list for these constituents.[1] As discussed in section IV.D.4, below, removal and relaxation of the effluent limits complies with federal and state antidegradation requirements. Thus, removal of effluent limitations for settleable solids and removal of the maximum daily and mass-based effluent limitations for BOD_5 and TSS from Order R5-2014-0072-01 meet 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 section 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 that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and that 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 of this Fact Sheet, updated information that was not available at the time Order R5-2014-0072-01 was issued indicates that settleable solids in the discharge do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the removal of effluent limitations for settleable solids includes the following:

   i. **Settleable Solids.** Effluent and receiving water monitoring data collected between October 2015 and September 2018 indicates that the discharge does

[1] "The exceptions in section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list." State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan narrative objective for settleable solids.

Thus, removal of the effluent limitations for settleable solids from Order R5-2014-0072-01 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.

c. **Flow.** Order R5-2014-0072-01 included flow as an effluent limit based on the Facility design flow. Compliance with the effluent limits for flow in Order R5-2014-0072-01 was calculated annually based on the average daily flow collected over three consecutive dry weather months. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order. Flow as a discharge prohibition adequately regulates the Facility, does not allow for an increase in the discharge of pollutants, and does not constitute backsliding.

4. Antidegradation Policies

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBEL's where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy. Compliance with these requirements will result in the use of BPTC of the discharge. The impact on existing water quality will be insignificant.

This Order removes effluent limitations for settleable solids based on updated information, as described in sections IV.C.3 and IV.D.3 of this Fact Sheet. The removal of these WQBEL's will not result in a decrease in the level of treatment or control, or a reduction in water quality. Therefore, the Central Valley Water Board finds that the removal of the effluent limitations for settleable solids does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the removal of effluent limitations is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy.

This Order also removes MDEL's and mass-based effluent limitations for BOD_5 and TSS based on 40 C.F.R part 122.45(d) and (f), and as described further in section IV.D.3 of this Fact Sheet. The removal of MDEL's and mass-based effluent limits for BOD_5 and TSS will not result in a decrease in the level of treatment or control, or a reduction in water quality. Furthermore, both concentration-based AMEL's and AWEL's remain for BOD_5 and TSS, as well as a discharge flow prohibition that limits the amount of flow that can be discharged to the receiving water. The combination of concentration-based effluent limits and a flow prohibition in this Order are equivalent to mass-based effluent limitations, which were redundant limits contained in previous Orders by multiplying the concentration-based effluent limits and permitted average dry weather flow by a conversion factor to determine the mass-based effluent limitations. Therefore, the Central Valley Water Board finds that the removal of MDEL's and mass-based effluent limits for BOD_5 and TSS does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the relaxation of effluent limitations is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Antidegradation Policy.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBEL's for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD_5, pH, and TSS. Restrictions on these constituents are discussed in section IV.B.2 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. For BOD_5, pH, and TSS, both technology-based effluent limitations and WQBEL's are applicable. The more stringent of these effluent limitations are implemented by this Order. These limitations are not more stringent than required by the CWA.

WQBEL's 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 WQBEL's were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual WQBEL's for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. 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-13. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L[2]	10	15	--	--	--	TTC
	mg/L[3]	20	25	--	--	--	PO
	% Removal	85	--	--	--	--	CFR
pH	standard units	--	--	--	6.5	8.5	BP
Total Suspended Solids	mg/L[2]	10	15	--	--	--	TTC
	mg/L[3]	30	45	--	--	--	CFR
	% Removal	85	--	--	--	--	CFR
Priority Pollutants							
Chlorodibromomethane	µg/L	34	--	74	--	--	CTR
Dichlorobromomethane	µg/L	46	--	74	--	--	CTR
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	1.4	2.1	--	--	--	NAWQC
Chlorine, Total Residual	mg/L	--	0.011[4]	0.019[5]	--	--	NAWQC
Electrical Conductivity @ 25°C	µmhos/cm	1,320[6]	--	--	--	--	PB
Nitrate Plus Nitrite, Total (as N)	mg/L	14	17	--	--	--	MCL
Total Coliform Organisms	MPN/100 mL[2]	--	2.2[7]	23[8]	--	240	Title 22
	MPN/100 mL[3]	--	23[7]	240[8]	--	--	
Acute Toxicity	% survival	--	--	70[9]/90[10]	--	--	BP

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

[1] TTC – Based on tertiary treatment capability. These effluent limitations reflect the capability of a properly operated tertiary treatment plant.
PO – Based on effluent limitations contained in previous Order R5-2014-0072-01.
CFR – Based on secondary treatment standards contained in 40 C.F.R part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on U.S. EPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
PB – Based on Facility performance
MCL – Based on the Primary Maximum Contaminant Level
Title 22 – Based on CA Division of Drinking Water Reclamation Criteria, CCR, Title 22, division 4, chapter 3.

[2] Effluent limitations applicable from 1 May through 31 October.

[3] Effluent limitations applicable from 1 November through 30 April.

[4] Applied as a 4-day average effluent limitation.

[5] Applied as a 1-hour average effluent limitation.

[6] Applied as an annual average effluent limitation.

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

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

[9] 70 percent minimum of any one bioassay.

[10] 90 percent median for any three consecutive bioassays.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria, where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

2. **Temperature.** Old Alamo Creek has a designated beneficial use of warm freshwater habitat. New Alamo Creek has designated beneficial uses of cold freshwater habitat and warm freshwater habitat. The Basin Plan states that "*[a]t no time shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature*." A 2006 study conducted by the Discharger titled *Characterization of Water Body and Reach-specific Seasonal Temperature Regimes Within the Alamo Creek Watershed and Recommended Temperature Limitations for the City of Vacaville's Easterly Wastewater Treatment Plant* (Temperature Report) reported that adult Fall-run Chinook salmon occasionally stray into New Alamo Creek. The adult salmon are constrained by physical barriers from continuing upstream and the lack of suitable habitat

precludes successful spawning and reproduction in the lower reaches. The Discharger's Temperature Report recommended seasonal temperatures that are protective of adult salmon. Thus, for New Alamo Creek, this Order includes receiving water limitations based on the Basin Plan objective and additional seasonal receiving water temperature limitations based on the Discharger's Temperature Report, which was approved by National Marine Fisheries Services on 20 November 2006, to be protective of the New Alamo Creek beneficial uses of cold freshwater habitat and warm freshwater habitat.

B. Groundwater

1. The beneficial uses of the underlying groundwater are MUN, industrial service supply, industrial process supply, and agricultural supply.

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

3. Total dissolved solids, which were found to be present in the wastewater at a maximum annual average concentration of 637 mg/L, have the potential to degrade groundwater quality at this site because there is little ability for attenuation in the shallow permeable vadose zone beneath this Facility. According to Ayers and Westcot, dissolved solids can cause yield or vegetative growth reductions of sensitive crops if present in excess of 450 mg/L in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural use from discharges of total dissolved solids is the narrative chemical constituents objective, which is applied following the "*Policy of Application of Water Quality Objectives*" in the Basin Plan. A numerical groundwater limitation of 450 mg/L for total dissolved solids, based on Ayers and Westcot, is appropriate to apply the narrative chemical constituents objective to protect the unrestricted agricultural use of groundwater in the absence of information to support a less protective limit.

4. Nitrate, which was found to be present in the wastewater at concentrations up to 13.8 mg/L as nitrogen, has the potential to degrade groundwater quality because there is little ability for attenuation in the shallow permeable vadose zone beneath the Facility. Furthermore, groundwater monitoring data show nitrate concentrations above the Primary MCL of 10 mg/L in monitoring wells MW-3 and MW-5. The chemical constituents objective prohibits concentrations of chemical constituents in excess of California MCL's in groundwater that is designated as MUN. The California Primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the Facility is designated as MUN. It is therefore appropriate to adopt a numerical groundwater

limitation of 10 mg/L for nitrate as nitrogen to implement the chemical constituents objective to protect the MUN beneficial use of groundwater.

5. pH, which ranged from 6.7 to 8.2 standard units in the domestic wastewater, has the ability to degrade groundwater quality at this site because there is little potential for buffering in the shallow permeable vadose zone. According to Ayers and Westcot, pH less than 6.5 or greater than 8.4 can cause yield or vegetative growth reductions of sensitive crops if present in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural use from discharges of substances that affect pH is the narrative chemical constituents objective, which is applied following the "*Policy of Application of Water Quality Objectives*" in the Basin Plan. A numerical groundwater limitation range of 6.5 to 8.4 for pH, based on Ayers and Westcot, is relevant and appropriate to apply the narrative chemical constituents objective to protect unrestricted agricultural use of groundwater in the absence of information to support a less protective limit.

6. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater. All basins and ponds at the Facility are now lined as of the completion date of concrete lining the earthen Emergency Storage Basin in March 2018.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

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

B. Special Provisions

1. Reopener Provisions

a. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic WET results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

b. **Whole Effluent Toxicity (WET).** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate, effluent toxicity through a site-specific TRE or, under certain circumstances, through participation in an approved Toxicity Evaluation Study (TES) in lieu of conducting a site-specific TRE. This Order may be reopened to include a new chronic toxicity limitation, revised acute toxicity limitations, and/or limitations for a specific toxicant identified in the TRE and/or TES.

c. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WER's and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

d. **Drinking Water Policy.** On 26 July 2013, the Central Valley Water Board adopted Resolution R5-2013-0098, amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.

e. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 31 May 2018, as part of the CV-SALTS initiative, the Central Valley Water Board approved Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley. If approved by the State Water Board, the Office of Administrative Law, and U.S. EPA, the Amendments would impose certain new requirements on salt and nitrate discharges. If the Amendments ultimately go into effect, this Order may be amended or modified to incorporate any newly-applicable requirements.

2. Special Studies and Additional Monitoring Requirements

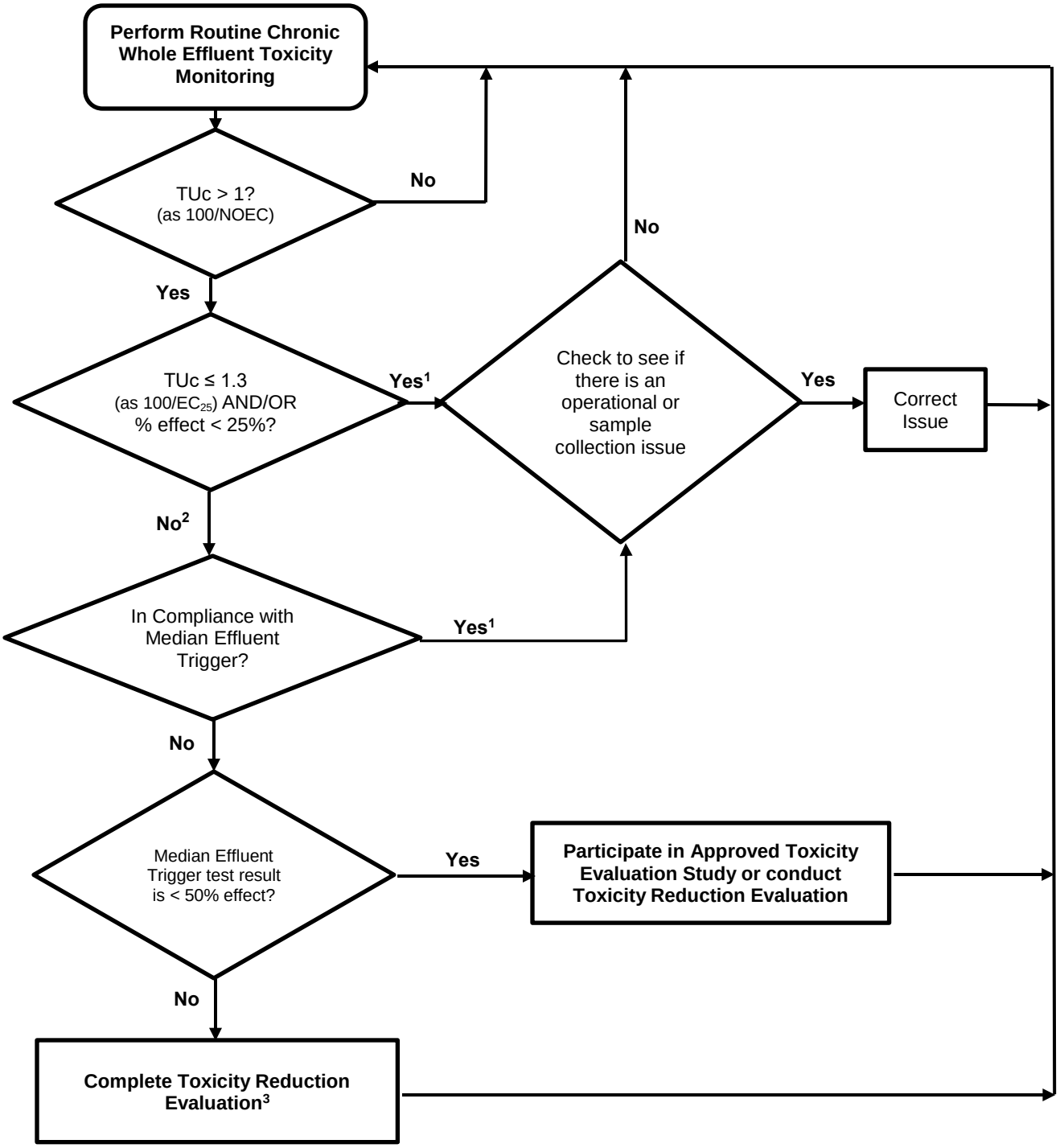
a. **Chronic Whole Effluent Toxicity (WET) Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at section 3.1.20) As discussed in section IV.C.5.b of this Fact Sheet, based on whole effluent chronic toxicity testing performed by the Discharger from October 2015 through September 2018, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The MRP of this Order requires chronic WET monitoring for demonstration of compliance with the Basin Plan's narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring trigger, this provision requires the Discharger either participate in an approved TES or conduct a site-specific TRE.

A TES may be conducted in lieu of a TRE if the percent effect at 100 percent effluent is less than or equal to 50 percent. Determining the cause of toxicity can be challenging when the toxicity signal is low. Several Central Valley facilities with similar treatment systems have been experiencing intermittent low-level toxicity. The dischargers have not been successful identifying the cause of the toxicity because of the low toxicity signal and the intermittent nature of the toxicity. Due to these challenges, CVCWA, in collaboration with staff from the Central Valley Water Board, has initiated a Special Study to Investigate Low Level Toxicity Indications (Group Toxicity Study). This Order allows the Discharger to participate in an approved TES, which may be conducted individually or as part of a coordinated group effort with other similar dischargers that are exhibiting toxicity. Although the current CVCWA Group Toxicity Study is related to low-level toxicity, participation in an approved TES is not limited to only low-level toxicity issues.

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

Figure F-2
WET Accelerated Monitoring Flow Chart



[1] The Discharger shall participate in an approved TES if the discharge has exceeded the chronic toxicity monitoring trigger twice or more in the past 12-month period and the cause is not identified and/or addressed.
[2] The Discharger may elect to take additional samples to determine the 3-sample median. The samples shall be collected at least one week apart, and the final sample shall be within 6 weeks of the initial sample exhibiting toxicity.
[3] The Discharger may participate in an approved TES instead of a TRE if the Discharger has conducted a TRE within the past 12 months and has been unsuccessful in identifying the toxicant.

3. Best Management Practices and Pollution Prevention

a. **Pollutant Evaluation and Minimization Plan for Mercury and Salinity.** This Order requires the Discharger to continue to implement pollutant evaluation and minimization plans for mercury and salinity to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity and mercury to Old Alamo Creek.

4. Construction, Operation, and Maintenance Specifications

a. **Filtration System Operating Specifications.** Turbidity is included as an operational specification as an indicator of the effectiveness of the filtration system for providing adequate disinfection. Failure of the treatment system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure, and rapid corrective action. The operational specification requires that from 1 May through 31 October, turbidity prior to disinfection shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period; and an instantaneous maximum of 10 NTU.

b. The operation and maintenance specifications for the emergency storage pond are necessary to protect the beneficial uses of the groundwater. The specifications included in this Order are retained from Order R5-2014-0072-01. In addition, reporting requirements related to use of the emergency storage pond are required to monitor their use and the potential impact on groundwater. The emergency storage pond will be operated such that there is no public contact with wastewater, mosquito breeding is prevented, erosion is controlled, weeds are minimized, debris does not accumulate on the water, freeboard is never less than two feet, and there is no infiltration of wastewater into soils or groundwater.

5. Special Provisions for Publicly-Owned Treatment Works (POTW's)

a. **Pretreatment Requirements**

i. 40 C.F.R. section 403.8(a) requires POTW's with a total design flow greater than 5 MGD and receiving pollutants that pass through or interfere with the operation of the POTW to establish a POTW Pretreatment Program. The Facility has a design flow greater than 5 MGD and, as identified in the ROWD, receives discharges from five non-categorical significant industrial users, three categorical industrial users, two zero-discharging categorical industrial users, and 3 non-categorical, non-significant industrial users. Therefore, the Discharger is required to implement a pretreatment program.

ii. The federal CWA section 307(b), and federal regulations, 40 C.F.R. part 403, require POTW's to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants that will interfere with treatment plant operations or sludge disposal and prevent pass-through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 C.F.R. part 403.

iii. The Discharger shall continue to implement and enforce its approved pretreatment program, which is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water

Board, the State Water Board or U.S. EPA may take enforcement actions against the Discharger as authorized by the CWA.

b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this Order means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the Facility. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 C.F.R. part 503. This Order does not regulate offsite use or disposal of biosolids, which are regulated instead under 40 C.F.R. part 503; administered by U.S. EPA. The Sludge/Biosolids Treatment or Discharge Specifications in this Order implement the California Water Code to ensure sludge/biosolids are properly handled on-site to prevent nuisance, protect public health, and protect groundwater quality.

6. Other Special Provisions

a. **Title 22, or Equivalent, Disinfection Requirements.** From 1 May through 31 October, this Order requires the discharge to be oxidized, filtered, and adequately disinfected pursuant to DDW reclamation criteria, Title 22, or equivalent.

7. Compliance Schedules – Not Applicable

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD_5 and TSS reduction requirements). The monitoring frequencies for flow (continuous), BOD_5 (weekly), TSS (weekly), electrical conductivity (monthly), and total dissolved solids (monthly) have been retained from Order R5-2014-0072-01.

2. This Order establishes weekly monitoring requirements for pH in the influent in order to characterize the wastewater and assess compliance with effluent limitations established in this Order.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 C.F.R. section 122.44(i)(2), effluent monitoring is required for all constituents with effluent limitations or discharge prohibitions. Effluent monitoring is necessary to assess compliance with effluent limitations and discharge prohibitions, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Effluent monitoring frequencies and sample types for flow (continuous), pH (continuous), carbon tetrachloride (monthly), chlorodibromomethane (monthly), chloroform (monthly),

dichlorobromomethane (monthly), ammonia (weekly), chlorine residual (continuous), electrical conductivity (monthly), hardness (monthly), nitrate (monthly), nitrite (monthly), temperature (continuous), total coliform organisms (five times per week), and total dissolved solids (monthly) have been retained from Order R5-2014-0072-01 to determine compliance with effluent limitations and discharge prohibitions for these parameters.

3. Order R5-2014-0072-01 required effluent monitoring for BOD_5 and TSS five times per week. This Order reduces the monitoring frequency for BOD_5 and TSS from five times per week to three times per week. The Central Valley Water Board finds that this frequency is sufficient for determining compliance with effluent limitations for BOD_5 and TSS established in this Order.

4. Effluent monitoring data collected over the term of Order R5-2014-0072-01 for mercury, methylmercury, and settleable solids did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2014-0072-01.

5. This Order establishes monthly effluent monitoring requirements for bromoform in order to characterize the effluent for this parameter and ensure protection of the beneficial uses in the receiving waters downstream of Discharge Point 001.

6. This Order establishes monthly effluent monitoring requirements for dissolved organic carbon in order to collect sufficient data for calculating aquatic life criteria for aluminum in accordance with the 2018 NAWQC.

7. Order R5-2014-0072-01 required the Discharger to submit a monthly summary of bypasses including the date, time, duration, and reason for the bypass. As described in Prohibition III.B, this Order does not permit bypasses or overflow of untreated wastewater, except under the conditions at 40 C.F.R. section 122.41(m)(4)). Therefore, the requirement to submit a monthly summary of bypasses has not been retained in this Order.

8. As discussed in section IV.C.3 of this Fact Sheet, this Order establishes effluent limitations for nitrate plus nitrite as a single parameter. Therefore, in addition to monthly effluent monitoring requirements for nitrate and nitrite, this Order requires the Discharger to calculate the sum of nitrate and nitrite in the effluent monthly in order to determine compliance with the applicable effluent limitations for nitrate plus nitrite as a single parameter.

9. In accordance with section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires effluent monitoring for priority pollutants and other constituents of concern monthly for one year beginning the August 2020. This monitoring frequency has been retained from Order R5-2014-0072-01. See section IX.E of the MRP (Attachment E) for more detailed requirements related to performing priority pollutant monitoring.

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

    Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the CWA (Wat. Code §§ 13370, subd. (c), 13372, 13377). Section 13176 is inapplicable to NPDES permits to the extent it

is inconsistent with CWA requirements (Wat. Code § 13372, subd. (a)). The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature (40 C.F.R. § 136.3(e), Table II. The Discharger maintains an ELAP accredited laboratory on-site and conducts analyses for chlorine residual, dissolved oxygen, and pH within the required 15-minute hold times.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2014-0072-01, monthly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitations for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2014-0072-01, quarterly chronic WET testing is required in order to demonstrate compliance with the numeric chronic toxicity effluent limitations.

D. Receiving Water Monitoring

1. Surface Water

a. **Delta Regional Monitoring Program.** The Central Valley Water Board requires individual dischargers and discharger groups to conduct monitoring of Delta waters and Delta tributary waters in the vicinity of their discharge, known as ambient (or receiving) water quality monitoring. This monitoring provides information on the impacts of waste discharges on Delta waters, and on the extant condition of the Delta waters. However, the equivalent funds spent on current monitoring efforts could be used more efficiently and productively and provide a better understanding of geographic and temporal distributions of contaminants and physical conditions in the Delta, and of other Delta water quality issues, if those funds were used for a coordinated ambient monitoring effort, rather than continue to be used in individual, uncoordinated ambient water quality monitoring programs. The Delta Regional Monitoring Program will provide data to better inform management and policy decisions regarding the Delta.

The Discharger is required to participate in the Delta Regional Monitoring Program. Delta Regional Monitoring Program data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Order. Delta Regional Monitoring Program monitoring stations are established generally as “integrator sites” to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta Regional Monitoring Program monitoring stations would not normally be able to identify the source of any specific constituent but would be used to identify water quality issues needing further evaluation. Delta Regional Monitoring Program monitoring data may be used to help establish background receiving water quality for an RPA in an NPDES permit after evaluation of the applicability of the data for that purpose. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point. Delta Regional Monitoring Program data, as with all environmental monitoring data, can provide an assessment of water quality at a specific place and time that can be used in conjunction with other information, such as other receiving water monitoring data, spatial and temporal distribution and trends of receiving water data, effluent data from the Discharger’s discharge and other point and non-point source discharges, receiving water flow volume, speed and direction, and other information to

determine the likely source or sources of a constituent that resulted in exceedance of a receiving water quality objective.

Participation in the Delta Regional Monitoring Program by a Discharger shall consist of providing funds and/or in-kind services to the Delta Regional Monitoring Program.

Since the Discharger is participating in the Delta Regional Monitoring Program, this Order does not require receiving water characterization monitoring for purposes of conducting the RPA. However, the ROWD for the next permit renewal shall include, at minimum, one representative ambient background characterization monitoring event for priority pollutant constituents[1] during the term of the permit. The ambient background characterization monitoring event for priority pollutant constituents shall be conducted at Monitoring Location RSW-003. Data from the Delta Regional Monitoring Program may be utilized to characterize the receiving water in the permit renewal. Alternatively, the Discharger may conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with the ROWD. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point. Historic receiving water monitoring data taken by the Discharger and from other sources may also be evaluated to determine whether or not that data is representative of current receiving water conditions. If found to be representative of current conditions, then that historic data may be used in characterizing receiving water quality for the purposes of the RPA.

b. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

c. Receiving water monitoring frequencies and sample types for flow (weekly, at Monitoring Location RSW-003 only), pH (weekly), dissolved oxygen (weekly), electrical conductivity (monthly), temperature (weekly), total dissolved solids (monthly), and turbidity (weekly) at Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004 have been retained from Order R5-2014-0072-01 to determine compliance with the applicable receiving water limitations and characterize the receiving water for these parameters.

d. On 21 December 2018, U.S. EPA finalized updated NAWQC for aluminum in freshwater that reflect the latest science and allow for development of criteria reflecting the impact of local water chemistry on aluminum toxicity to aquatic life. The updated criteria account for the site-specific bioavailability of aluminum in receiving waters, which is dependent on pH, dissolved organic carbon, and hardness. This Order establishes monthly receiving water monitoring requirements for dissolved organic carbon and hardness at Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004 in order to collect sufficient data for calculating aquatic life criteria for aluminum in accordance with the 2018 NAWQC.

e. Receiving water monitoring frequencies and sample types for chlorodibromomethane (twice per month, from 1 November 2020 through 31 March 2021), chloroform (twice per month, from 1 November 2020 through 31 March 2021), and dichlorobromomethane (twice per month, from 1 November 2020 through 31 March 2021) at Monitoring Location RSW-005 have been retained from Order R5-2014-0072-01 to characterize the impacts of the discharge on the receiving water and ensure protection of downstream beneficial

[1] Appendix A to 40 C.F.R. part 423.

uses, as required by Resolution No. R5-2010-0047 approving a Basin Plan amendment to establish site-specific water quality objectives for chloroform, chlorodibromomethane, and dichlorobromomethane for New Alamo and Ulatis Creeks.

f. This Order reduces monitoring for carbon tetrachloride from twice per month from 1 November 2020 through 31 March 2021, at Monitoring Location RSW-005, to once per permit term during characterization monitoring at RSW-003, since carbon tetrachloride did not exhibit reasonable potential to exceed water quality objectives in New Alamo Creek.

g. In accordance with section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires receiving water monitoring for priority pollutants and other constituents of concern monthly for one year beginning August 2020, at Monitoring Location RSW-003, in order to collect data to conduct an RPA for the next permit renewal.

2. Groundwater

a. Water Code section 13267 states, in part, "(a) A *Regional Water Board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region" and "(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.*" The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, a Regional Water Board shall provide the person with a written explanation with regard to the need for the reports and shall identify the evidence that supports requiring that person to provide the reports. The MRP is issued pursuant to Water Code section 13267. The groundwater monitoring and reporting program required by this Order and the MRP are necessary to assure compliance with these WDR's. The Discharger is responsible for the discharges of waste at the Facility subject to this Order.

b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents that may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide BPTC to comply with the State Antidegradation Policy. Economic analysis is only one of many factors considered in determining BPTC. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this Order may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be

degraded by the discharge, this Order may be reopened, and specific numeric limitations established consistent with the State Antidegradation Policy and the Basin Plan.

c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached MRP. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Central Valley Water Board plans and policies, including the State Anti-Degradation Policy. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the pretreatment requirements contained in 40 C.F.R. part 403 and implemented in section VI.C.5.a of this Order. Biosolids monitoring is required per U.S. EPA guidance to evaluate the effectiveness of the pretreatment program.

2. Water Supply Monitoring

Water supply monitoring is required to evaluate the source of constituents in the wastewater. Order R5-2014-0072-01 required the Discharger to conduct a municipal water supply characterization study and submit annual update reports describing municipal water supply quality and quantity data collected from water purveyors within the Discharger's service area. Instead of a municipal water supply characterization study, this Order requires the Discharger to conduct annual water supply monitoring for electrical conductivity, standard minerals, and total dissolved solids at a location where a representative sample of the Facility's municipal water supply can be collected (Monitoring Location SPL-001).

3. Filtration System Monitoring

Filtration system monitoring and reporting are required to determine compliance with the operation specifications for turbidity in Special Provision VI.C.4.a. Order R5-2014-0072-01 required effluent monitoring for turbidity at Monitoring Location EFF-001. This Order moves the point of compliance to an internal compliance point following the tertiary filters and prior to the disinfection system (Monitoring Location FIL-001) in order to ensure the operational specifications for turbidity are being met prior to the disinfection process.

4. Emergency Storage Pond Monitoring

Emergency storage pond monitoring is required to ensure proper operation of the storage ponds. Consistent with Order R5-2014-0072-01, this Order requires the Discharger to record the date(s) when wastewater is directed to the emergency storage pond, the type(s) of wastewater directed to the emergency storage pond, the total estimated volume of wastewater directed to the emergency storage pond, and the available freeboard in the emergency storage pond, and submit monthly logs to the Central Valley Water Board with the SMR's.

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

Under the authority of section 308 of the CWA (33 U.S.C. § 1318), U.S. EPA requires all dischargers under the NPDES Program to participate in the annual DMR-QA Study Program. The DMR-QA Study evaluates the analytical ability of laboratories that

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

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Easterly Wastewater Treatment Plant. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Persons

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through posting of the Notice of Public Hearing (Notice) at the City of Vacaville City Hall, Elmira Post Office, and Facility on 2 April 2019, and publication of the Notice in the Vacaville Reporter on 5 April 2019. The Notice and tentative Order were also posted on the Central Valley Water Board's website on 27 March 2019.

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

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

B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on **26 April 2019**.

C. Public Hearing

The Central Valley Water Board held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date:	**6/7 June 2019**
Time:	8:30 a.m.
Location:	Regional Water Quality Control Board, Central Valley Region 11020 Sun Center Dr., Suite #200 Rancho Cordova, CA 95670

Interested persons were invited to attend. At the public hearing, the Central Valley Water Board heard testimony pertinent to the discharge, WDR's, and permit. For accuracy of the record, important testimony was requested in writing.

D. Reconsideration of Waste Discharge Requirements

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

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

Or by email at waterqualitypetitions@waterboards.ca.gov

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

E. Information and Copying

The ROWD, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (559) 445-5116.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this Facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Danielle Siebal at (916) 464-4843.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Ammonia Nitrogen, Total (as N)	mg/L	0.11 (DNQ)	0.50	2.17	3.20[1]	2.17[2]	--	--	--	--	Yes
Chloride	mg/L	128	53	230	860[1]	230[3]	--	--	250[4]	250	No
Chlorodibromomethane	µg/L	43	<0.085	34	--	--	4.9[5]	34	--	--	Yes
Cyanide, Total (as CN)	µg/L	5.7	2.2 (DNQ)	5.2	22	5.2	700	220,000	--	--	No
Dichlorobromomethane	µg/L	64	<0.10	46	--	--	16[5]	46	--	--	Yes
Electrical Conductivity @ 25°C	µmhos/cm	1,043[6]	664[6]	900	--	--	--	--	--	900	No
Mercury, Total Recoverable	µg/L	0.0018[6]	0.0042[6]	0.012	--	--	--	--	--	0.012[7]	No
Molybdenum, Total Recoverable	µg/L	7.1[8]	<4.5	10	--	--	--	--	10[9]	--	No
Nitrate, Total (as N)	mg/L	13.8	6.9	10	--	--	--	--	--	10	Yes
Nitrite, Total (as N)	mg/L	<0.010	0.15 (DNQ)	1.0	--	--	--	--	--	1.0	No
Sulfate	mg/L	71[6]	50[6]	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	637[6]	419[6]	500	--	--	--	--	--	500	Yes

General Note: All inorganic concentrations are given as a total recoverable.
DNQ = Detected but not Quantified
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level

Footnotes:
(1) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.
(2) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day average.
(3) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 4-day average.
(4) The Basin Plan contains site-specific water quality objectives for chloride in Cache Slough at the City of Vallejo Intake, from October through September, based on the Bay-Delta Plan.
(5) Site-specific human health water quality objective for New Alamo Creek, where the MUN beneficial use is applicable.
(6) Represents the maximum observed annual average concentration for comparison with the Secondary MCL or Sport Fish Water Quality Objective for mercury, where applicable.
(7) State Water Board Sport Fish Water Quality Objective for mercury.
(8) Represents the maximum observed average molybdenum concentration during the agricultural (dry weather) season for comparison to the Agricultural Water Quality Goal.
(9) Represents the Agricultural Water Quality Goal for molybdenum used to interpret the Basin Plan's narrative chemical constituents objective.

ATTACHMENT H – CALCULATION OF WQBEL'S

Human Health WQBEL's Calculations

Parameter	Units	Criteria	Mean Background Concentration	CV Eff[1]	Dilution Factor	MDEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL
Chlorodibromomethane	µg/L	34	<0.085	0.71	--	2.17	1.66	34	74	--
Dichlorobromomethane	µg/L	46	<0.10	0.36	--	1.60	1.32	46	74	--
Nitrate Plus Nitrite Nitrogen, Total (as N)	mg/L	10	2.26	0.18	0.49	1.23[2]	1.15	14	--	17

1 Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.
2 AWEL/AMEL multiplier used to calculate the AWEL for nitrate plus nitrite.

Aquatic Life WQBEL's Calculations

Parameter	Units	Criteria		B	Dilution Factors		Aquatic Life Calculations							Final Effluent Limitations		
		CMC	CCC		CMC	CCC	ECA Multiplier$_{acute}$	LTA$_{acute}$	ECA Multiplier$_{chronic}$	LTA$_{chronic}$	AMEL Multiplier$_{95}$	AWEL Multiplier	MDEL Multiplier$_{99}$	AMEL[1]	AWEL[2]	MDEL[3]
Ammonia Nitrogen, Total (as N)	mg/L	3.20	2.17	0.50	--	--	0.32	1.0	0.78	1.69[4]	1.55	2.68	--	1.4[5]	2.1[6]	--

1 Average Monthly Effluent Limitations are calculated according to section 1.4 of the SIP using a 95th percentile occurrence probability.
2 Average Weekly Effluent Limitations are calculated according to section 1.4 of the SIP using a 98th percentile occurrence probability.
3 Maximum Daily Effluent Limitations are calculated according to section 1.4 of the SIP using a 99th percentile occurrence probability.
4 The LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period and a monthly sampling frequency (n) of 30.
5 AMEL retained from Order R5-2014-0072-01.
6 AWEL calculated based on the CMC, CCC, and coefficient of variation used to calculate WQBEL's for ammonia in Order R5-2014-0072-01.