

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

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**ORDER R5-2014-0055
NPDES NO. CA0081850**

**WASTE DISCHARGE REQUIREMENTS
FOR THE UNITED STATES DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY
FORMER MCCLELLAN AIR FORCE BASE
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
SACRAMENTO COUNTY**

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

Table 1. Discharger Information

Discharger	United States Department of the Air Force, Air Force Real Property Agency
Name of Facility	Former McClellan Air Force Base, Groundwater Extraction and Treatment System
Facility Address	4934 Patrol Road, Building 740
	McClellan, CA 95652
	Sacramento County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Treated Groundwater	38° 39' 30"	121° 24' 54.6"	Magpie Creek
002	Treated Groundwater	38° 39' 46"	121° 25' 30"	Beaver Pond/Don Julio Creek

Table 3. Administrative Information

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

I, **Pamela C. Creedon**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **28 March 2014**.

Original Signed by
PAMELA C. CREEDON, Executive Officer

CONTENTS

I. Facility Information 3
 II. Findings 3
 III. Discharge Prohibitions 4
 IV. Effluent Limitations and Discharge Specifications 4
 A. Effluent Limitations – Discharge Points 001 and 002 4
 1. Final Effluent Limitations – Discharge Points 001 and 002 4
 2. Interim Effluent Limitations – Not Applicable 5
 B. Land Discharge Specifications – Not Applicable 5
 C. Recycling Specifications – Not Applicable 5
 V. Receiving Water Limitations 5
 A. Surface Water Limitations 5
 B. Groundwater Limitations – Not Applicable 7
 VI. Provisions 7
 A. Standard Provisions 7
 B. Monitoring and Reporting Program (MRP) Requirements 11
 C. Special Provisions 11
 1. Reopener Provisions 11
 2. Special Studies, Technical Reports and Additional Monitoring Requirements 11
 3. Best Management Practices and Pollution Prevention 13
 4. Construction, Operation and Maintenance Specifications – Not Applicable 13
 5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable 13
 6. Other Special Provisions – Not Applicable 13
 7. Compliance Schedules – Not Applicable 13
 VII. Compliance Determination 13

TABLES

Table 1. Discharger Information 1
 Table 2. Discharge Location 1
 Table 3. Administrative Information 1
 Table 4. Effluent Limitations 4

ATTACHMENTS

Attachment A – Definitions A-1
 Attachment B – Map B-1
 Attachment C – Flow Schematic C-1
 Attachment D – Standard Provisions D-1
 Attachment E – Monitoring and Reporting Program E-1
 Attachment F – Fact Sheet F-1
 Attachment G – Summary of Reasonable Potential Analysis for Constituents of COncern G-1
 Attachment H – Calculation of WQBELs H-1
 Attachment I – Effluent and Receiving Water Characterization Study I-1

I. FACILITY INFORMATION

Information describing the United States Department of the Air Force, Air Force Real Property Agency, Former McClellan Air Force Base, Groundwater Treatment and Extraction System (Facility) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

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

- A. Legal Authorities.** This Order serves as WDR's pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with section 13260). This Order is also issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. EPA and chapter 5.5, division 7 of the Water Code (commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this Facility to surface waters.
- B. Background and Rationale for Requirements.** The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for the requirements in this Order, is hereby incorporated into and constitutes Findings for this Order. Attachments A through E and G through I are also incorporated into this Order.
- C. Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections IV.B, IV.C, and V.B are included to implement State law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.
- D. Monitoring and Reporting.** 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

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

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

- E. Notification of Interested Parties.** The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of the notification are provided in the Fact Sheet.
- F. Consideration of Public Comment.** The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED that Order R5-2008-0161 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

- A.** Discharge of wastewater at a location or in a manner different from that described in this Order is prohibited.
- B.** The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).
- C.** Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.
- D.** The Discharger shall not allow pollutant-free wastewater to be discharged into the treatment or disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Points 001 and 002

1. Final Effluent Limitations – Discharge Points 001 and 002

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

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

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Carbon Tetrachloride	µg/L	--	0.5	--	--
Chromium VI, Dissolved	µg/L	11	12	--	--

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Dichlorobromomethane	µg/L	--	0.5	--	--
1,1-Dichloroethane	µg/L	--	0.5	--	--
1,2-Dichloroethane	µg/L	--	0.5	--	--
1,1-Dichloroethylene	µg/L	--	0.5	--	--
Tetrachloroethylene	µg/L	--	0.5	--	--
Trichloroethylene	µg/L	--	0.5	--	--
Vinyl Chloride	µg/L	--	0.5	--	--
Non-Conventional Pollutants					
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--

- b. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
 - i. 70%, minimum for any one bioassay; and
 - ii. 90%, median for any three consecutive bioassays.
- c. **Chronic Whole Effluent Toxicity.** There shall be no chronic toxicity in the effluent discharge.
- d. **Average Daily Discharge Flow.** The average daily discharge flow at Discharge Point 001 shall not exceed 2.88 million gallons per day (MGD). The average daily discharge flow at Discharge Point 002 shall not exceed 0.144 MGD. The total combined average daily discharge flow from Discharge Points 001 and 002 shall not exceed 2.88 MGD.

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 Magpie Creek, Beaver Pond, or Don Julio 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 which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
- 3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
- 4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.

5. **Dissolved Oxygen:**
 - a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
 - b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
 - c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.
9. **Pesticides:**
 - a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
 - b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
 - c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;
 - d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);
 - e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
 - f. Pesticides to be present in concentration in excess of the maximum contaminant levels (MCLs) set forth in CCR, Title 22, division 4, chapter 15; nor
 - g. Thiobencarb to be present in excess of 1.0 µg/L.
10. **Radioactivity:**
 - a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
 - b. Radionuclides to be present in excess of the MCLs specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.
11. **Suspended Sediments.** The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
12. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
13. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.
15. **Temperature.** The natural temperature to be increased by more than 5°F. Compliance to be determined based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.
16. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
17. **Turbidity:**
 - a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;
 - b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTUs;
 - c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTUs;
 - d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTUs; nor
 - e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTUs.

B. Groundwater Limitations – Not Applicable

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;
 - i. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
 - ii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
 - iii. a material change in the character, location, or volume of discharge.

The causes for modification include:

- *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.
- *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

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

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

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

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

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

- e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
- f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.
- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

- h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.
- i. Safeguard to electric power failure:
 - i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.
 - ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.
 - iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.
- j. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Central Valley Water Board Standard Provision contained in section VI.A.2.i of this Order.

The technical report shall:

- i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.
- ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.
- iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

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

- k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.
- l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.
- n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).
- o. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.
- p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, list limitation types as appropriate (e.g., maximum daily effluent limitation, hourly average 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 noncompliance, and shall confirm this notification in writing within five days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

- a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:
 - i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
 - ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
- b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.
- c. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.
- d. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

- a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in MRP section V. Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger during accelerated monitoring established in this 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 stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity

control options, and confirm the reduction in effluent toxicity. This Provision includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

- i. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.
- ii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is >1 TUC (where $TUC = 100/NOEC$) for all chronic toxicity endpoints, except the *Ceriodaphnia dubia* reproduction endpoint. For the *Ceriodaphnia dubia* reproduction endpoint, the numeric toxicity monitoring trigger to initiate a TRE is >1 TUC AND the reproduction (neonates/female) of the 100% effluent sample is less than or equal to 50% of the reproduction of the control sample. The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.
- iii. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14-days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four chronic toxicity tests conducted once every two weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:
 - (a) If the results of four consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.
 - (b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.
 - (c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:
 - (1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

- (2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
 - (3) A schedule for these actions.
3. **Best Management Practices and Pollution Prevention – Not Applicable**
 4. **Construction, Operation and Maintenance Specifications – Not Applicable**
 5. **Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable**
 6. **Other Special Provisions – Not Applicable**
 7. **Compliance Schedules – Not Applicable**

VII. COMPLIANCE DETERMINATION

- A. **Average Daily Discharge Flow Effluent Limitation (Section IV.A.1.d).** The average daily discharge flow represents the mean of all daily flow values obtained within a calendar day (i.e., midnight through 11:59 PM).
- B. **Priority Pollutant Effluent Limitations.** Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:
 1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).
 2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:
 - a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or
 - b. A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).
 3. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
 - a. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
 - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
 4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall not be deemed out of compliance.

- C. Chronic Whole Effluent Toxicity Effluent Limitation (Section IV.A.1.c).** Compliance with the accelerated monitoring and TRE provisions of Provision VI.C.2.a shall constitute compliance with the effluent limitation.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (m)

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 = $m = Sx / n$ where: Sx 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.

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.

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.

Inland Surface Waters

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

Instantaneous Maximum Effluent Limitation

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

Instantaneous Minimum Effluent Limitation

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

Maximum Daily Effluent Limitation (MDEL)

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

Median

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

Method Detection Limit (MDL)

MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 C.F.R. part 136, Attachment B, revised as of 3 July 1999.

Minimum Level (ML)

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

Mixing Zone

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

Not Detected (ND)

Sample results which are less than the laboratory's MDL.

Ocean Waters

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

Persistent Pollutants

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

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 (s)

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

$$s = \sqrt{[(x - m)^2]/(n - 1)}^{0.5}$$

where:

x is the observed value;

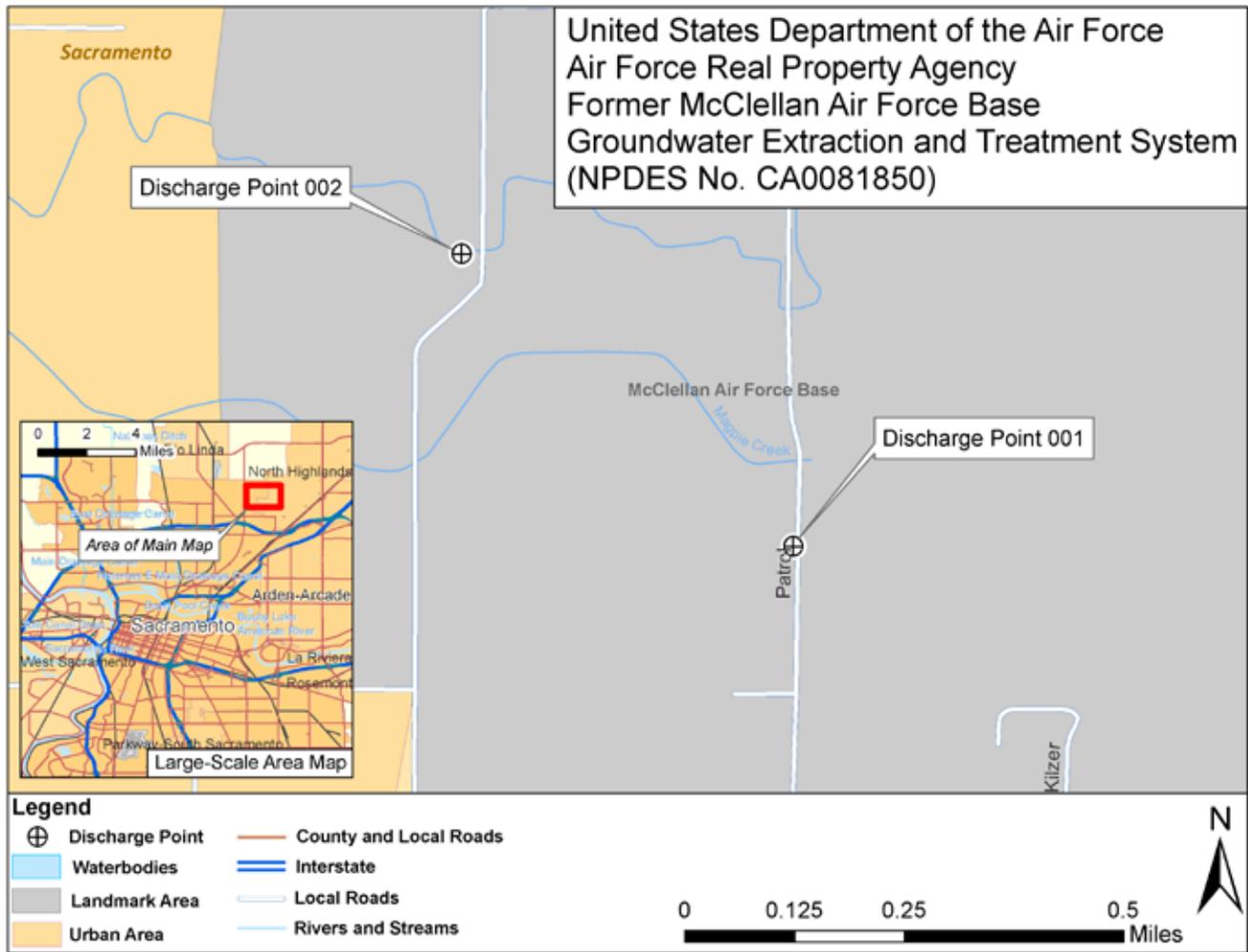
m is the arithmetic mean of the observed values; and

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



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

F. Inspection and Entry

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

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

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

G. Bypass

1. Definitions
 - a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 C.F.R. § 122.41(m)(1)(i).)
 - b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 C.F.R. § 122.41(m)(1)(ii).)
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 122.41(m)(2).)
3. Prohibition of bypass. Bypass is prohibited, and the Central Valley Water Board may take enforcement action against a Discharger for bypass, unless (40 C.F.R. § 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and
 - c. The Discharger submitted notice to the Central Valley Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)
4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)
5. Notice
 - a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 C.F.R. § 122.41(m)(3)(i).)

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

H. Upset

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

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 122.41(n)(2).)
2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 C.F.R. § 122.41(n)(3)):
 - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));
 - c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and
 - d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 122.41(n)(3)(iv).)
3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 C.F.R. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

This Order is not transferable to any person except after notice to the Central Valley Water Board. The Central Valley Water Board may require modification or revocation and

reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

- A.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)
- B.** Monitoring results must be conducted according to test procedures under 40 C.F.R. part 136 or, in the case of sludge use or disposal, approved under 40 C.F.R. part 136 unless otherwise specified in 40 C.F.R. part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

- A.** Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 C.F.R. part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Central Valley Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)
- B.** Records of monitoring information shall include:
 - 1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
 - 2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
 - 3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
 - 4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
 - 5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
 - 6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- C.** Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):
 - 1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and
 - 2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

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

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)
2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of U.S. EPA). (40 C.F.R. § 122.22(a)(3).)
3. All reports required by this Order and other information requested by the Central Valley Water Board, State Water Board, or U.S. EPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
 - c. The written authorization is submitted to the Central Valley Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)
4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Central Valley Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

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

C. Monitoring Reports

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

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 C.F.R. § 122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 C.F.R. part 136, or another method required for an industry-specific waste stream under 40 C.F.R. subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Central Valley Water Board. (40 C.F.R. § 122.41(l)(4)(ii).)
4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 C.F.R. § 122.41(l)(4)(iii).)

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that 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 written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 C.F.R. § 122.41(l)(6)(i).)
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):
 - a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
 - b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)
3. The Central Valley Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

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

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

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 C.F.R. § 122.41(l)(1)(ii).)
3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 C.F.R. § 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

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

H. Other Noncompliance

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

I. Other Information

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

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

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

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):
 - a. 100 micrograms per liter ($\mu\text{g/L}$) (40 C.F.R. § 122.42(a)(1)(i));
 - b. 200 $\mu\text{g/L}$ for acrolein and acrylonitrile; 500 $\mu\text{g/L}$ for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));
 - c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or

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

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Contents

I.	General Monitoring Provisions	E-2
II.	Monitoring Locations	E-3
III.	Influent Monitoring Requirements	E-3
	A. Monitoring Location INF-001	E-3
IV.	Effluent Monitoring Requirements	E-4
	A. Monitoring Locations EFF-001 and EFF-002.....	E-4
V.	Whole Effluent Toxicity Testing Requirements	E-5
VI.	Land Discharge Monitoring Requirements – not Applicable	E-7
VII.	Recycling Monitoring Requirements – Not Applicable	E-7
VIII.	Receiving Water Monitoring Requirements.....	E-7
	A. Monitoring Locations RSW-001, RSW-002, and RSW-003.....	E-7
IX.	Other Monitoring Requirements – not Applicable	E-8
X.	Reporting Requirements	E-8
	A. General Monitoring and Reporting Requirements	E-8
	B. Self-Monitoring Reports (SMR's)	E-8
	C. Discharge Monitoring Reports (DMR's)	E-10
	D. Other Reports	E-11

Tables

Table E-1.	Monitoring Station Locations	E-3
Table E-2.	Influent Monitoring.....	E-3
Table E-3.	Effluent Monitoring	E-4
Table E-4.	Chronic Toxicity Testing Dilution Series.....	E-6
Table E-5.	Receiving Water Monitoring Requirements.....	E-7
Table E-6.	Monitoring Periods and Reporting Schedule.....	E-9

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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

I. GENERAL MONITORING PROVISIONS

- A.** Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.
- B.** Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
- C.** Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, dissolved oxygen (DO), turbidity, temperature, and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, DO, turbidity, temperature, and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.
- D.** Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.
- E.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.
- F.** Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.
- G.** The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

- H. The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.
- I. The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

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 to the Facility can be collected prior to treatment.
001	EFF-001	Downstream from the last connection through which wastes can be admitted to the outfall to Magpie Creek. Latitude 38° 39' 30" N, Longitude 121° 24' 54.6" W
002	EFF-002	Downstream from the last connection through which wastes can be admitted to the outfall to Beaver Pond. Latitude 38° 39' 46" N, Longitude 121° 25' 30" W
--	RSW-001	100 feet upstream of Discharge Point 001 in Magpie Creek.
--	RSW-002	100 feet downstream of Discharge Point 001 in Magpie Creek.
--	RSW-003	Within 100 feet from Discharge Point 002 in Beaver Pond.

The North latitude and West longitude information in Table 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
Priority Pollutants				
Carbon Tetrachloride	µg/L	Grab	1/Year	1,2
Chromium VI, Dissolved	µg/L	Grab	1/Year	1,2
Dichlorobromomethane	µg/L	Grab	1/Year	1,2
1,1-Dichloroethane	µg/L	Grab	1/Year	1,2
1,2-Dichloroethane	µg/L	Grab	1/Year	1,2
1,1-Dichloroethylene	µg/L	Grab	1/Year	1,2
1,4-Dioxane	µg/L	Grab	1/Year	1,2
Tetrachloroethylene	µg/L	Grab	1/Year	1,2
Trichloroethylene	µg/L	Grab	1/Year	1,2

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Vinyl Chloride	µg/L	Grab	1/Year	1,2
Non-Conventional Pollutants				
cis-1,2-Dichloroethylene	µg/L	Grab	1/Year	1

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

² For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment I, Table I-1).

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Locations EFF-001 and EFF-002

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

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
pH	standard units	Grab ¹	1/Month	2
Priority Pollutants				
Carbon Tetrachloride	µg/L	Grab	1/Month	2,3
Chromium VI, Dissolved	µg/L	Grab	1/Month	2,3
Dichlorobromomethane	µg/L	Grab	1/Month	2,3
1,1-Dichloroethane	µg/L	Grab	1/Month	2,3
1,2-Dichloroethane	µg/L	Grab	1/Month	2,3
1,1-Dichloroethylene	µg/L	Grab	1/Month	2,3
Tetrachloroethylene	µg/L	Grab	1/Month	2,3
Trichloroethylene	µg/L	Grab	1/Month	2,3
Vinyl Chloride	µg/L	Grab	1/Month	2,3
Priority Pollutants and Other Constituents of Concern	See Attachment I	See Attachment I	See Attachment I	2,3
Non-Conventional Pollutants				
cis-1,2-Dichloroethylene	µg/L	Grab	1/Month	2
1,4-Dioxane	µg/L	Grab	1/Year	2
Dissolved Oxygen	mg/L	Grab	1/Month	2
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Quarter	2
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Quarter ⁴	2
Temperature	°F/°C	Grab ¹	1/Month	2
Turbidity	NTU	Grab	1/Quarter	2

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
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- 1 A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
- 2 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.
- 3 For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment I, Table I-1).
- 4 Hardness samples shall be collected concurrently with metals samples.

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 annual 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 or Monitoring Location EFF-002.
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 conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. Monitoring Frequency – The Discharger shall perform annual three species chronic toxicity testing.
2. Sample Types – Effluent samples shall 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 or Monitoring Location EFF-002. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this Monitoring and Reporting Program.
3. Sample Volumes – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
4. Test Species – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

- The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
 - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
 - The green alga, *Selenastrum capricornutum* (growth test).
5. **Methods** – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.*
 6. **Reference Toxicant** – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.
 7. **Dilutions** – For routine and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and one control. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. A receiving water control or laboratory water control may be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

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

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

8. **Test Failure** – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:
 - a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or
 - b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI. 2.a.iii. of the Order.)
- C. WET Testing Notification Requirements.** The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.
- D. WET Testing Reporting Requirements.** All toxicity test reports shall include the contracting laboratory’s complete report provided to the Discharger and shall be in accordance with the appropriate “Report Preparation and Test Review” sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 30 days following completion of the test, and shall contain, at minimum:
 - a. The results expressed in TUC, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.
 - b. The statistical methods used to calculate endpoints;
 - c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);
 - d. The dates of sample collection and initiation of each toxicity test; and
 - e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUC, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).
2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.
3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger’s approved TRE Workplan, or as amended by the Discharger’s TRE Action Plan.
4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:
 - a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.
 - b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.
 - c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECYCLING MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

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

1. The Discharger shall monitor Magpie Creek at Monitoring Locations RSW-001 and RSW-002 and Beaver Pond at Monitoring Location RSW-003 as follows:

Table E-5. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Estimate	1/Month ^{1,2}	--
Conventional Pollutants				
pH	standard units	Grab ³	1/Month	⁴

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Priority Pollutants				
Priority Pollutants and Other Constituents of Concern	See Attachment I	See Attachment I	See Attachment I ¹	4,5
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Grab ³	1/Month	4
Electrical Conductivity @ 25°C	µmhos/cm	Grab ³	1/Month	4
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Quarter	4
Temperature	°F/°C	Grab ³	1/Month	4
Turbidity	NTU	Grab ³	1/Month	4

¹ Monitoring required at Monitoring Location RSW-001 only.

² Estimate of receiving water flow, recorded for each day of sample collection.

³ A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

⁴ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or by methods approved by the Central Valley Water Board or the State Water Board.

⁵ For priority pollutant constituents the reporting level shall be consistent with Sections 2.4.2 and 2.4.3 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (See Attachment I, Table I-1).

IX. OTHER MONITORING REQUIREMENTS – NOT APPLICABLE

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

B. Self-Monitoring Reports (SMR's)

1. The Discharger shall submit hard copy SMR's. 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.

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

Table E-6. 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
1/Month	Permit effective date	1 st 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

3. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current laboratory's Method Detection Limit (MDL), as determined by the procedure in 40 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 (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
- d. Dischargers are to instruct laboratories to establish calibration standards so that the Minimum Level (ML) value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no

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

4. **Multiple Sample Data.** When determining compliance with an AMEL or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:
 - a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
 - b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.
5. The Discharger shall submit SMR’s in accordance with the following requirements:
 - a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations.
 - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDR’s; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
6. The Discharger shall submit in the SMR’s calculations and reports in accordance with the following requirements:
 - a. **Dissolved Oxygen Receiving Water Limitations.** The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95th percentile dissolved oxygen concentration.
 - b. **Turbidity Receiving Water Limitations.** The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.17.a-e. of the Limitations and Discharge Requirements.
 - c. **Temperature Receiving Water Limitations.** The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at Monitoring Locations RSW-001 and RSW-002.
 - d. **Flow.** Reports must clearly show when discharging to Discharge Point 001 or Discharge Point 002. Reports must show the date and time that the discharge started and stopped at each location.

C. Discharge Monitoring Reports (DMR’s)

1. At any time during the term of this permit, the State Water Board or Central Valley Water Board may notify the Discharger to electronically submit DMR’s. Until such notification is

given specifically for the submittal of DMR's, the Discharger shall submit DMR's in accordance with the requirements described below.

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

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

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

D. Other Reports

1. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, PMP, and Pollution Prevention Plan required by Special Provisions – VI.C. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.
2. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. The maximum required reporting levels for priority pollutant constituents shall be based on the Minimum Levels (MLs) contained in Appendix 4 of the SIP, determined in accordance with Section 2.4.2 and Section 2.4.3 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table I-1 (Attachment I) provides required maximum reporting levels in accordance with the SIP.
3. **Annual Operations Report.** By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:
 - a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.
 - b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
 - c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

- d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.
- e. The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

ATTACHMENT F – FACT SHEET

Contents

I.	Permit Information.....	F-3
II.	Facility Description.....	F-4
	A. Description of Wastewater and Biosolids Treatment and Controls.....	F-5
	B. Discharge Points and Receiving Waters	F-5
	C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data	F-6
	D. Compliance Summary	F-7
	E. Planned Changes – Not Applicable.....	F-7
III.	Applicable Plans, Policies, and Regulations	F-7
	A. Legal Authorities.....	F-7
	B. California Environmental Quality Act (CEQA).....	F-8
	C. State and Federal Laws, Regulations, Policies, and Plans	F-8
	D. Impaired Water Bodies on CWA 303(d) List.....	F-11
	E. Other Plans, Policies and Regulations – Not Applicable.....	F-11
IV.	Rationale For Effluent Limitations and Discharge Specifications.....	F-11
	A. Discharge Prohibitions.....	F-12
	B. Technology-Based Effluent Limitations	F-13
	1. Scope and Authority	F-13
	2. Applicable Technology-Based Effluent Limitations	F-14
	C. Water Quality-Based Effluent Limitations (WQBELs).....	F-16
	1. Scope and Authority	F-16
	2. Applicable Beneficial Uses and Water Quality Criteria and Objectives.....	F-16
	3. Determining the Need for WQBELs	F-24
	4. WQBEL Calculations.....	F-41
	5. Whole Effluent Toxicity (WET)	F-43
	D. Final Effluent Limitation Considerations	F-46
	1. Mass-based Effluent Limitations	F-46
	2. Averaging Periods for Effluent Limitations	F-47
	3. Satisfaction of Anti-Backsliding Requirements.....	F-47
	4. Antidegradation Policies.....	F-49
	5. Stringency of Requirements for Individual Pollutants.....	F-49
	E. Interim Effluent Limitations – Not Applicable	F-50
	F. Land Discharge Specifications – Not Applicable	F-50
	G. Recycling Specifications – Not Applicable.....	F-50
V.	Rationale for Receiving Water Limitations	F-51
	A. Surface Water.....	F-51
	B. Groundwater – Not Applicable.....	F-53
VI.	Rationale for Provisions	F-53
	A. Standard Provisions.....	F-53
	B. Special Provisions	F-53
	1. Reopener Provisions.....	F-53
	2. Special Studies and Additional Monitoring Requirements.....	F-53
	3. Best Management Practices and Pollution Prevention	F-57
	4. Construction, Operation, and Maintenance Specifications – Not Applicable	F-57
	5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable	F-57
	6. Other Special Provisions – Not Applicable.....	F-57

7. Compliance Schedules – Not Applicable	F-57
VII. Rationale for Monitoring and Reporting Requirements	F-57
A. Influent Monitoring	F-57
B. Effluent Monitoring.....	F-57
C. Whole Effluent Toxicity Testing Requirements	F-58
D. Receiving Water Monitoring.....	F-58
1. Surface Water	F-58
2. Groundwater – Not Applicable	F-59
E. Other Monitoring Requirements – Not Applicable	F-59
VIII. Public Participation	F-59
A. Notification of Interested Parties.....	F-59
B. Written Comments.....	F-59
C. Public Hearing	F-60
D. Reconsideration of Waste Discharge Requirements	F-60
E. Information and Copying.....	F-60
F. Register of Interested Persons	F-60
G. Additional Information	F-60

Tables

Table F-1. Facility Information	F-3
Table F-2. Historic Effluent Limitations and Monitoring Data.....	F-6
Table F-3. Basin Plan Beneficial Uses.....	F-8
Table F-4. Summary of Technology-based Effluent Limitations	F-16
Table F-5. Copper ECA Evaluation.....	F-22
Table F-6. Lead ECA Evaluation	F-24
Table F-7. Summary of ECA Evaluations for CTR Hardness-dependent Metals	F-24
Table F-8. Salinity Water Quality Criteria/Objectives.....	F-33
Table F-9. Lead RPA	F-37
Table F-10. Summary of Effluent and Receiving Water Data for Lead.....	F-38
Table F-11. Summary of Water Quality-Based Effluent Limitations.....	F-42
Table F-12. Whole Effluent Chronic Toxicity Testing Results.....	F-44
Table F-13. Summary of Final Effluent Limitations	F-50

ATTACHMENT F – FACT SHEET

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

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

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5A340700006
Discharger	United States Department of the Air Force, Air Force Real Property Agency
Name of Facility	Former McClellan Air Force Base, Groundwater Extraction and Treatment System
Facility Address	4934 Patrol Road
	McClellan, CA 95652
	Sacramento County
Facility Contact, Title and Phone	Steve Mayer, P.E., Base Realignment and Closure (BRAC) Environmental Coordinator, (916) 643-0830 ext. 224
Authorized Person to Sign and Submit Reports	Steve Mayer, P.E., Base Realignment and Closure (BRAC) Environmental Coordinator, (916) 643-0830 ext. 224
Mailing Address	AFRPA Western Region Execution Center 3411 Olson Street McClellan, CA 95652
Billing Address	Same as mailing address
Type of Facility	Groundwater Extraction and Treatment Facility
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	B
Pretreatment Program	Not Applicable
Recycling Requirements	Not Applicable
Facility Permitted Flow	Discharge Point 001 – 2.88 million gallons per day (MGD) Discharge Point 002 – 0.144 MGD
Facility Design Flow	Discharge Point 001 – 2.88 MGD Discharge Point 002 – 0.144 MGD
Watershed	Sacramento River
Receiving Water	Magpie Creek and Beaver Pond (wetlands area adjacent to Don Julio Creek)
Receiving Water Type	Inland Surface Water

- A.** The United States Department of the Air Force, Air Force Real Property Agency (hereinafter Discharger) is the owner and operator of the Former McClellan Air Force Base, Groundwater Extraction and Treatment System (GWTS, hereinafter Facility).

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 Magpie Creek and Beaver Pond (wetlands area adjacent to Don Julio Creek), waters of the United States, tributary to the Sacramento River via Robla (Rio Linda) Creek and Natomas East Main Drainage Canal within the Sacramento River watershed. The Discharger was previously regulated by Order R5-2008-0161 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0081850 adopted on 24 October 2008 and expired on 1 October 2013. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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

- C.** The Discharger did not submit a Report of Waste Discharge (ROWD), but did submit information necessary for permit renewal in several other documents. The NPDES Program and the California Toxics Rule (CTR) are included as Applicable, Relevant, and Appropriate Requirements (ARARs) in the final Record of Decision (ROD), signed in August 2007, for the Facility. As such, the Discharger will continue to comply with the substantive requirements of the permit.

II. FACILITY DESCRIPTION

The former McClellan Air Force Base (Base) is approximately 8 miles northeast of downtown Sacramento in North Highlands. As part of the Base Realignment and Closure (BRAC) Program, the Base was officially closed on 13 July 2001. Clean-up of the Base is currently supervised by the Department of Defense (DOD) Installation and Restoration Program (IRP). The IRP is designed to manage the overall DOD activities with respect to past waste disposal practices and site remediation. This program has identified 318 sites on the Base. The cleanup of IRP sites, and reuse and transfer of the former property, is being directed by the Discharger. Many contamination source areas have been identified and found to have soil and groundwater contamination due to buried and burned wastes, spills, unregulated disposal practices, leaking underground storage tanks, and industrial activities on the Base. Contamination is found to extend from the surface to 150 to 200 feet in depth and includes many volatile organic compounds (VOCs), semi-volatile compounds, and heavy metals.

One of the first sites to be addressed at the Base was Site S in Operable Unit (OU) D, located in the northwest portion of the Base. The plan for controlling and remediating the contamination in OU D included removing 20,000 cubic yards of soils and sludges; installing a plastic membrane and soil cap to stop rainfall infiltration into the contaminated area; and operation of a GWTS.

A. Description of Wastewater and Biosolids Treatment and Controls

The Discharger owns and operates the GWTS to extract groundwater contaminated with VOCs, remove contaminants, and discharge treated water. The treatment system consists of a 64,000 gallon influent tank, a packed-tower air stripper, and an ion exchange system, consisting of one 60-cubic foot (cf) vessel containing ion exchange resin. Previously, two 500-cf vessels were used. The two 500-cubic-foot ion exchange resin vessels were replaced with one 60-cubic-foot ion exchange resin vessel in December 2009 as this was determined to optimize treatment of hexavalent chromium. However, plumbing still exists for these vessels as well as for an additional 60-cubic-foot vessel, if needed. Six 20,000 lb liquid-phase granular activated carbon (GAC) vessels that were in operation prior to the term of Order R5-2008-0161 are bypassed, although the equipment remains.

The air stripper is equipped with two blowers (one for backup and redundancy) designed to treat up to 2,000 gallons per minute (gpm), removing greater than 99% of VOCs in groundwater entering the stripper, and discharges the off-gas to the atmosphere. An off-gas treatment system was removed in March 2006.

The GWTS has a design capacity of 2.88 MGD. Treated groundwater is discharged to Magpie Creek from Discharge Point 001. Up to 0.144 MGD of the 2.88 MGD may be discharged to Beaver Pond, a wetlands area, via Discharge Point 002, which is hydraulically connected to Don Julio Creek, tributary to Magpie Creek downstream of Discharge Point 001. Effluent is discharged to Beaver Pond only when the water level in the pond is below 2 feet for 2 consecutive weeks.

The GWTS is configured to allow for discharge to the municipal sewer system if there is potential to exceed limitations or if the effluent quality is uncertain. Under the Discharger's current permit (No. GRW023) with the Sacramento County Regional Sanitation District (SCRSD), the Discharger is allowed to discharge a maximum monthly volume of 3.3 million gallons to the municipal sewer system from all of their outfalls. The Discharger has two storage basins which can provide up to 10 million gallons of treated effluent temporary storage to support the GWTS restart protocol. The stored effluent may subsequently be discharged back to Discharge Point 001 or may be metered at a slower rate into the sanitary sewer as the SCRSD industrial permit allows after the effluent has been characterized.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 24, T19N, R5E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated municipal wastewater is discharged at Discharge Point 001 to Magpie Creek, a water of the United States and a tributary to the Sacramento River via Robla (Rio Linda) Creek and the Natomas East Main Drainage Canal at a point latitude 38° 39' 30" N and longitude 121° 24' 54.6" W.
3. Treated groundwater is discharged from Discharge Point 002 to Beaver Pond, a water of the United States, at a point latitude 38° 39' 46" N and longitude 121° 25' 30" W. Beaver Pond is a wetlands area adjacent to Don Julio Creek, which is tributary to the Sacramento River via Magpie Creek, Robla Creek, and the Natomas East Main Drainage Canal.

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

Effluent limitations contained in Order R5-2008-0161 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and Discharge Point 002 (Monitoring Location EFF-002) and representative monitoring data from the term of Order R5-2008-0161 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation		Monitoring Data (13 December 2008 – 30 March 2013)	
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge
Average Daily Discharge Flow	MGD	--	2.88 ¹	--	2.45 ²
		--	0.144 ³	--	0.138 ⁴
pH	standard units	--	6.5 – 8.5	--	6.71 – 8.54
Chromium VI, Dissolved	µg/L	11	13	11	11
Mercury, Total Recoverable	lbs/year	0.021 ⁵	--	0.000315 ^{2,7}	--
		0.0011 ⁶			
Selenium, Total Recoverable	µg/L	3.6	9.1	<0.75	<0.75
	lbs/day	0.09 ⁸	0.22 ⁹	Not Reported	Not Reported
	lbs/day	0.004 ¹⁰	0.011 ¹¹	0.030 ⁴	0.030 ⁴
Carbon Tetrachloride	µg/L	0.25	0.50	<0.16	<0.16
Dichlorobromomethane	µg/L	--	0.5	--	<0.16
1,1-Dichloroethane	µg/L	0.38	0.5	<0.20	<0.20
1,1-Dichloroethylene	µg/L	0.06	0.11	<0.21	<0.21
Tetrachloroethylene	µg/L	--	0.5	--	<0.19
Trichloroethylene	µg/L	--	0.5	--	<0.20
Vinyl Chloride	µg/L	--	0.5	--	<0.25
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	<0.20
Acute Toxicity	% survival	--	¹²	--	100 ¹³
Chronic Toxicity (Discharge Point 002 only)	TUc	--	¹⁴	--	>1

Parameter	Units	Effluent Limitation		Monitoring Data (13 December 2008 – 30 March 2013)	
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge

- 1 The daily average discharge flow from Discharge Point 001 shall not exceed 2.88 MGD. The total
- 2 combined daily average discharge flow from Discharge Points 001 and 002 shall not exceed 2.88 MGD.
- 3 Represents the maximum observed combined result from Discharge Points 001 and 002.
- 4 The daily average discharge flow from Discharge Point 002 shall not exceed 0.144 MGD. The total
- 5 combined daily average discharge flow from Discharge Points 001 and 002 shall not exceed 2.88 MGD.
- 6 Represents the maximum observed value from Discharge Point 002.
- 7 The total annual mass discharge of mercury from Discharge Point 001 shall not exceed 0.021 pounds.
- 8 The total combined annual mass discharge of mercury from Discharge Point 001 and 002 shall not
- 9 exceed 0.021 pounds.
- 10 The total annual mass discharge of mercury from Discharge Point 002 shall not exceed 0.0011 pounds.
- 11 The total combined annual mass discharge of mercury from Discharge Point 001 and 002 shall not
- 12 exceed 0.021 pounds.
- 13 Represents the maximum observed rolling 12-month total mercury mass loading.
- 14 The average monthly selenium mass loading from Discharge Point 001 shall not exceed 0.09 pounds
- per day. The total combined average monthly mass loading from Discharge Point 001 and 002 shall not
- exceed 0.09 pounds per day.
- The total maximum daily selenium mass loading from Discharge Point 001 shall not exceed
- 0.22 pounds per day. The total combined maximum daily mass loading from Discharge Points 001 and
- 002 shall not exceed 0.22 pounds per day.
- The average monthly selenium mass loading from Discharge Point 002 shall not exceed 0.004 pounds
- per day. The total combined average monthly mass loading from Discharge Point 001 and 002 shall not
- exceed 0.09 pounds per day.
- The total maximum daily selenium mass loading from Discharge Point 002 shall not exceed
- 0.011 pounds per day. The total combined maximum daily mass loading from Discharge Points 001 and
- 002 shall not exceed 0.22 pounds per day.
- Minimum for any one bioassay----- 70%
- Median for any three consecutive bioassays ----- 90%
- Represents the minimum observed percent survival.
- There shall be no chronic toxicity in the effluent discharge.

D. Compliance Summary

The Central Valley Water Board conducted a compliance evaluation inspection (CEI) at the Facility on 12 May 2011. The inspection report noted some deficiencies in reporting and recordkeeping.

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

a. **Basin Plan.** The Central Valley Water Board adopted Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Requirements in this Order implement the Basin Plan.

The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, Section II, does not specifically identify beneficial uses for Magpie Creek, Beaver Pond, or Don Julio Creek, but does identify present and potential uses for the Sacramento River from the Colusa Basin Drain to the “I” Street Bridge, to which Magpie Creek, Beaver Pond, and Don Julio Creek, via Robla Creek and the Natomas East Main Drainage Canal, is 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. Thus, beneficial uses applicable to Magpie Creek, Beaver Pond, and Don Julio Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001 and 002	Magpie Creek, Beaver Pond, and Don Julio Creek	<u>Existing:</u> Municipal and domestic water supply (MUN); agricultural supply for irrigation (AGR); water contact recreation (REC-1); non-contact water recreation, including canoeing and rafting (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); warm and cold migration of aquatic organisms (MIGR); warm and cold spawning, reproduction, and/or early development (SPAWN); wildlife habitat (WILD); and navigation (NAV).

In reviewing what beneficial uses that may apply to Magpie Creek, Beaver Pond, and Don Julio Creek, the Central Valley Water Board has considered the following facts:

i. Domestic, Municipal, and Agricultural Irrigation Supply

The Central Valley Water Board is required to apply the beneficial uses of municipal and domestic supply to Magpie Creek, Beaver Pond, and Don Julio Creek based on State Water Board Resolution No. 88-63, which

was incorporated into the Basin Plan pursuant to Central Valley Water Board Resolution No. 89-056. In addition, the State Water Board has issued water rights to existing water users along the Sacramento River downstream of the discharge for domestic and irrigation uses. As documented in Order R5-2008-0161, reports provided by the Discharger indicate that Magpie Creek and Don Julio Creek are losing streams, losing some of their surface flow to the subsurface vadose zone and groundwater zones via surface water infiltration. Groundwater is a source of domestic, municipal, and irrigation supply water. In addition to the existing water uses, growth in the area downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Magpie Creek and Don Julio Creek. Municipal and domestic supply is also identified as an existing beneficial use of the Sacramento River.

ii. **Water Contact and Non-Contact Recreation and Esthetic Enjoyment**

The Central Valley Water Board finds that the discharge flows through residential areas, and there is ready public access to Magpie Creek and Don Julio Creek. Exclusion of the public is unrealistic and contact recreational activities currently exist along the creeks. These uses are likely to increase as the population in the area grows.

iii. **Preservation and Enhancement of Fish , Wildlife, and Other Aquatic Resources**

From the point of discharge, Magpie Creek flows into the Magpie Creek Diversion which empties into Robla Creek. Robla Creek, in turn, empties into the Natomas East Main Drainage Canal. From the point the Natomas East Main Drainage Canal flows south to the north side of the American River, then turns west, paralleling the American River before emptying into the Sacramento River just north of Discovery Park and upstream from the confluence with the American River. While the beneficial uses of Magpie Creek are not identified in the Basin Plan, Table II-1 of the Basin Plan designates cold freshwater habitat (COLD) as an existing beneficial use of the Sacramento River, from the Colusa Basin Drain to the I Street Bridge, downstream of the discharge (#30, Hydro Unit Number 520.00). There is limited information on the specific types of habitats provided by Magpie Creek. However, Magpie Creek has been observed to retain pools of water several feet deep throughout the summer due to the discharge from the Facility. Magpie Creek, via Magpie Creek Diversion and Robla Creek, is tributary to and in hydraulic continuity with the Natomas East Main Drainage Canal during periods of the year. Information is available on the Natomas East Main Drainage Canal which suggests it has served in the past as an important migration pathway for cold water aquatic life fish species like salmon and steelhead. There are no known permanent barriers to flow between Magpie Creek and the Natomas East Main Drainage Canal which would prevent the migration or movement of cold water species between the water bodies at times of the year. Use of the tributary language in the Basin Plan results in the designation of the COLD beneficial use to Magpie Creek. Evidence in the record suggests that the COLD beneficial use is an appropriate designation for Magpie Creek. Upon review of the flow conditions, habitat

values, existing and potential beneficial uses of the Sacramento River, and the facts described above, the Central Valley Water Board finds that the beneficial uses identified in the Basin Plan for the Sacramento River from the Colusa Basin Drain to the I Street Bridge are applicable to Magpie Creek, Beaver Pond, and Don Julio Creek.

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** U.S. EPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, U.S. EPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain federal water quality criteria for priority pollutants.
3. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005, that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
4. **Antidegradation Policy.** Federal regulation 40 C.F.R. section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 is deemed to incorporate the federal antidegradation policy where the federal policy applies under federal law. Resolution 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 C.F.R. section 131.12 and State Water Board Resolution 68-16.
5. **Anti-Backsliding Requirements.** Sections 402(o) and 303(d)(4) of the CWA and federal regulations at 40 C.F.R. 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. **Human Right to Water Act.** In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This Order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

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

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 11 October 2011 USEPA gave final approval to California's 2008-2010 section 303(d) List of Water Quality Limited Segments (WQLSs). The Basin Plan references this list of WQLSs, which are defined as "...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR Part 130, et seq.)." The Basin Plan also states, "Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment." Magpie Creek, Beaver Pond, and Don Julio Creek are not listed on the 303(d) list as impaired. The Sacramento River from Knights Landing to the Delta, to which the receiving waters are tributary, is listed on the 303(d) list as impaired for chlordane, DDT, dieldrin, mercury, PCBs, and unknown toxicity.
2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. Magpie Creek, Beaver Pond, and Don Julio Creek are not impaired waterbodies and no active TMDLs are applicable to the receiving waters or to discharges from the Facility.
3. The 303(d) listings and TMDLs have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C. of this Fact Sheet.

E. Other Plans, Polices and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "are or may be discharged at a level which will cause, have the

reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.” Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.”

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page V-17, contains an implementation policy, “Policy for Application of Water Quality Objectives”, that specifies that the Central Valley Water Board “*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*” This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA’s published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board’s “Policy for Application of Water Quality Objectives”)(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: “*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*” (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, “*...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*” in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: “*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*”

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 information as part of the cleanup efforts that serves as a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited.

2. **Prohibition III.B (No bypasses or overflow of untreated wastewater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define “bypass” as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board’s prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.
3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance.
4. **Prohibition III.D (No inclusion of pollutant free wastewater shall cause improper operation of the Facility’s systems).** This prohibition is based on CFR Part 122.41 et seq. that requires the proper design and operation of treatment facilities.

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

The CWA requires that technology-based effluent limitations be established based on several levels of controls:

- a. Best practicable treatment control technology (BPT) represents the average of the best existing performance by well-operated facilities within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.
- b. Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.
- c. Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, pH, and oil and grease. The BCT standard is established after considering a two-part reasonableness test. The first test compares the relationship between the costs of attaining a reduction in effluent discharge and the resulting benefits. The second test examines the cost and level of reduction of pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or

category of industrial sources. Effluent limitations must be reasonable under both tests.

- d. New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires U.S. EPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. Section 402(a)(1) of the CWA and 40 C.F.R. section 125.3 authorize the use of BPJ to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the Central Valley Water Board must consider specific factors outlined in 40 C.F.R. section 125.3.

2. Applicable Technology-Based Effluent Limitations

- a. **Flow.** A technology-based effluent limitation for flow is established in this Order to monitor the performance of the groundwater treatment system from the standpoint of volumes being treated. The maximum daily flow rate in Order R5-2008-0161 was established at 2.88 MGD and is retained in this Order. Up to 0.144 MGD of the 2.88 MGD may be discharged from Discharge Point 002 to Beaver Pond when the water level in the pond is below 2 feet for 2 consecutive weeks.
- b. **Carbon Tetrachloride, Dichlorobromomethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, Tetrachloroethylene, Trichloroethylene, and Vinyl Chloride.** Technology-based limits were established for 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride in Order R5-2003-0052-A01 and were retained in Order R5-2008-0161. Order R5-2008-0161 included technology-based limits for two additional VOCs, carbon tetrachloride and dichlorobromomethane, based on their presence in the GWTS influent. Air stripping treatment systems are commonly used to remove VOCs from extracted groundwater at cleanup sites. The GWTS utilizes air stripping and retains activated carbon equipment as backup and is capable of dependably removing the groundwater contaminants to concentrations that are non-detectable by current analytical technology. Order R5-2008-0161 included technology-based effluent limitations for VOC constituents based on the ability of the groundwater treatment system technology to remove the contaminants to concentrations that are non-detectable by current analytical technology. The technology-based effluent limitations contained in Order R5-2008-0161 consisted of maximum daily effluent limitations (MDELs) equal to 0.5 µg/L, equivalent to the Minimum Levels (MLs) specified by Appendix 4, Table 2a of the SIP.

State Water Board Resolution No. 68-16 requires implementation of best practicable treatment and control (BPTC) to ensure that the highest water quality is maintained consistent with the maximum benefit to the people of the State. BPTC for groundwater cleanup of VOCs provides that the pollutants should be discharged at concentrations no higher than quantifiable levels for each pollutant. For the purposes of this Order, BPTC for VOCs requires

meeting effluent limitations based on the MLs defined in Appendix 4, Table 2a of the SIP. Because the SIP does not specify an ML for cis-1,2-dichloroethylene, the MDEL reflects the commonly achieved reporting level (RL) for this constituent. Several dischargers, including the GWTS, in the Central Valley Region have implemented BPTC groundwater treatment systems and have been able to consistently treat VOCs in the wastewater to concentrations below the MLs in the SIP.

According to the SIP, if no ML value is below the effluent limitation, the applicable ML value shall be the lowest ML value listed in Appendix 4 of the SIP. VOC concentrations below the MLs are generally considered unquantifiable. Therefore, application of technology-based effluent limitations for VOCs at groundwater cleanup sites requires effluent to meet MLs.

With respect to the specific discharges permitted herein, the following have been considered as required in 40 CFR 125.3 for establishing effluent limitations based on BPJ.

- i. **Appropriate Technology for Category or Class of Discharges.** Air stripping and GAC are commonly used to remove VOCs from extracted groundwater at cleanup sites. Properly operated and maintained systems perform reliably and ensure essentially complete removal of VOCs. The Discharger has utilized GAC in the past and equipment can be used if needed to meet effluent limits.
- ii. **Unique Factors Relating to the Discharger.** The Discharger has not identified any unique factors that would justify discharges equaling or exceeding quantifiable concentrations of the VOC constituents of concern.
- iii. **Age of Equipment.** The Discharger has not identified any concerns related to the ability to treat the contaminated groundwater due to the age of the equipment.
- iv. **Non-water Quality Environmental Impacts.** Air stripping should reliably remove VOC constituents of concern to concentrations of less than 0.5 µg/L and should not create additional non-water quality impacts (e.g., air emissions), or undue financial costs for the Discharger.
- v. **Effluent Data.** The monitoring data provided by the Discharger indicates that the GAC system has the ability to consistently remove VOC constituents of concern in the groundwater to less than 0.5 µg/L.

Air stripping and GAC are appropriate technologies for VOC removal from extracted groundwater. The above supports the conclusion that the Discharger can meet an MDEL of 0.5 µg/L for the VOC constituents of concern. Therefore, the MDEL for carbon tetrachloride, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride of 0.5 µg/L is retained in this Order based on BPTC and BPJ.

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

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

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Priority Pollutants					
Carbon Tetrachloride	µg/L	--	0.5	--	--
Dichlorobromomethane	µg/L	--	0.5	--	--
1,1-Dichloroethane	µg/L	--	0.5	--	--
1,2-Dichloroethane	µg/L	--	0.5	--	--
1,1-Dichloroethylene	µg/L	--	0.5	--	--
Tetrachloroethylene	µg/L	--	0.5	--	--
Trichloroethylene	µg/L	--	0.5	--	--
Vinyl Chloride	µg/L	--	0.5	--	--
Non-Conventional Pollutants					
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--

C. Water Quality-Based Effluent Limitations (WQBELs)

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.

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

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all

waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

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

- a. **Receiving Water and Beneficial Uses.** Refer to III.C.1. above for a complete description of the receiving water and beneficial uses.
- b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from January 2009 through March 2013, which includes effluent and ambient background data submitted in monthly performance evaluation reports and effluent and receiving water priority pollutant data collected on 9 July 2013.
- c. **Assimilative Capacity/Mixing Zone.** Based on available information, Magpie Creek and Don Julio Creek, absent the discharges, are at times seasonal and/or ephemeral waterbodies. The seasonal and/or ephemeral nature of Magpie Creek and Don Julio Creek means that the beneficial uses must be protected, but that no year-round credit for receiving water dilution is available. Although the discharges, at times, maintain the aquatic habitat, constituents may not be discharged in concentrations that may cause harm to aquatic life. At other times, flows within Magpie Creek and Don Julio Creek help support aquatic life. Both conditions may exist within a short time span, where the creeks would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Natomas East Main Drainage Canal and the Sacramento River. The lack of dilution results in more stringent effluent limitations to protect recreational uses and aquatic life.
- d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. For these constituents, USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.
- e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water

quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP¹, the CTR² and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (*Id.*, p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body³. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

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

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

² The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

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

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

- (b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the maximum ambient background concentration of a pollutant exceeds the applicable criterion, adjusted for hardness¹. For comparing the maximum ambient background concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

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

A 2006 Study² developed procedures for calculating the effluent concentration allowance (ECA)³ for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g. high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

¹ The pollutant must also be detected in the effluent.

² Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.

³ The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.

The equation describing the total recoverable regulatory criterion, as established in the CTR¹, is as follows:

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

Where:

H = hardness (as CaCO₃)²

WER = water-effect ratio

m, b = metal- and criterion-specific constants

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

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

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

Where:

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

B = the ambient background concentration

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

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc –

For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria⁴. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water

¹ 40 CFR § 131.38(b)(2).

² For this discussion, all hardness values are in mg/L as CaCO₃.

³ The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e., C ≤ B)

⁴ 2006 Study, p. 5700

flow)¹. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The effluent hardness ranged from 98 mg/L to 120 mg/L, based on 17 samples between January 2009 through July 2013. The upstream receiving water hardness in Magpie Creek ranged from 15 mg/L to 120 mg/L, based on 17 samples between January 2009 through July 2013. However, the minimum observed upstream receiving water hardness of 15 mg/L collected on 10 October 2011 falls below the first percentile of the data distribution. The Central Valley Water Board has determined that this result is not representative of the upstream ambient conditions. Excluding the 10 October 2011 hardness result, the minimum upstream receiving water hardness was 39 mg/L. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 98 mg/L CaCO₃. As demonstrated in the example shown in Table F-5, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 39 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

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

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

Where:

C_{MIX} = Mixed concentration (e.g. metals or hardness)

C_{RW} = Upstream receiving water concentration

C_{Eff} = Effluent concentration

EF = Effluent Fraction

In this example, for copper, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient copper concentration is in compliance with the CTR criteria².

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

² This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-5 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates

Table F-5. Copper ECA Evaluation

		Lowest Observed Effluent Hardness			98 mg/L (as CaCO₃)
		Lowest Observed Upstream Receiving Water Hardness			39 mg/L (as CaCO₃)
		Highest Assumed Upstream Receiving Water Copper Concentration			4.2 µg/L¹
		Copper ECA_{chronic}²			9.2 µg/L
		Fully Mixed Downstream Ambient Concentration			
Effluent Fraction⁶		Hardness³ (mg/L)	CTR Criteria⁴ (µg/L)	Copper⁵ (µg/L)	Complies with CTR Criteria
High Flow  Low Flow	1%	40	4.2	4.2	Yes
	5%	42	4.4	4.4	Yes
	15%	48	5.0	4.9	Yes
	25%	54	5.5	5.4	Yes
	50%	69	6.8	6.7	Yes
	75%	83	8.0	7.9	Yes
	100%	98	9.2	9.2	Yes

- ¹ Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 39 mg/L.
- ² ECA calculated using Equation 1 for chronic criterion at a hardness of 98 mg/L.
- ³ Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.
- ⁴ Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
- ⁵ Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.
- ⁶ The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

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

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

that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-6).

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

Where:

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

An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal, in Table F-6, below. As previously mentioned, the lowest effluent hardness is 98 mg/L, while the upstream receiving water hardness ranged from 39 mg/L to 120 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 39 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-6, for lead.

Table F-6. Lead ECA Evaluation

		Lowest Observed Effluent Hardness			98 mg/L
		Reasonable Worst-case Upstream Receiving Water Hardness			39 mg/L
		Reasonable Worst-case Upstream Receiving Water Lead Concentration			0.96 µg/L¹
		Lead ECA_{chronic}²			2.8 µg/L
		Fully Mixed Downstream Ambient Concentration			
		Hardness³ (mg/L) (as CaCO₃)	CTR Criteria⁴ (µg/L)	Lead⁵ (µg/L)	Complies with CTR Criteria
High Flow Low Flow	1%	40	0.98	0.98	Yes
	5%	42	1.1	1.1	Yes
	15%	48	1.2	1.2	Yes
	25%	54	1.4	1.4	Yes
	50%	69	2.0	1.9	Yes
	75%	83	2.5	2.3	Yes
	100%	98	3.1	2.8	Yes

¹ Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 39 mg/L.

² ECA calculated using Equation 4 for chronic criteria.

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

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

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

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

Based on the procedures discussed above, Table F-7 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-7. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)¹	
	acute	chronic
Copper	14	9.2
Chromium III	1,700	200
Cadmium	4.2	2.4
Lead	72	2.8
Nickel	460	51
Silver	2.9	--
Zinc	120	120

¹ Metal criteria rounded to two significant figures in accordance with the CTR.

3. Determining the Need for WQBELs

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

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

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

i. Aluminum

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

- (a) **WQO.** The Code of Federal Regulations promulgated criteria for priority toxic pollutants for California's surface waters as part of section 131.38 Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule or CTR), including metals criteria. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, WQBEL's in the Central Valley Region's NPDES permits are based on the Basin Plans' narrative toxicity objective. The Basin Plans' Policy for Application of Water Quality Objectives requires the Central Valley Water Board to consider, "*on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective.*" Relevant information includes, but is not limited to (1) USEPA Ambient Water Quality Criteria (NAWQC) and subsequent Correction, (2) site-specific conditions of Magpie Creek, and (3) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, p. IV.-17.00; see also, 40 CFR 122.44(d)(vi).)

USEPA NAWQC. USEPA recommended the NAWQC aluminum acute criterion at 750 $\mu\text{g/L}$ based on test waters with a pH of 6.5 to 9.0. USEPA also recommended the NAWQC aluminum chronic

criterion at 87 µg/L based upon the following two toxicity tests. All test waters contained hardness at 12 mg/L as CaCO₃.

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

Site-specific Conditions. Effluent and Magpie Creek data indicate that the hardness values are not similar to the low hardness and pH conditions under which the chronic criterion for aluminum was developed, as shown in the table below, and therefore, the Central Valley Water Board does not expect aluminum to be as reactive in the Magpie Creek as in the previously described toxicity tests. The pH of Magpie Creek, the receiving water, ranged from 5.9 to 9.73 with an average of 7.8, and was below 6.5 only three times, based on 51 monitoring results obtained between January 2009 through March 2013. These water conditions are circumneutral pH where aluminum is predominately in the form of Al(OH)³ and non-toxic to aquatic life. Excluding the lowest hardness data point as discussed under section IV.C.2.e.ii of this Fact Sheet, the hardness of Magpie Creek ranged from 39 mg/L to 120 mg/L based on 16 samples, which is above the conditions, and thus less toxic, than the tests used to develop the chronic criterion. There are no known fish surveys of Magpie Creek. Downstream receiving waters, such as the Sacramento River may support aquatic species such as Chinook salmon and steelhead (rainbow trout). Brook trout and striped bass have not been surveyed nor expected to be present (<http://bios.dfg.ca.gov/>) since striped bass is non-native to California and brook trout is present in higher elevation lakes and streams.

Parameter	Units	Test Conditions for Applicability of Chronic Criterion	Effluent	Receiving Water
pH	standard units	6.0 – 6.5	6.71 – 8.54	5.9 – 9.73
Hardness, Total (as CaCO ₃)	mg/L	12	98 – 120	15–120
Aluminum, Total Recoverable	µg/L	87.2 - 390	1.8 ¹	90

¹. Estimated concentration. The parameter was detected in the effluent at a concentration greater than the MDL and less than the ML.

Local Environmental Conditions and Studies. Twenty-one site-specific aluminum toxicity tests have been conducted within the Central Valley Region. The pH and hardness of Magpie Creek are similar, as shown in the table below, and thus the results of these site-specific aluminum toxicity tests are relevant and appropriate for Magpie Creek. As shown in the following table, all EC50 toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Thus, the toxic effects of aluminum in surface waters within the Central Valley Region, including Magpie Creek, is less toxic (or less reactive) to aquatic species than demonstrated in the toxicity tests that USEPA used for the basis of establishing the chronic criterion of 87 µg/L. This new information, and review of the toxicity tests USEPA used to establish the chronic criterion, indicates that 87 µg/L is overly stringent and not applicable to Magpie Creek.

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC ₅₀ Value	pH	WER
Auburn	<i>Ceriodaphnia dubia</i>	Effluent	99	>5270	7.44	>19.3
	“ “	Surface Water	16	>5160	7.44	>12.4
Manteca	“ “	Surface Water/Effluent	124	>8800	9.14	N/C
	“ “	Effluent	117	>8700	7.21	>27.8
	“ “	Surface Water	57	7823	7.58	25.0
	“ “	Effluent	139	>9500	7.97	>21.2
	“ “	Surface Water	104	>11000	8.28	>24.5
	“ “	Effluent	128	>9700	7.78	>25.0
	“ “	Surface Water	85	>9450	7.85	>25.7
	“ “	Effluent	106	>11900	7.66	>15.3
	“ “	Surface Water	146	>10650	7.81	>13.7
Modesto	“ “	Surface Water/Effluent	120/156	31604	8.96	211
Yuba City	“ “	Surface Water/Effluent	114/164 ¹	>8000	7.60/7.46	>53.5
Placer County	“ “	Effluent	150	>5000	7.4 – 8.7	>13.7
Manteca	<i>Daphnia magna</i>	Surface Water/Effluent	124	>8350	9.14	N/C
Modesto	“ “	Surface Water/Effluent	120/156	>11900	8.96	>79.6
Yuba City	“ “	Surface Water/Effluent	114/164 ¹	>8000	7.60/7.46	>53.5
Manteca	<i>Oncorhynchus mykiss</i> (rainbow trout)	Surface Water/Effluent	124	>8600	9.14	N/C
Auburn	“ “	Surface Water	16	>16500	7.44	N/C
Modesto	“ “	Surface Water/Effluent	120/156	>34250	8.96	>229
Yuba City	“ “	Surface Water/Effluent	114/164 ¹	>8000	7.60/7.46	>53.5

Discharger (City)	Species	Test Waters	Hardness Value	Total Aluminum EC ₅₀ Value	pH	WER
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Hardness values may be biased high because the EDTA titrimetric method is subject to interferences that measure as hardness (barium, cadmium, lead, manganese, strontium, and zinc will be measured as hardness) producing hardness numbers that are likely to be greater than the calculation of hardness based upon the ICP analysis of calcium and magnesium. Upstream receiving water hardness ranged from 30 to 50.9 mg/L as CaCO₃ between January 2008 and August 2011. Furthermore, the upstream receiving water hardness was 37 mg/L as CaCO₃ on 4 October 2005, 7 days prior to the Feasibility Assessment (first phase of a Water Effects Ratio study) sample collection date of 11 October 2005. It is likely that matrix interferences from other metals were responsible for the unexpected hardness values reported by Pacific EcoRisk.

The Discharger has not conducted a toxicity test for aluminum; however, the City of Auburn conducted two toxicity tests in Auburn Ravine, shown highlighted in the previous table. As shown, the test water quality characteristics of Auburn Ravine are similar to Magpie Creek, with the pH at 7.4 and hardness at 16 mg/L as CaCO₃ in comparison to the mean pH at 7.8 and the minimum hardness at 39 mg/L (mean hardness at 64 mg/L) as CaCO₃, respectively. Thus, based on these two similar primary water quality characteristics (pH and hardness) that drive aluminum speciation, the aluminum toxicity within Auburn Ravine is expected to be similar in Magpie Creek. Therefore, the Auburn Ravine aluminum toxicity test study is relevant and appropriate in this case for use in determining the specific numerical criteria to be used in determining compliance with the Basin Plan’s narrative toxicity objective. The Auburn Ravine aluminum toxicity study resulted in a site-specific aluminum objective at 1,079 µg/L. Thus, these results support the conclusion that the 87 µg/L chronic criterion is overly stringent for Magpie Creek.

State of California Department of Public Health (DPH) has established Secondary Maximum Contaminant Levels (MCLs) to assist public drinking water systems in managing their drinking water for aesthetic conditions such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L. U.S. EPA has also adopted a NAWQC acute criterion of 750 µg/L for the protection of aquatic life.

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

standards is determined, the RPA was conducted based on the calendar annual average effluent aluminum concentrations.

The maximum effluent aluminum concentration was an estimated concentration of 1.8 µg/L based on a single sample collected on 9 July 2013, which represents the maximum observed annual average effluent concentration. Effluent aluminum is less than the concentrations in the receiving water and below the Secondary MCL. Therefore, the Central Valley Water Board finds the discharge does not have reasonable potential to cause or contribute to an exceedance in the receiving water and the Facility is adequately controlling the discharge of aluminum.

ii. **Carbon Tetrachloride**

- (a) **WQO.** The CTR includes a criterion of 0.25 µg/L for carbon tetrachloride for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0161 included WQBELs for carbon tetrachloride based on the CTR criterion.
- (b) **RPA Results.** Carbon tetrachloride was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Carbon tetrachloride was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion and WQBELs for carbon tetrachloride have not been retained in this Order. However, carbon tetrachloride is a constituent of concern in the influent groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for carbon tetrachloride, as discussed in section IV.B.2 of this Fact Sheet. Relaxation of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

iii. **Dichlorobromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** Dichlorobromomethane was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Dichlorobromomethane was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion and WQBELs for dichlorobromomethane have not been included in this Order. However, dichlorobromomethane is a constituent of concern in the influent

groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for dichlorobromomethane, as discussed in section IV.B.2 of this Fact Sheet.

iv. **1,1-Dichloroethane**

- (a) **WQO.** DPH has adopted a Primary MCL for 1,1-dichloroethane of 5 µg/L, which is protective of the Basin Plan's chemical constituent objective.
- (b) **RPA Results.** 1,1-Dichloroethane was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). 1,1-Dichloroethane was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL and WQBELs for 1,1-dichloroethane have not been included in this Order. However, 1,1-dichloroethane is a constituent of concern in the influent groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for 1,1-dichloroethane, as discussed in section IV.B.2 of this Fact Sheet.

v. **1,2-Dichloroethane**

- (a) **WQO.** The CTR includes a criterion of 0.38 µg/L for 1,2-dichloroethane for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0161 included a water quality-based average monthly effluent limitation (AMEL) for 1,2-dichloroethane based on the CTR criterion.
- (b) **RPA Results.** 1,2-Dichloroethane was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). 1,2-Dichloroethane was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion and the water quality-based AMEL for 1,2-dichloroethane has not been retained in this Order. However, 1,2-dichloroethane is a constituent of concern in the influent groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for 1,2-dichloroethane, as discussed in section IV.B.2 of this Fact Sheet. Removal of the water quality-based AMEL is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

vi. **cis-1,2-Dichloroethylene**

- (a) **WQO.** DPH has adopted a Primary MCL for cis-1,2-dichloroethylene of 6 µg/L, which implements the Basin Plan's chemical constituent objective.

- (b) **RPA Results.** cis-1,2-Dichloroethylene was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). cis-1,2-Dichloroethylene was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not have reasonable potential to exceed the Primary MCL for cis-1,2-dichloroethylene and WQBELs for cis-1,2-dichloroethylene are not included in this Order. However, cis-1,2-dichloroethylene is a constituent of concern in the influent groundwater. This Order retains a technology-based effluent limitation of 0.5 µg/L for cis-1,2-dichloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

vii. **1,4-Dioxane**

- (a) **WQO.** No CTR criteria or MCLs have been established for 1,4-dioxane. The State's Preliminary Remediation Goal for 1,4-dioxane is 6.1 µg/L. This Preliminary Remediation Goal is a risk-based standard for tap water recommended by USEPA Region 9.
- (b) **RPA Results.** The treatment system at the Facility previously included ultraviolet/peroxide (UVOX) technology to treat for high concentrations of certain organics, including 1,4-dioxane. The UVOX technology was discontinued in 2004. During the term of Order R5-2008-0161, 1,4-dioxane was detected in the effluent at a concentrations ranging from 0.93 µg/L to 3.5 µg/L based on four samples collected between January 2009 and July 2013. These data indicate that the effluent concentrations remain below the Preliminary Reduction Goal with the existing treatment system. In the absence of an applicable criterion to determine reasonable potential, this Order does not establish effluent limitations for 1,4-dioxane. However, 1,4-dioxane is a constituent of concern in the influent groundwater; therefore this Order requires continued monitoring of 1,4-dioxane in the influent and effluent.

viii. **Mercury**

- (a) **WQO.** The current NAWQC for protection of freshwater aquatic life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "*...more stringent mercury limits may be determined and implemented through use of the State's narrative criterion.*" In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. No TMDL for mercury is scheduled for Magpie Creek.
- (b) **RPA Results.** Order R5-2008-0161 included performance-based effluent limitations for total mercury at Discharge Point 001

(0.021 lbs/year) and Discharge Point 002 (0.0011 lbs/year) to maintain the mercury loading at the existing level until a TMDL could be established or USEPA develops mercury standards that are protective of human health. The MEC for total mercury was 0.00076 µg/L based on nine samples collected between January 2009 and July 2013 (minimum MDL 0.0002 µg/L, minimum RL 0.0005 µg/L). The MEC does not exceed the criteria of 0.77 µg/L or 0.050 µg/L. In addition, calculating the equivalent lbs/year results in 0.0067 lbs/year for Discharge Point 001 and 0.00033 lbs/year for Discharge Point 002, which are less than the effluent limitations contained in Order R5-2008-0161. The maximum observed upstream receiving water concentration for total mercury was 0.018 µg/L based on five samples collected between January 2009 and July 2013 (minimum MDL 0.0002 µg/L, minimum RL 0.0005 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion, and the WQBEL for mercury has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3. of the Fact Sheet). If mercury toxicity is detected or USEPA develops new water quality standards for mercury, this permit may be reopened and effluent limitations imposed.

ix. **Salinity**

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

Table F-8. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective ¹	Secondary MCL ²	USEPA NAWQC	Effluent	
				Average ³	Maximum
EC (µmhos/cm)	Varies ²	900, 1600, 2200	N/A	320	364
TDS (mg/L)	Varies	500, 1000, 1500	N/A	250	260
Sulfate (mg/L)	Varies	250, 500, 600	N/A	4	4
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	4	4

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

² The Secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

³ Maximum calendar annual average.

⁴ No data available.

- (1) **Chloride.** The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.
- (2) **Electrical Conductivity.** The Secondary MCL for electrical conductivity is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum.
- (3) **Sulfate.** The Secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.
- (4) **Total Dissolved Solids.** The Secondary MCL for total dissolved solids is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum.

(b) **RPA Results**

- (1) **Chloride.** Effluent monitoring for chloride was not required by Order R5-2008-0161; therefore, monitoring data for chloride in the treated groundwater is not available.
- (2) **Electrical Conductivity.** A review of the Discharger’s monitoring reports shows an average effluent electrical conductivity of 288 µmhos/cm, with a range from 181 µmhos/cm to 364 µmhos/cm. These levels do not exceed the Secondary MCL. The background receiving water electrical conductivity averaged 209 µmhos/cm.

- (3) **Sulfate.** Effluent monitoring for sulfate was not required by Order R5-2008-0161; therefore, monitoring data for sulfate in the treated groundwater is not available.
- (4) **Total Dissolved Solids.** The average total dissolved solids effluent concentration was 242 mg/L with concentrations ranging from 210 mg/L to 260 mg/L. These levels do not exceed the Secondary MCL. The background receiving water total dissolved solids ranged from 38 mg/L to 320 mg/L, with an average of 172 mg/L.

Based on the relatively low reported salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity. However, since the Facility discharges to Magpie Creek and Beaver Pond, both tributaries of the Sacramento River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Allowing the Discharger to increase its current salt loading is contrary to the Region-wide effort to address salinity in the Central Valley. Therefore, this Order requires salinity monitoring of the discharge to verify that salinity is not increasing.

x. **Selenium**

- (a) **WQO.** The CTR includes maximum 1-hour average and 4-day average criteria of 20 µg/L and 5.0 µg/L, respectively, for total recoverable selenium for the protection of freshwater aquatic life. Order R5-2008-0161 included effluent limitations for selenium based on the CTR criteria.
- (b) **RPA Results.** The MEC for selenium was 0.75 µg/L based on 18 samples collected between January 2009 and July 2013 (minimum MDL 0.15 µg/L, minimum RL 1 µg/L). Selenium was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.15 µg/L, minimum RL 1 µg/L). Therefore, selenium in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion, and the WQBELs for selenium have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

xi. **Tetrachloroethylene**

- (a) **WQO.** The CTR includes a criterion of 0.8 µg/L for tetrachloroethylene for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** Tetrachloroethylene was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Tetrachloroethylene was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential

to cause or contribute to an in-stream excursion above the CTR human health criterion and WQBELs for tetrachloroethylene have not been included in this Order. However, tetrachloroethylene is a constituent of concern in the influent groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for tetrachloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

xii. **Trichloroethylene**

- (a) **WQO.** The CTR includes a criterion of 2.7 µg/L for trichloroethylene for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** Trichloroethylene was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Trichloroethylene was detected but not quantified in the upstream receiving water at a maximum estimated concentration of 0.2 µg/L based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion and WQBELs for trichloroethylene have not been included in this Order. However, trichloroethylene is a constituent of concern in the influent groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for trichloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

xiii. **Vinyl Chloride**

- (a) **WQO.** DPH has adopted a Primary MCL for vinyl chloride of 0.5 µg/L, which is protective of the Basin Plan's chemical constituent objective.
- (b) **RPA Results.** Vinyl chloride was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Vinyl chloride was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL and WQBELs for vinyl chloride have not been included in this Order. However, vinyl chloride is a constituent of concern in the influent groundwater. Therefore, this Order establishes a technology-based MDEL of 0.5 µg/L for vinyl chloride, as discussed in section IV.B.2 of this Fact Sheet.

- b. **Constituents with Limited Data.** Reasonable potential cannot be determined for the following constituents because effluent data are limited or ambient background concentrations are not available. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data

become available, further analysis will be conducted to determine whether to add numeric effluent limitations or to continue monitoring.

i. **1,1-Dichloroethylene**

- (a) **WQO.** The CTR includes a criterion of 0.057 µg/L for 1,1-dichloroethylene for the protection of human health for waters from which both water and organisms are consumed. Order R5-2008-0161 included WQBELs for 1,1-dichloroethylene based on the CTR criterion.
- (b) **RPA Results.** 1,1-Dichloroethylene was not detected in the effluent based on 52 samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L). 1,1-Dichloroethylene was not detected in the upstream receiving water based on five samples collected between January 2009 and July 2013 (minimum MDL 0.1 µg/L, minimum RL 0.5 µg/L).

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

- (1) Required MLs are listed in Appendix 4 of the SIP. Where more than one ML is listed in Appendix 4, the discharger may select any one of the cited analytical methods for compliance determination. The selected ML used for compliance determination is referred to as the RL.
- (2) An RL can be lower than the ML in Appendix 4 only when the discharger agrees to use an RL that is lower than the ML listed in Appendix 4. The Central Valley Water Board and the Discharger have no agreement to use an RL lower than the listed MLs.
- (3) SIP Section 1.2 requires that the Regional Board use all available, valid, relevant, representative data and information, as determined by the Regional Board, to implement the SIP. SIP Section 1.2 further states that the Regional Board has the discretion to consider if any data are inappropriate or insufficient for use in implementing the SIP.
- (4) SIP Appendix 4 cites two MLs for 1,1-dichloroethylene. The lowest applicable ML cited for 1,1-dichloroethylene is 0.5 µg/L. The Discharger used an analytical method consistent with the lowest ML required by the SIP; however, the lowest ML is greater than the applicable CTR criterion and the effluent and receiving water results were all non-detects. Therefore, in accordance with Section 1.2 of the SIP, the Central Valley Water Board has determined that the submitted effluent and receiving water data is insufficient to determine reasonable potential under the SIP.
- (5) In implementing its discretion, the Central Valley Water Board is not finding that reasonable potential does not exist; rather the Central Valley Water Board cannot make such a determination

given the invalid data. Therefore, the Central Valley Water Board will require additional monitoring for such constituents until such time a determination can be made in accordance with the SIP policy.

Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of a WQBEL if data are unavailable or insufficient. Instead of WQBELs, additional effluent monitoring has been established for 1,1-dichloroethylene. Additionally, since 1,2-dichloroethane is a constituent of concern in the influent groundwater, this Order establishes a technology-based MDEL of 0.5 µg/L, as discussed in section IV.B.2 of this Fact Sheet. Removal of the WQBELs is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet). 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 appropriate WQBELs.

ii. Lead

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

Table F-9. Lead RPA

	CTR Chronic Criterion (Total Recoverable)	Maximum Concentration (Total Recoverable)	Reasonable Potential? (Y/N)
Receiving Water	0.96 µg/L ¹	1.4 µg/L	Inconclusive ²
Effluent	2.8 µg/L ³	J 0.05 µg/L	No ⁴

¹ Based on lowest observed upstream hardness of 39 mg/L (as CaCO₃).
² Per Section 1.3, step 4 of the SIP.
³ Based on reasonable worst-case downstream hardness as discussed in section IV.C.2.e of this Fact Sheet.
⁴ Per Section 1.3, step 6 of the SIP.

Total recoverable lead was detected but not quantified in the effluent in one sample collected on 9 July 2013 (see table below). Total

recoverable lead was detected at a concentration of 1.4 µg/L in one upstream receiving water sample collected on 9 July 2013 (see table below). Based on the limited amount of data available (one sample) and since the effluent sample was detected but not quantified, the data is insufficient per Section 1.2 of the SIP.

Table F-10. Summary of Effluent and Receiving Water Data for Lead

Sample Date	Method Detection Level (MDL)	Reporting Level (RL)	Lead Effluent Result
Effluent Data			
9 July 2013	0.030	0.25	J 0.05
Receiving Water Data			
9 July 2013	0.030	0.25	1.4

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

- (1) Required MLs are listed in Appendix 4 of the SIP. Where more than one ML is listed in Appendix 4, the discharger may select any one of the cited analytical methods for compliance determination. The selected ML used for compliance determination is referred to as the RL.
- (2) An RL can be lower than the ML in Appendix 4 only when the discharger agrees to use an RL that is lower than the ML listed in Appendix 4. The Central Valley Water Board and the Discharger have no agreement to use an RL lower than the listed MLs.
- (3) SIP Section 1.2 requires that the Regional Board use all available, valid, relevant, representative data and information, as determined by the Regional Board, to implement the SIP. SIP Section 1.2 further states that the Regional Board has the discretion to consider if any data are inappropriate or insufficient for use in implementing the SIP.
- (4) Data reported below the ML indicates the data may not be valid due to possible matrix interferences during the analytical procedure.
- (5) Further, SIP Section 2.4.5 (Compliance Determination) supports the insufficiency of data reported below the ML or RL. In part it states, “Dischargers shall be deemed out of compliance with an effluent limitation, for reporting and administrative enforcement purposes, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the RL.” Thus, if submitted data is below the RL, that data cannot be used to determine compliance with effluent limitations.

- (6) Data reported below the ML is not considered valid data for use in determining reasonable potential. Therefore, in accordance with Section 1.2 of the SIP, the Central Valley Water Board has determined that data reported below the ML is inappropriate and insufficient to be used to determine reasonable potential.
- (7) In implementing its discretion, the Central Valley Water Board is not finding that reasonable potential does not exist; rather the Central Valley Water Board cannot make such a determination given the invalid data. Therefore, the Central Valley Water Board will require additional monitoring for such constituents until such time a determination can be made in accordance with the SIP policy.

SIP Appendix 4 cites several MLs for lead. The MLs below the applicable criteria cited for lead are 0.5 µg/L and 2 µg/L. The Discharger used an analytical method that was more sensitive than the ML required by the SIP. The only available effluent result was an estimated value (i.e., DNQ). Therefore, the submitted effluent lead data is inappropriate and insufficient to determine reasonable potential under the SIP.

The upstream receiving water concentration of 1.4 µg/L does exceed the CTR chronic criterion, however, Section 1.3, Step 6 of the SIP states that if the receiving water concentration exceeds the criteria and the pollutant is detected in the effluent, an effluent limitation is required. As discussed in detail above, insufficient effluent data is available at this time to justify establishing an effluent limitation for lead.

Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Instead of limitations, additional monitoring has been established for lead in both the effluent and the receiving water. 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.

- c. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for chromium VI and pH. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

- i. **Chromium VI**

- (a) **WQO.** The CTR includes maximum 1-hour average and 4-day average criteria of 16 µg/L and 11 µg/L, respectively, for dissolved chromium VI for the protection of freshwater aquatic life.
- (b) **RPA Results.** The MEC for chromium VI was 11 µg/L based on 53 samples collected from January 2009 through July 2013

(minimum MDL 0.035 µg/L, minimum RL 0.5 µg/L). The maximum observed upstream receiving water concentration for chromium VI was 3 µg/L based on five samples collected from January 2009 through July 2013 (minimum MDL 0.08 µg/L, minimum RL 0.5 µg/L). Therefore, chromium VI in the discharge demonstrates reasonable potential to cause or contribute to an in-stream excursion above the CTR chronic criterion of 11 µg/L.

- (c) **WQBELs.** This Order contains a final AMEL and MDEL for chromium VI of 12 µg/L and 11 µg/L, respectively, based on the CTR criterion for the protection of freshwater aquatic life.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 11 µg/L is equal to, but does not exceed the applicable WQBELs. Performance of ion-exchange systems is largely controlled by frequency of resin replacement. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ii. **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.** The treated groundwater inherently has variable pH. Additionally, some groundwater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan’s numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBELs are required.

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

USEPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, “State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for

pathogens in all permits for POTWs discharging to contact recreational waters)." USEPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.*" (TSD, p. 50)

The Facility is a groundwater treatment system. Based on 51 samples taken from January 2009 through July 2013, the maximum pH reported was 8.54 and the minimum was 6.71. The Facility exceeded the instantaneous maximum effluent limitation once on 1 April 2011. Although the Discharger has proper pH controls in place, the pH for the Facility's influent varies due to the nature of groundwater, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBELs for pH are required in this Order.

- (c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.
- (d) **Plant Performance and Attainability.** Based on effluent data collected during the term of Order R5-2008-0161, the discharge did not exceed the instantaneous minimum effluent limitation and only exceeded the instantaneous maximum effluent limitation once. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

4. WQBEL Calculations

- a. This Order includes WQBELs for chromium VI and pH. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.
- b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

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

where:

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

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

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

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

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

$$MDEL_{HH} = \frac{mult_{MDEL} \cdot AMEL_{HH}}{mult_{AMEL}}$$

where:

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

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

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

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Priority Pollutants					
Chromium VI, Dissolved	µg/L	11	12	--	--

5. Whole Effluent Toxicity (WET)

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

- a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page III-8.00) The Basin Plan also states that, “...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...”.

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Acute whole effluent toxicity is not a priority pollutant. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA. USEPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, “State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBELs are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBELs for pathogens in all permits for POTWs discharging to contact recreational waters).” Acute toxicity effluent limits are required to ensure compliance with the Basin Plan’s narrative toxicity objective.

USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc." Accordingly, effluent limitations for acute toxicity have been included in this Order as follows:

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

Minimum for any one bioassay----- 70%
 Median for any three consecutive bioassays ----- 90%

- b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page III-8.01). As shown in the table below, based on chronic WET testing performed by the Discharger from January 2009 through July 2013, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan’s narrative toxicity objective.

Table F-12. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
6 April 2009	1	1	1	>1	1
27 April 2009	--	--	1	1.33	--
8 June 2009	--	--	1	1	--
22 June 2009	--	--	1	1	--
13 July 2009	--	--	1	1	--
27 July 2009	--	--	1	>1	--
17 August 2009	--	--	1	>1	--
12 October 2009	1	1	1	1	1
11 January 2010	--	--	1	1	--
8 February 2010	--	--	1	1	--
8 March 2010	--	--	1	1	--
5 April 2010	1	1	1	1	1
10 May 2010	--	--	1	1	--
14 June 2010	--	--	1	1	--
18 October 2010	1	1	1	1	1
18 April 2011	1	1	1	1	1
24 October 2011	1	1	1	1	1
18 April 2012	1	1	1	1	1
22 October 2012	1	1	1	>1	--
24 October 2012	--	--	--	--	1
26 November 2012	--	--	1	>1	--

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

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and

implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region¹ that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, *"In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

For the sample date of 6 April 2009, the effluent showed low-level toxicity to *Ceriodaphnia dubia* reproduction. A follow-up sample was collected 27 April 2009 and chronic toxicity testing was performed using the dilution series described in Order R5-2008-0161. The results showed chronic toxicity to *Ceriodaphnia dubia* reproduction (>1 TUC and 1.33 TUC) for both of the April sampling events; therefore, accelerated monitoring was implemented. The four accelerated monitoring sampling events occurred during June and July 2009. The results for the first three rounds of accelerated monitoring were 1 TUC for *Ceriodaphnia dubia* reproduction, which does not exceed the numeric monitoring trigger. However, the chronic toxicity monitoring trigger was exceeded for *Ceriodaphnia dubia* reproduction in the fourth accelerated monitoring event on 27 July 2009. Due to sampling anomalies identified during this round, the fourth round of accelerated monitoring was repeated during August 2009. *Ceriodaphnia dubia* reproduction was again greater than 1 TUC during the August round of sampling and analysis, prompting a TRE.

The Discharger submitted a TRE Work Plan on 8 October 2009 to investigate the chronic toxicity exceedances. The Discharger initiated semi-annual three-species chronic toxicity testing of the effluent. The results indicated no chronic toxicity for survival, reproduction and growth tests. Since April 2010, during implementation of the TRE, chronic toxicity to *Ceriodaphnia dubia* reproduction was observed for two out of seven sample dates.

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

The Discharger submitted a TRE report to the Central Valley Water Board on 23 September 2010. The report indicated that the Discharger was unable to identify a source of effluent toxicity and was unable to identify the chemical toxicant(s) through the Toxicity Identification Evaluation (TIE) procedures.

The level of toxicity observed is low and is not persistent, and a TIE has not been feasible to identify the cause of toxicity. The Discharger does not add any chemicals; therefore a modification of the numeric toxicity trigger was recommended in the approved TRE Workplan as follows:

- i. > 1 TUc for *Ceriodaphnia dubia* reproduction and the reproduction rate of the 100% effluent sample is less than 50% of the control sample, and
- ii. >1 TUc for all other chronic WET endpoints (no change).

For this discharge, the water quality is well-known and is of consistent quality, and this Order includes chemical-specific effluent limitations to prevent aquatic toxicity. The Discharger has conducted a TRE to determine the cause of the toxicity; however, since the level of toxicity was too low and not persistent, the Discharger was unable to identify a toxicant. Due to the nature of the discharge, if the numeric toxicity trigger were to be unchanged for *Ceriodaphnia dubia* reproduction and the same low level of toxicity was experienced, the Discharger would likely be in the same situation and come to the same inconclusive findings. Therefore, the numeric toxicity trigger has been modified from Order R5-2008-0161 in accordance with the approved TRE workplan. Based on the site-specific conditions of this discharge, this change is appropriate for the reasons discussed above, and would require action by the Discharger in the event there is sufficient toxicity to successfully identify the toxicant.

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, the Special Provisions contained in section VI.C.2.a of this Order require the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a TRE in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order does not include effluent limitations expressed in terms of mass. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in

terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works unless impracticable. The rationale for using alternative averaging periods for pH is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

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

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for carbon tetrachloride (AMEL only), 1,2-dichloroethane (AMEL only), 1,1-dichloroethylene, mercury, and selenium. The effluent limitations for these pollutants are less stringent than those in Order R5-2008-0161. These constituents did not exhibit reasonable potential and WQBELs are not required. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

- a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent WQBELs “*except in compliance with Section 303(d)(4).*” CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.
 - i. For waters where standards are not attained, CWA section 304(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDLs or WLAs will assure the attainment of such water quality standards.
 - ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

Magpie Creek and Beaver Pond are considered attainment waters for carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethylene, mercury, and selenium because the receiving waters are not listed as impaired on the 303(d) list for these constituents¹. As discussed in section IV.D.4, below, removal of effluent limitations for carbon tetrachloride (AMEL only), 1,2-dichloroethane (AMEL only), mercury, and selenium and the relaxation of effluent limits for 1,1-dichloroethylene complies with federal and state antidegradation requirements. Thus, removal and relaxation of the effluent limitations for these

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.

constituents from Order R5-2008-0161 meets the exception in CWA section 303(d)(4)(B).

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

As described further in section IV.C.3.a of this Fact Sheet, updated information that was not available at the time Order R5-2008-0161 was issued indicates that carbon tetrachloride, 1,2-dichloroethane, mercury, and selenium do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The updated information that supports the removal of effluent limitations for these constituents includes the following:

- i. **Carbon Tetrachloride.** Effluent and receiving water monitoring data collected between January 2009 and July 2013 for carbon tetrachloride indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria. Although this Order discontinues the WQBELs for carbon tetrachloride, as discussed in section IV.B.2, this Order includes a technology-based MDEL of 0.5 µg/L, which is equivalent to the water quality-based MDEL contained in Order R5-2008-0161.
- ii. **1,2-Dichloroethane.** Effluent and receiving water monitoring data collected between January 2009 and July 2013 for 1,2-dichloroethane indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria. Although this Order discontinues the water quality-based AMEL for 1,2-dichloroethane, as discussed in section IV.B.2, this Order includes a technology-based MDEL of 0.5 µg/L, consistent with Order R5-2008-0161.
- iii. **Mercury.** Order R5-2008-0161 included performance-based limits for mercury. This limitation was based on maintaining the mercury loading at the existing level until a TMDL could be established and USEPA developed mercury standards that are protective of human health. Effluent and receiving water data collected between January 2009 and July 2013 indicate that the discharge does not demonstrate reasonable potential to cause or contribute to an excursion of the human health CTR criterion. No TMDL is proposed for Magpie Creek or Beaver Pond. Therefore, performance-based limitations are not included in this Order.
- iv. **Selenium.** Effluent and receiving water monitoring data collected between January 2009 and July 2013 for selenium indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR aquatic life criteria.

Thus, removal of effluent limitations for carbon tetrachloride (AMEL only), 1,2-dichloroethane (AMEL only), mercury, and selenium from Order R5-2008-0161 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.

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 WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order removes existing effluent limitations for constituents in which updated monitoring data demonstrates that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water (i.e., carbon tetrachloride (AMEL only), 1,2-dichloroethane (AMEL only), mercury, and selenium). For 1,1-dichloroethylene, the effluent data for the Facility did not exceed the WQBELs established in previous Order R5-2008-0161, demonstrating the Discharger can comply with the WQBELs without additional treatment or controls. The removal of the WQBELs will not result in an increase in pollutant concentration or loading, a decrease in the level of treatment or control, or a reduction of water quality. The Central Valley Water Board finds that the removal and relaxation of the effluent limitations does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the removal of effluent limitations for carbon tetrachloride (AMEL only), 1,2-dichloroethane (AMEL only), mercury, and selenium and the relaxation of effluent limits for 1,1-dichloroethylene is consistent with the the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on carbon tetrachloride, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, and vinyl chloride. Restrictions on these pollutants are discussed in section IV.B.2 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

WQBELs have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs 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 WQBELs for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to May 30, 2000, but not approved by U.S. EPA before that date, are

nonetheless “*applicable water quality standards for purposes of the CWA*” pursuant to 40 C.F.R. section 131.21(c)(1). Collectively, this Order’s restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

**Summary of Final Effluent Limitations
 Discharge Points 001 and 002**

Table F-13. Summary of Final Effluent Limitations

Parameter	Units	Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	Basis ¹
Flow	MGD	--	2.88 ²	--	--	DC
Conventional Pollutants						
pH	standard units	--	--	6.5	8.5	BP
Priority Pollutants						
Carbon Tetrachloride	µg/L	--	0.5	--	--	BPJ
Chromium VI, Dissolved	µg/L	11	12	--	--	CTR
Dichlorobromomethane	µg/L	--	0.5	--	--	BPJ
1,1-Dichloroethane	µg/L	--	0.5	--	--	BPJ
1,2-Dichloroethane	µg/L	--	0.5	--	--	BPJ
1,1-Dichloroethylene	µg/L	--	0.5	--	--	BPJ
Tetrachloroethylene	µg/L	--	0.5	--	--	BPJ
Trichloroethylene	µg/L	--	0.5	--	--	BPJ
Vinyl Chloride	µg/L	--	0.5	--	--	BPJ
Non-Conventional Pollutants						
cis-1,2-Dichloroethylene	µg/L	--	0.5	--	--	BPJ
Acute Toxicity	% Survival	--	70 ³ /90 ⁴	--	--	BP
Chronic Toxicity	TUc	--	Narrative ⁵	--	--	BP

¹ DC – Based on the design capacity of the Facility.
 BP – Based on water quality objectives contained in the Basin Plan.
 BPJ – Based on best professional judgment.
 CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.

² The daily average discharge flow from Discharge Point 001 shall not exceed 2.88 MGD. The daily average discharge flow from Discharge Point 002 shall not exceed 0.144 MGD. The combined daily average discharge flow from Discharge Point 001 and 002 shall not exceed 2.88 MGD.

³ 70% minimum of any one bioassay.

⁴ 90% median for any three consecutive bioassays.

⁵ There shall be no chronic toxicity in the effluent discharge.

- 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

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

1. **pH.** Order R5-2008-0161 established a receiving water limitation for pH specifying that discharges from the Facility shall not cause the ambient pH to change by more than 0.5 units based on the water quality objective for pH in the Basin Plan, and allowed an annual averaging period for calculating pH change. The Central Valley Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to delete the portion of the pH water quality objective that limits the change in pH to 0.5 units and the allowance of averaging periods for pH. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order does not require a receiving water limitation for pH change.

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

There are no other pollutants regulated by this Order directly related to pH. Therefore the relaxation of the pH receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the pH receiving water limitation (i) is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for pH, which is based on the amendment to the Basin Plan's pH water quality objective, reflects current scientifically supported pH requirements for the protection of aquatic life and other beneficial uses. The revised receiving water limitation for pH is more consistent with the current USEPA recommended criteria and is fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in pH when pH is maintained within the

range of 6.5 to 8.5 are neither beneficial nor adverse and, therefore, are not considered to be degradation in water quality. Attempting to restrict pH changes to 0.5 pH units would incur substantial costs without demonstrable benefits to beneficial uses. Thus, any changes in pH that would occur under the revised pH limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore the proposed amendment will not violate antidegradation policies.

2. **Turbidity.** Order R5-2008-0161 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Central Valley Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

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

The Order will be protective of the receiving water under all natural background conditions as defined in the Basin Plan's revised water quality objective for turbidity. The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Central Valley Water Board finds that the relaxation of the turbidity receiving water limitation is to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the

State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

B. Groundwater – Not Applicable

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

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

B. Special Provisions

1. Reopener Provisions

- a. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a TRE. This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.
- b. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

2. Special Studies and Additional Monitoring Requirements

- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, “*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*” (Basin Plan at page III-8.00). Based on whole effluent chronic toxicity testing performed by the Discharger from January 2009 and July 2013 the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan’s narrative toxicity objective.

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

Monitoring Trigger. This Order does not allow any dilution for the chronic condition. During the term of Order R5-2008-0161, the Discharger intermittently exceeded the numeric monitoring trigger of 1 TUc for *Ceriodaphnia dubia* reproduction. The Discharger submitted a TRE study report in September 2010, which could not identify a cause for the exceedances and concluded that the exceedances were anomalous and not indicative of a persistent problem. The discharge exceeded the trigger for *C. dubia* reproduction again in October and November 2012.

The level of toxicity that has been observed is low and is not persistent, and the Discharger has been unable to determine the cause of toxicity. The potential toxicants in the discharge are well known and the Discharger does not add any chemicals. Chromium VI is the only toxicant with reasonable potential and chemical-specific limitations are included in this Order. Therefore, this Order includes a revised numeric toxicity monitoring trigger as follows:

> 1 TUc for *Ceriodaphnia dubia* reproduction and the reproduction rate of the 100% effluent sample is less than 50% of the control sample.

>1 TUc for all other chronic WET endpoints.

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

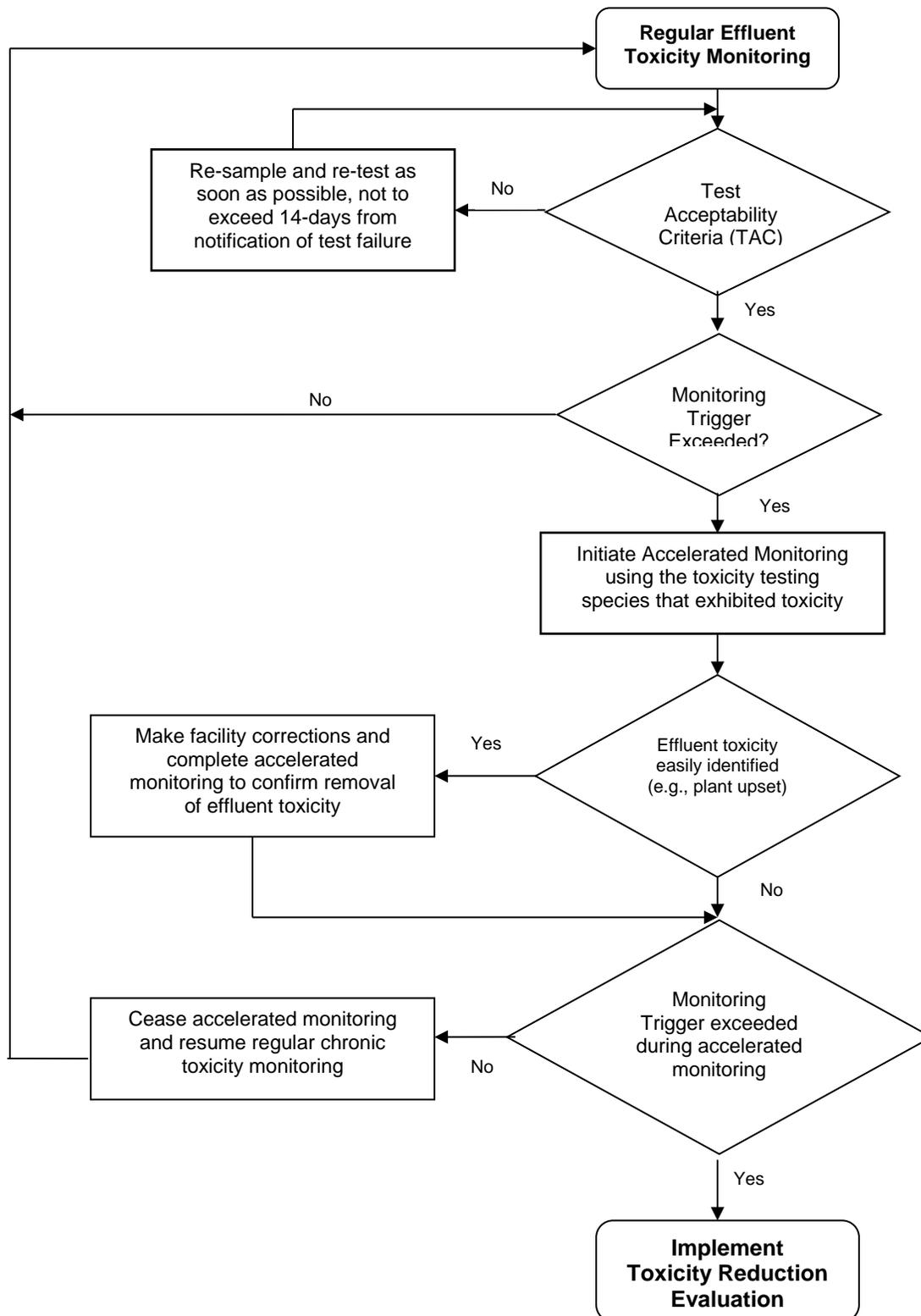
The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water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

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

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants*, EPA/833-B-99/002, August 1999.
- *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs)*, EPA/600/2-88/070, April 1989.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition*, EPA 600/6-91/003, February 1991.
- *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA/600/6-91/005F, May 1992.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition*, EPA/600/R-92/080, September 1993.
- *Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition*, EPA 600/R-92/081, September 1993.
- *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition*, EPA-821-R-02-012, October 2002.
- *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA-821-R-02-013, October 2002.
- *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991.

**Figure F-1
 WET Accelerated Monitoring Flow Chart**



3. **Best Management Practices and Pollution Prevention – Not Applicable**
4. **Construction, Operation, and Maintenance Specifications – Not Applicable**
5. **Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable**
6. **Other Special Provisions – Not Applicable**
7. **Compliance Schedules – Not Applicable**

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 C.F.R. requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E, establishes monitoring and reporting requirements that implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater. The monitoring frequencies (annual) and sample types for carbon tetrachloride, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, tetrachloroethylene, trichloroethylene, vinyl chloride, and cis-1,2-dichloroethylene have been retained from Order R5-2008-0161.
2. This Order does not retain the influent monitoring requirement for selenium as the effluent limitations have been discontinued and it is not a constituent of concern in the influent groundwater.
3. This Order includes new influent monitoring requirements for chromium VI, and 1,4-dioxane in order to characterize influent and evaluate treatment performance.

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.
2. Effluent monitoring frequencies and sample types for flow (continuous), pH (monthly), carbon tetrachloride (monthly), chromium VI (monthly), dichlorobromomethane (monthly), 1,1-dichloroethane (monthly), 1,2-dichloroethane (monthly), 1,1-dichloroethylene (monthly), tetrachloroethylene (monthly), trichloroethylene (monthly), vinyl chloride (monthly), cis-1,2-dichloroethylene (monthly), 1,4-dioxane (annually), dissolved oxygen (monthly), hardness (quarterly), temperature (monthly), and turbidity (quarterly), have been retained from Order R5-2008-0161 to determine compliance with effluent limitations for these parameters.
3. Monitoring data collected over the previous permit term for total suspended solids, mercury, methylmercury, selenium, and nitrate, did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained or have reduced frequencies from Order R5 2008-0161.
4. Order R5-2008-0161 required monthly monitoring for electrical conductivity and annual monitoring for total dissolved solids. This Order reduces the monitoring frequency for electrical conductivity to quarterly, which will provide sufficient information to monitor the

performance of the Facility. Electrical conductivity is an indicator parameter for salinity and monitoring data for electrical conductivity is expected to adequately characterize the salinity of the effluent. Therefore, this Order discontinues effluent monitoring for total dissolved solids.

5. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. This Order requires monitoring once during the third year of the permit term in order to collect data to conduct an RPA for the next permit renewal. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.
6. California Water Code section 13176, subdivision (a), states: "*The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.*" DPH certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the Clean Water Act. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with Clean Water Act requirements. (Wat. Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II). Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Order R5-2008-0161 required semi-annual acute toxicity testing. Based on semi-annual acute toxicity testing conducted during the term of Order R5-2008-0161, the minimum observed percent survival was 100%. Therefore, this Order reduces the monitoring frequency for 96-hour bioassay testing from semi-annually to annually to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Order R5-2008-0161 required semi-annual chronic toxicity testing. Based on semi-annual chronic toxicity testing conducted during the term of Order R5-2008-0151, exhibited intermittent chronic toxicity to *Ceriodaphnia dubia* reproduction. The Discharger submitted a TRE study report in September 2010, which could not identify a cause for the exceedances and concluded that the exceedances were anomalous and not indicative of a persistent problem. The level of toxicity that has been observed is low and is not persistent, and the Discharger has been unable to determine the cause of toxicity. The potential toxicants in the discharge are well known and the Discharger does not add any chemicals. Therefore, this Order reduces the monitoring frequency for chronic whole effluent toxicity testing from semi-annually to annually to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

- a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

- b. The receiving water monitoring frequency and sample type for flow (once per sample collection), pH (monthly), dissolved oxygen (monthly), electrical conductivity (monthly), hardness (quarterly), and temperature (monthly) have been retained from Order R5-2008-0161.
- c. Order R5-2008-0161 required monitoring for TSS, carbon tetrachloride, chromium VI, dichlorobromomethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, mercury, selenium, tetrachloroethylene, trichloroethylene, vinyl chloride, cis-1,2-dichloroethylene, nitrate, and total dissolved solids. Monitoring requirements for these constituents have not been retained from Order R5-2008-0161 as monitoring is not necessary to determine compliance with permit requirements.
- d. Order R5-2008-0161 required quarterly monitoring for turbidity. This Order includes receiving water limitations for turbidity and turbidity is simple to measure. Therefore, this Order increases the monitoring frequency from quarterly to monthly to determine compliance with the applicable receiving water limitation, which is consistent with the monitoring frequency for other water quality parameters for which receiving water monitoring is required.
- e. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires monitoring for priority pollutants and other pollutants of concern once during the third year of the permit term, concurrent with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements – Not Applicable

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board has considered the issuance of WDR's that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the posting of a Notice of Public Hearing at the Facility, via an email sent to interested parties, and through posting on the Central Valley Water Board's internet website.

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/>

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 **13 January 2014**.

C. Public Hearing

The Central Valley Water Board held a public hearing on the tentative WDR's during its regular Board meeting on the following date and time and at the following location:

Date: 27/28 March 2014
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 aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDR's. The petition must be received by the State Water Board at the following address within 30 calendar days of the Central Valley Water Board's action:

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

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

E. Information and Copying

The Report of Waste Discharge, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDR's and NPDES permit should contact the Central Valley Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Dania Jimmerson at (916)-474-4742.

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

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum, Total Recoverable	µg/L	1.8 ¹	90 ¹	200	750 ²	--	--	--	--	200	No
Carbon Tetrachloride	µg/L	<0.1	<0.1	0.25	--	--	0.25	4.4	--	0.5	No
Chromium (VI), Dissolved	µg/L	11	3	11	16	11	--	--	--	--	Yes
Dichlorobromomethane	µg/L	<0.1	<0.1	0.56	--	--	0.56	46	--	80 ³	No
1,1-Dichloroethane	µg/L	<0.1	<0.1	5	--	--	--	--	--	5	No
1,2-Dichloroethane	µg/L	<0.1	<0.1	0.38	--	--	0.38	99	--	0.5	No
1,1-Dichloroethylene	µg/L	<0.1	<0.1	0.057	--	--	0.057	3.2	--	6	Inconclusive
cis-1,2-Dichloroethylene	µg/L	<0.1	<0.1	6	--	--	--	--	--	6	No
1,4-Dioxane	µg/L	3.5	N/A	--	--	--	--	--	--	--	No
Electrical Conductivity @ 25°C	µmhos/cm	320 ¹	273 ¹	900	--	--	--	--	--	900	No
Lead, Total Recoverable	µg/L	0.05	1.4	2.8 ⁴ /0.96 ⁵	72 ⁴ /25	2.8 ⁴ /0.96 ⁵	--	--	--	15	Inconclusive
Mercury, Total Recoverable	µg/L	0.00076	0.018	0.050	--	--	0.050	0.051	--	2	No
Selenium, Total Recoverable	µg/L	0.75	<0.15	5	20	5.0	170	4,200	--	50	No
Tetrachloroethylene	µg/L	<0.1	<0.1	0.8	--	--	0.8	8.85	--	5	No
Total Dissolved Solids	mg/L	250 ¹	320	500	--	--	--	--	--	500	No
Trichloroethylene	µg/L	<0.1	0.2	2.7	--	--	2.7	81	--	5	No
Vinyl Chloride	µg/L	<0.1	<0.1	0.5	--	--	2	525	--	0.5	No

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

MEC = Maximum Effluent Concentration

B = Maximum Receiving Water Concentration or lowest detection level, if non-detect

C = Criterion used for Reasonable Potential Analysis

CMC = Criterion Maximum Concentration (CTR or NTR)

CCC = Criterion Continuous Concentration (CTR or NTR)

Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)

Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)

Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective

MCL = Drinking Water Standards Maximum Contaminant Level

NA = Not Available

ND = Non-detect

Footnotes:

- (1) Represents the maximum observed annual average concentration for comparison with the Secondary MCL.
- (2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.
- (3) Represents the Primary MCL for Total Trihalomethanes, which include bromoform, chlorodibromomethane, chloroform, and dichlorobromomethane.
- (4) Criterion to be compared to the MEC.
- (5) Criterion to be compared to the maximum upstream receiving water concentration.

ATTACHMENT H – CALCULATION OF QBELS

Parameter	Units	Most Stringent Criteria			HH Calculations ¹			Aquatic Life Calculations ¹										Final Effluent Limitations		
		HH	CMC	CCC	ECA _{HH} = AMEL _{HH}	AMEL/MDEL Multiplier _{HH}	MDEL _{HH}	ECA _{acute}	ECA Multiplier _{acute}	LTA _{acute}	ECA _{chronic}	ECA Multiplier _{chronic}	LTA _{chronic}	Lowest LTA	AMEL Multiplier ₉₅	AMEL _{AL}	MDEL Multiplier ₉₉	MDEL _{AL}	Lowest AMEL	Lowest MDEL
Chromium VI, Dissolved	µg/L	--	16	11	--	--	--	16	0.84	13	11	0.92	10	10	1.06	11	1.19	12	11	12

¹ As described in section IV.C.2.c of the Fact Sheet (Attachment F), calculation of effluent limitations for the protection of human health and aquatic life are determined without the allowance of dilution credits.

ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

- I. **Background.** Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from <http://www.waterboards.ca.gov/iswp/index.html>). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:
- A. **Drinking water constituents.** Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.
 - B. **Effluent and receiving water temperature.** This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.
 - C. **Effluent and receiving water hardness and pH.** These are necessary because several of the CTR constituents are hardness and pH dependent.
- II. **Monitoring Requirements**
- A. **Once Per Permit Term Monitoring.** Priority pollutant samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table I-1. Monitoring shall be conducted once during the third year of the permit term and the results of such monitoring be submitted to the Central Valley Water Board, during the fourth year of the permit term. Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.
 - B. **Concurrent Sampling.** Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.
 - C. **Sample type.** All effluent and receiving water samples shall be taken as grab samples.
 - D. **Additional Monitoring/Reporting Requirements.** The Discharger shall conduct the monitoring and reporting in accordance with the General Monitoring Provisions and Reporting Requirements in Attachment E.

Table I-1. Priority Pollutants and Other Constituents of Concern

CTR #	Constituent	CAS Number	Maximum Reporting Level ¹ µg/L or noted
28	1,1-Dichloroethane	75343	1
30	1,1-Dichloroethene	75354	0.5
41	1,1,1-Trichloroethane	71556	2
42	1,1,2-Trichloroethane	79005	0.5
37	1,1,2,2-Tetrachloroethane	79345	0.5
75	1,2-Dichlorobenzene	95501	2
29	1,2-Dichloroethane	107062	0.5
	cis-1,2-Dichloroethene	156592	
31	1,2-Dichloropropane	78875	0.5
101	1,2,4-Trichlorobenzene	120821	1
76	1,3-Dichlorobenzene	541731	2
32	1,3-Dichloropropene	542756	0.5
77	1,4-Dichlorobenzene	106467	2
17	Acrolein	107028	2
18	Acrylonitrile	107131	2
19	Benzene	71432	0.5
20	Bromoform	75252	2
34	Bromomethane	74839	2
21	Carbon tetrachloride	56235	0.5
22	Chlorobenzene (mono chlorobenzene)	108907	2
24	Chloroethane	75003	2
25	2- Chloroethyl vinyl ether	110758	1
26	Chloroform	67663	2
35	Chloromethane	74873	2
23	Dibromochloromethane	124481	0.5
27	Dichlorobromomethane	75274	0.5
36	Dichloromethane	75092	2
33	Ethylbenzene	100414	2
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87683	1
91	Hexachloroethane	67721	1
94	Naphthalene	91203	10

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

CTR #	Constituent	CAS Number	Maximum Reporting Level ¹ µg/L or noted
38	Tetrachloroethene	127184	0.5
39	Toluene	108883	2
40	trans-1,2-Dichloroethylene	156605	1
43	Trichloroethene	79016	2
44	Vinyl chloride	75014	0.5
	Methyl-tert-butyl ether (MTBE)	1634044	
	Trichlorofluoromethane	75694	
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	
	Styrene	100425	
	Xylenes	1330207	
60	1,2-Benzanthracene	56553	5
85	1,2-Diphenylhydrazine	122667	1
45	2-Chlorophenol	95578	5
46	2,4-Dichlorophenol	120832	5
47	2,4-Dimethylphenol	105679	2
49	2,4-Dinitrophenol	51285	5
82	2,4-Dinitrotoluene	121142	5
55	2,4,6-Trichlorophenol	88062	10
83	2,6-Dinitrotoluene	606202	5
50	2-Nitrophenol	25154557	10
71	2-Chloronaphthalene	91587	10
78	3,3'-Dichlorobenzidine	91941	5
62	3,4-Benzofluoranthene	205992	10
52	4-Chloro-3-methylphenol	59507	5
48	4,6-Dinitro-2-methylphenol	534521	10
51	4-Nitrophenol	100027	10
69	4-Bromophenyl phenyl ether	101553	10
72	4-Chlorophenyl phenyl ether	7005723	5
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	10
58	Anthracene	120127	10
59	Benzidine	92875	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2
63	Benzo(g,h,i)perylene	191242	5
64	Benzo(k)fluoranthene	207089	2

CTR #	Constituent	CAS Number	Maximum Reporting Level ¹ µg/L or noted
65	Bis(2-chloroethoxy) methane	111911	5
66	Bis(2-chloroethyl) ether	111444	1
67	Bis(2-chloroisopropyl) ether	39638329	10
68	⁵ Bis(2-ethylhexyl) phthalate ¹	117817	5
70	Butyl benzyl phthalate	85687	10
73	Chrysene	218019	5
81	Di-n-butylphthalate	84742	10
84	Di-n-octylphthalate	117840	10
74	Dibenzo(a,h)-anthracene	53703	0.1
79	Diethyl phthalate	84662	10
80	Dimethyl phthalate	131113	10
86	Fluoranthene	206440	10
87	Fluorene	86737	10
90	Hexachlorocyclopentadiene	77474	5
92	Indeno(1,2,3-c,d)pyrene	193395	0.05
93	Isophorone	78591	1
98	N-Nitrosodiphenylamine	86306	1
96	N-Nitrosodimethylamine	62759	5
97	N-Nitrosodi-n-propylamine	621647	5
95	Nitrobenzene	98953	10
53	Pentachlorophenol	87865	1
99	Phenanthrene	85018	5
54	Phenol	108952	1
100	Pyrene	129000	10
	Aluminum	7429905	
1	Antimony	7440360	5
2	Arsenic	7440382	10
15	Asbestos	1332214	
	Barium	7440393	
3	Beryllium	7440417	2
4	Cadmium	7440439	0.5
5a	Chromium (III)	7440473	50
5b	Chromium (VI)	18540299	10
6	Copper	7440508	2
14	Cyanide	57125	5

CTR #	Constituent	CAS Number	Maximum Reporting Level ¹ µg/L or noted
	Fluoride	7782414	
	Iron	7439896	
7	Lead	7439921	0.5
8	Mercury	7439976	0.5
	Manganese	7439965	
	Molybdenum	7439987	
9	Nickel	7440020	20
10	Selenium	7782492	5
11	Silver	7440224	0.25
12	Thallium	7440280	1
	Tributyltin	688733	
13	Zinc	7440666	20
110	4,4'-DDD	72548	0.05
109	4,4'-DDE	72559	0.05
108	4,4'-DDT	50293	0.01
112	alpha-Endosulfan	959988	0.02
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01
	Alachlor	15972608	
102	Aldrin	309002	0.005
113	beta-Endosulfan	33213659	0.01
104	beta-Hexachlorocyclohexane	319857	0.005
107	Chlordane	57749	0.1
106	delta-Hexachlorocyclohexane	319868	0.005
111	Dieldrin	60571	0.01
114	Endosulfan sulfate	1031078	0.05
115	Endrin	72208	0.01
116	Endrin Aldehyde	7421934	0.01
117	Heptachlor	76448	0.01
118	Heptachlor Epoxide	1024573	0.01
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02
119	PCB-1016	12674112	0.5
120	PCB-1221	11104282	0.5
121	PCB-1232	11141165	0.5
122	PCB-1242	53469219	0.5
123	PCB-1248	12672296	0.5

CTR #	Constituent	CAS Number	Maximum Reporting Level ¹ µg/L or noted
124	PCB-1254	11097691	0.5
125	PCB-1260	11096825	0.5
126	Toxaphene	8001352	0.5
	Atrazine	1912249	
	Bentazon	25057890	
	Carbofuran	1563662	
	2,4-D	94757	
	Dalapon	75990	
	1,2-Dibromo-3-chloropropane (DBCP)	96128	
	Di(2-ethylhexyl)adipate	103231	
	Dinoseb	88857	
	Diquat	85007	
	Endothal	145733	
	Ethylene Dibromide	106934	
	Glyphosate	1071836	
	Methoxychlor	72435	
	Molinate (Ordram)	2212671	
	Oxamyl	23135220	
	Picloram	1918021	
	Simazine (Princep)	122349	
	Thiobencarb	28249776	
16	2,3,7,8-TCDD (Dioxin)	1746016	
	2,4,5-TP (Silvex)	93765	
	Diazinon	333415	0.015 µg/L*
	Chlorpyrifos	2921882	0.014 µg/L*
	Ammonia (as N)	7664417	
	Boron	7440428	
	Chloride	16887006	
	Flow		
	Hardness (as CaCO ₃)		
	Foaming Agents (MBAS)		
	Mercury, Methyl	22967926	0.06 ng/L*
	Nitrate (as N)	14797558	2,000
	Nitrite (as N)	14797650	400
	pH		0.1

CTR #	Constituent	CAS Number	Maximum Reporting Level ¹ µg/L or noted
	Phosphorus, Total (as P)	7723140	
	Specific conductance (EC)		
	Sulfate		500
	Sulfide (as S)		
	Sulfite (as SO ₃)		
	Temperature		
	Total Dissolved Solids (TDS)		

¹ In order to verify if bis (2-ethylhexyl) phthalate is truly present in the effluent and receiving water, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant.

*Total Maximum Daily Load (TMDL) for this constituent, which requires a maximum RL to determine reasonable potential and determine compliance with the TMDL.