CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

11020 Sun Center Drive, #200 Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • Fax (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

ORDER R5-2018-0003
NPDES NO. CA0085243

WASTE DISCHARGE REQUIREMENTS FOR THE MERIDIAN BEARTRACK CO ROYAL MOUNTAIN KING MINE CALAVERAS COUNTY

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

Table 1. Discharger Information

Discharger	Meridian Beartrack Co
Name of Facility	Royal Mountain King Mine
Facility Address	4461 Rock Creek Road
	Copperopolis, CA 95228
	Calaveras County

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude (North)	Discharge Point Longitude (West)	Receiving Water
001	Groundwater	37° 59' 22"	120° 41' 12"	Littlejohns Creek

Table 3. Administrative Information

This Order was adopted on:	**1 February 2018**
This Order shall become effective on:	**1 February 2018**
This Order shall expire on:	**31 January 2023**
The Discharger shall file a Report of Waste Discharge as an application for reissuance of WDR's in accordance with title 23, California Code of Regulations, and an application for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit no later than:	**31 January 2022**
The U.S. Environmental Protection Agency (U.S. EPA) and the California Regional Water Quality Control Board, Central Valley Region have classified this discharge as follows:	**Major**

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 **1 February 2018**.

ORIGINAL SIGNED BY

PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

Information describing the Meridian Beartrack Co, Royal Mountain King Mine (Facility) is summarized in Table 1 and in sections I and II of the Fact Sheet (Attachment F). Section I of the Fact Sheet also includes information regarding the Facility's permit application.

II. FINDINGS

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

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

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

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

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

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

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

E. **Notification of Interested 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 R5-2013-0071 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order. This action in no way prevents the Central Valley Water Board from taking enforcement action for past violations of the previous Order.

III. DISCHARGE PROHIBITIONS

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

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

C. The discharge of wastewater at Discharge Point 001 is prohibited when the daily average flow rate at Littlejohns Creek is less than 1,000 gallons per minute (gpm), as measured at Monitoring Location RSW-002.

D. The discharge of wastewater at Discharge Point 001 is prohibited except when Littlejohns Creek flows provide a flow ratio greater than or equal to 7:1 (Littlejohns Creek flow : effluent flow) as a daily average.

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

F. Discharges exceeding an average monthly flow of 3.0 million gallons per day (MGD) are prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – Discharge Point 001

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

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

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Antimony, Total Recoverable	µg/L	20	33	--	--
Selenium, Total Recoverable	µg/L	14	20	--	--
	lbs/day	0.35[1]	7.2[2]	--	--
Non-Conventional Pollutants					
Total Dissolved Solids	mg/L	--	4,000	--	--

[1] Based on an average monthly flow of 3.0 MGD.
[2] Based on a design peak daily flow of 43 MGD.

b. The Discharger shall maintain compliance with the effluent limitations specified in Table 5. Applicable effluent limitations shall be based on the corresponding flow ratio (Littlejohns Creek flow: effluent flow) at the time of discharge.

Table 5. Effluent Limitations – Arsenic

Parameter	Units	Flow Ratio[1]	Effluent Limitations	
			Average Monthly	Maximum Daily
Arsenic, Total Recoverable	µg/L	7:1 ≤ Flow Ratio < 8:1	77	111
		8:1 ≤ Flow Ratio < 9:1	87	125
		9:1 ≤ Flow Ratio < 10:1	96	139
		10:1 ≤ Flow Ratio < 11:1	106	153
		11:1 ≤ Flow Ratio < 12:1	115	167
		12:1 ≤ Flow Ratio < 13:1	125	181
		13:1 ≤ Flow Ratio < 14:1	134	195
		14:1 ≤ Flow Ratio < 15:1	144	208
		15:1 ≤ Flow Ratio	154	222

[1] Daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

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

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

d. **Total Dissolved Solids.** The total effluent annual (1 August – 31 July) mass loading of total dissolved solids shall not exceed 3,000 tons.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Not Applicable

C. Recycled Water Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in Littlejohns 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 U.S. EPA or the Executive Officer;
   d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution 68-16 and 40 C.F.R. section 131.12.);
   e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
   f. Pesticides to be present in concentration in excess of the maximum contaminant levels (MCL's) set forth in CCR, Title 22, division 4, chapter 15 (Title 22); nor
   g. Thiobencarb to be present in excess of 1.0 µg/L.

10. **Radioactivity:**
    a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
    b. Radionuclides to be present in excess of the MCL's specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the CCR.
11. **Suspended Sediments.** The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
12. **Settleable Substances.** Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.
13. **Suspended Material.** Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.
14. **Taste and Odors.** Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.
15. **Temperature.** 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-002 and RSW-003.
16. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.
17. **Turbidity:**
    a. Shall not exceed 2 Nephelometric Turbidity Units (NTU) where natural turbidity is less than 1 NTU;
    b. Shall not increase more than 1 NTU where natural turbidity is between 1 and 5 NTU;
    c. Shall not increase more than 20 percent where natural turbidity is between 5 and 50 NTU;
    d. Shall not increase more than 10 NTU where natural turbidity is between 50 and 100 NTU; nor
    e. Shall not increase more than 10 percent where natural turbidity is greater than 100 NTU.
18. **Total Dissolved Solids.** The total dissolved solids concentration to exceed 1,000 mg/L.
19. **Arsenic, Total Recoverable.** The total recoverable arsenic concentration to exceed 10 µg/L.

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;

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

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

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

   The causes for modification include:

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

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

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

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

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

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

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

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

   ii. Controls any pollutant limited in the Order.

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

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

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

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

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

i. Safeguard to electric power failure:

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

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

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

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

   The technical report shall:

   i. Identify the possible sources of spills, leaks, untreated waste bypass, and contaminated drainage. Loading and storage areas, power outage, waste

treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

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

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

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

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new

owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

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

p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such non-compliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of non-compliance, and shall describe the measures being taken to remedy the current non-compliance and prevent recurrence including, where applicable, a schedule of implementation. Other non-compliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

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

C. Special Provisions

1. Reopener Provisions

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

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

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

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

c. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a new chronic toxicity effluent limitation, a revised acute toxicity effluent limitation, and/or an effluent limitation for a specific toxicant identified in a TRE. Additionally, if the State Water Board revises the toxicity control provisions within the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State

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Implementation Policy or SIP), this Order may be reopened to implement 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 WER's and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

e. **Flow Ratio.** Should the Discharger provide additional information that indicates an alternate flow ratio would be adequately protective of the beneficial uses of the receiving water, this Order may be reopened to modify Discharge Prohibition III.D.

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

2. Special Studies, Technical Reports and Additional Monitoring Requirements

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

i. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger is 7 chronic toxicity units (TUc) (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to initiate additional actions to evaluate effluent toxicity as specified in subsection ii, below.

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

(a) **Evaluate 6-Week Median.** The Discharger may take two additional samples within 6 weeks of the initial routine sampling event exceeding the chronic toxicity monitoring trigger to evaluate compliance using a 6-week median. If the 6-week median is greater than 7 TUc (as 100/NOEC), proceed with subsection (b). Otherwise, the Discharger shall check for any operation or sample collection issues and return to routine chronic toxicity monitoring.

(b) **Toxicity Source Easily Identified.** If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the Facility and shall resume routine chronic toxicity monitoring. If the source of toxicity is not easily identified, the

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Discharger shall conduct a site-specific TRE as described in the following subsection.

(c) **Toxicity Reduction Evaluation.** The Discharger shall initiate a site-specific TRE as follows:

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

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

b. **Water Quality Assessment.** The Discharger shall submit a water quality assessment by 1 March 2022. This assessment shall include an evaluation (e.g., trend analyses) of total dissolved solids and arsenic concentrations in Skyrocket Pit Lake and Littlejohns Creek at Monitoring Locations RSW-001 and RSW-002 (as defined in Attachment E). It is necessary to assess the concentrations of total dissolved solids and arsenic in Littlejohns Creek in order to evaluate whether lowering the level of Skyrocket Pit Lake affects water quality in Littlejohns Creek. This Order includes a reopener provision to allow the permit to be reopened to lower or raise the required flow ratio (Discharge Prohibition III.D), based on the changes in constituent concentrations in Skyrocket Pit Lake and Littlejohns Creek.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Construction, Operation and Maintenance Specifications – Not Applicable

5. Special Provisions for Publicly-Owned Treatment Works – Not Applicable

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

A. Average Monthly Flow Prohibition (Section III.F). To evaluate compliance with the average monthly flow prohibition, the average monthly flow shall be calculated as the total volume of wastewater discharged to Littlejohns Creek during the month (million gallons) divided by the number of days in the month.

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. **Mass Effluent Limitations.** The mass effluent limitations contained in section IV.A.1.a for total recoverable selenium are based on the permitted average monthly flow and the design peak daily flow. The average monthly and daily maximum mass of total recoverable selenium shall be calculated as follows:

1. **Average Monthly**

   Mass (lbs/day) = Average Monthly Flow (MGD), calculated per section VII.A x Average Monthly Concentration (mg/L) x 8.34 (conversion factor)

2. **Maximum Daily**

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

D. **Total Dissolved Solids Mass Loading Effluent Limitations (Section IV.A.1.d).** The total pollutant mass load for each individual calendar month shall be determined using an average of all concentration data collected that month and the corresponding total monthly flow. The total annual mass loading (in tons/year) shall be the sum of the individual calendar months from 1 August through 31 July of the following year.

E. **Dissolved Oxygen Receiving Water Limitation (Section V.A.5.a-c).** Receiving water monitoring for dissolved oxygen is required once per discharge event in the MRP (Attachment E), which is sufficient to evaluate the impacts of the discharge and compliance with this Order. Receiving water monitoring data, measured at Monitoring Locations RSW-002 and RSW-003, will be used to determine compliance with part "c" of the dissolved oxygen receiving water limitation to ensure the discharge does not cause the dissolved oxygen concentrations in Littlejohns Creek to be reduced below 7.0 mg/L at any time. However, should more frequent dissolved oxygen and temperature receiving water monitoring be conducted, Central Valley Water Board staff may evaluate compliance with parts "a" and "b".

F. **Turbidity Receiving Water Limitations (Section V.A.17.a-e).** Compliance with the turbidity receiving water limitations will be determined based on the change in turbidity measured at

Monitoring Location RSW-002 as compared to the downstream turbidity measured at Monitoring Location RSW-003.

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ATTACHMENT A – DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Method Detection Limit (MDL)
MDL is the minimum 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 in 40 C.F.R. part 136, Attachment B, revised as of July 3, 1999.

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

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

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

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

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

Percent Effect
The percent effect of the sample at a specific effluent concentration shall be calculated using untransformed data and the following equation:

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

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

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

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

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

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

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

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

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

where:
x is the observed value;
μ is the arithmetic mean of the observed values; and

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n is the number of samples.

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

ATTACHMENT B – MAP

Figure B-1. Facility Map

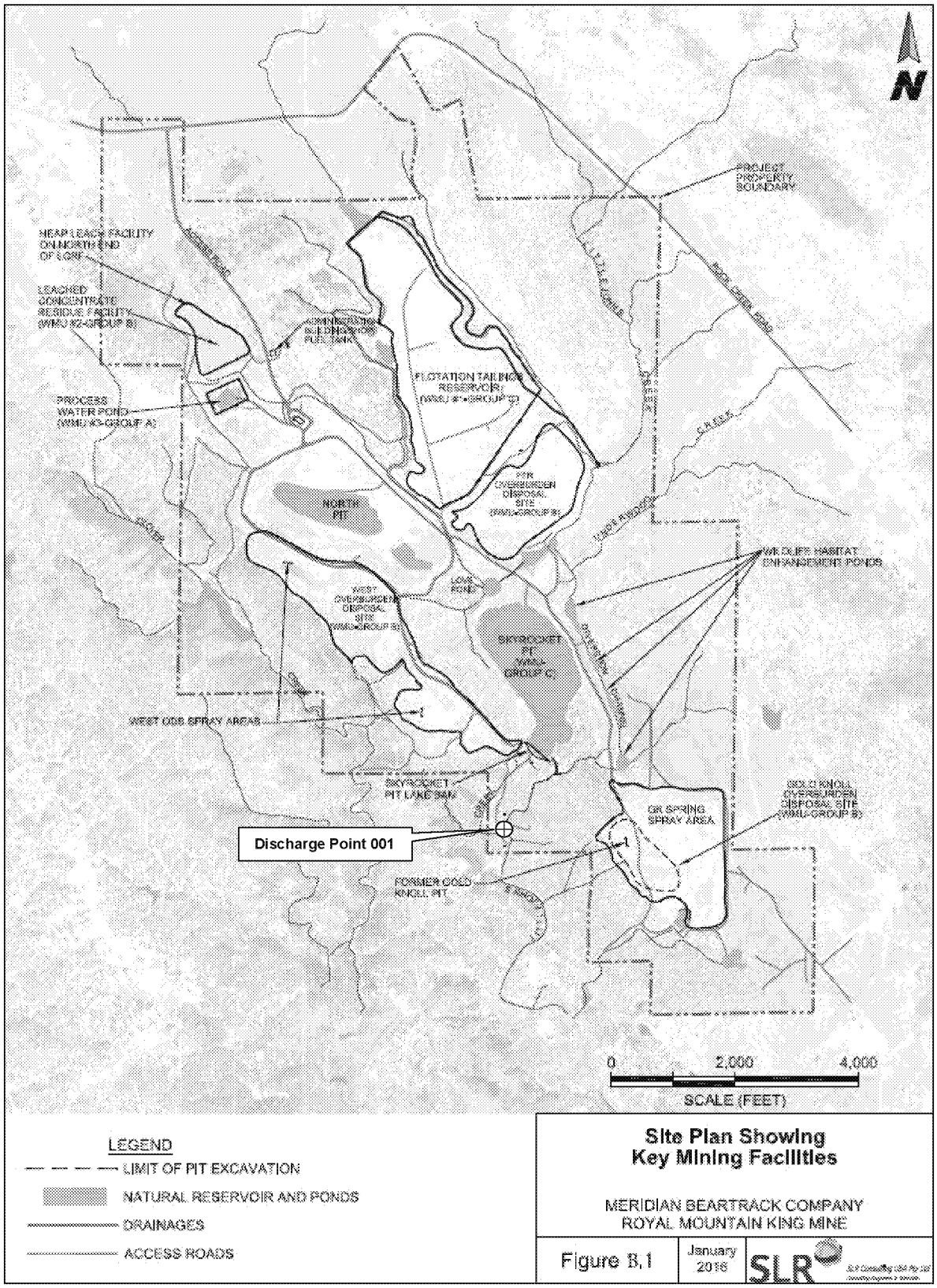
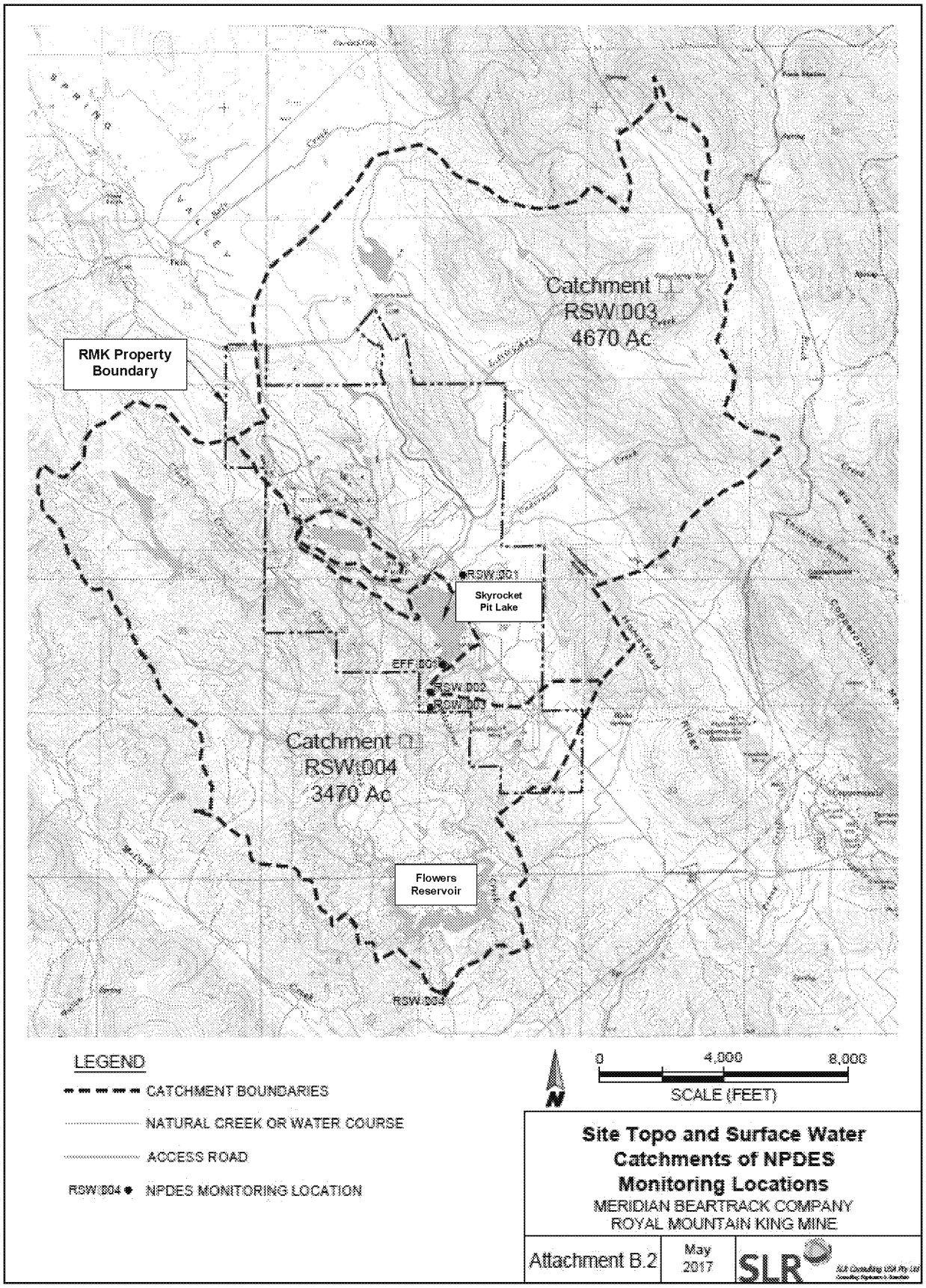
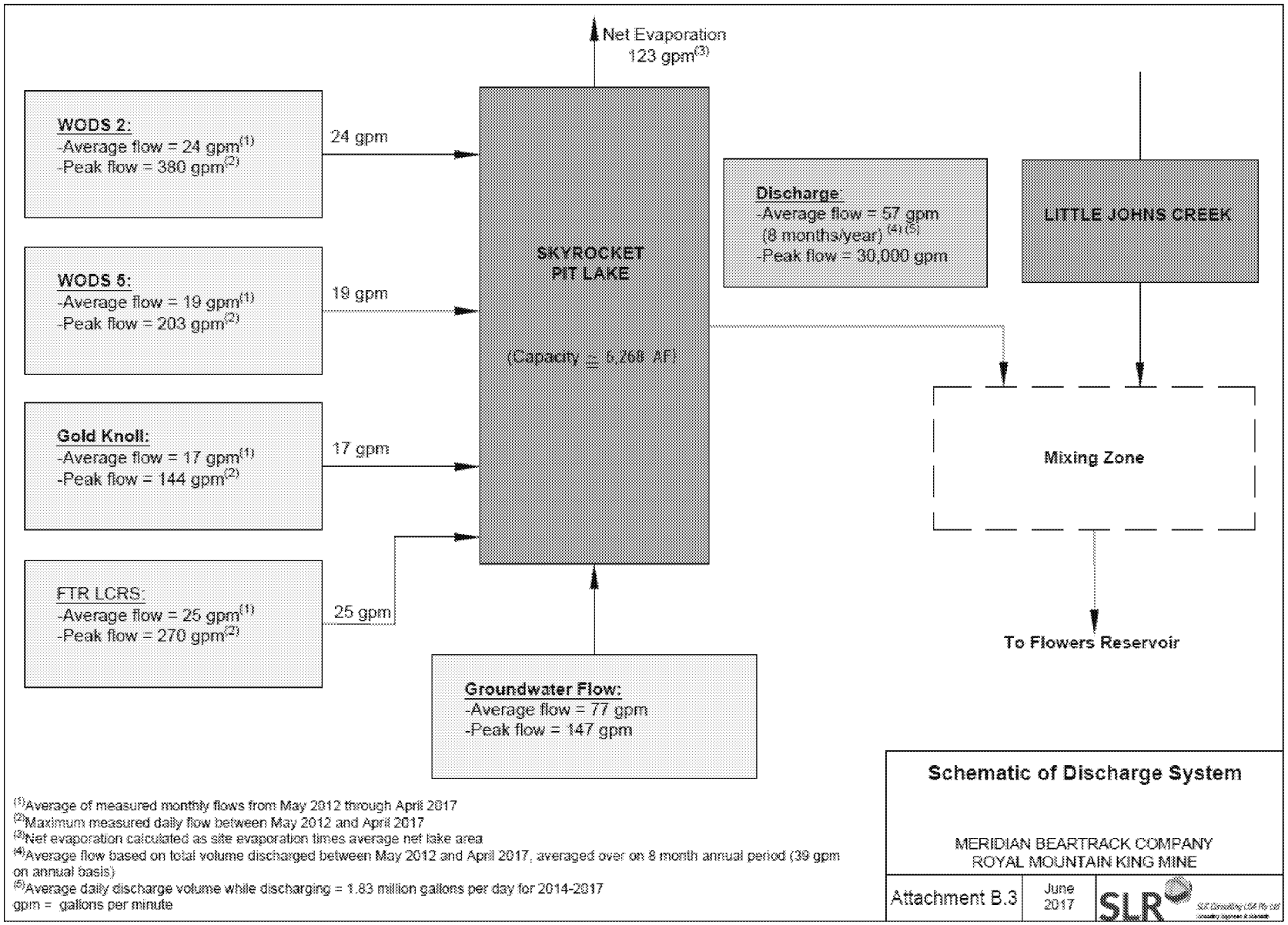


Figure B-2. Surface Water Monitoring Locations



ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

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

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

B. Need to Halt or Reduce Activity Not a Defense

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

C. Duty to Mitigate

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

D. Proper Operation and Maintenance

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

E. Property Rights

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

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

F. Inspection and Entry

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

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

G. Bypass

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

4. The Central Valley Water Board may approve an anticipated bypass, after considering its adverse effects, if the Central Valley Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 122.41(m)(4)(ii).)

5. Notice

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

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

H. Upset

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

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

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

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

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

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

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

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

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

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

B. Duty to Reapply

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

C. Transfers

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

III. STANDARD PROVISIONS – MONITORING

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

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

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

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

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

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

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five

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

B. Records of monitoring information shall include:

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

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

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

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

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

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Central Valley Water Board, State Water Board, and/or U.S. EPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, V.B.5, and V.B.6 below. (40 C.F.R. § 122.41(k).)
2. All permit applications shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary

systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 C.F.R. § 122.22(a)(1).)

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

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

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

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

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

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

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

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

C. Monitoring Reports

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

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Central Valley Water Board or State Water Board for

reporting the results of monitoring, sludge use, or disposal practices. As of 21 December 2016 all reports and forms must be submitted electronically to the initial recipient, defined in Standard Provisions – Reporting V.J, and comply with 40 C.F.R. part 3, section 122.22, and 40 C.F.R. part 127. (40 C.F.R. § 122.41(l)(4)(i).)

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

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

D. Compliance Schedules

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

E. Twenty-Four Hour Reporting

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

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

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

F. Planned Changes

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

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

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2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 C.F.R. § 122.41(l)(1)(ii).)

G. Anticipated Noncompliance

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

H. Other Noncompliance

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

I. Other Information

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

J. Initial Recipient for Electronic Reporting Data

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

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

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

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(1)):

   a. 100 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(1)(i));

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(1)(ii));

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(1)(iii)); or

d. The level established by the Central Valley Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(1)(iv).)

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 C.F.R. § 122.42(a)(2)):

a. 500 micrograms per liter (µg/L) (40 C.F.R. § 122.42(a)(2)(i));

b. 1 milligram per liter (mg/L) for antimony (40 C.F.R. § 122.42(a)(2)(ii));

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 C.F.R. § 122.42(a)(2)(iii)); or

d. The level established by the Central Valley Water Board in accordance with section 122.44(f). (40 C.F.R. § 122.42(a)(2)(iv).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

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

I. GENERAL MONITORING PROVISIONS

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

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

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

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

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

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

G. The Discharger shall ensure that the results of the Discharge Monitoring Report-Quality Assurance (DMR-QA) Study or the most recent Water Pollution Performance Evaluation

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

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

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

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

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
001	EFF-001	The outfall pipe from Skyrocket Pit Lake, prior to its being split to the three control valves.
--	RSW-001	Littlejohns Creek, upstream of Discharge Point 001 at Monitoring Location SWM-6.
--	RSW-002	Littlejohns Creek, 100 feet upstream of Discharge Point 001.
--	RSW-003	Littlejohns Creek, 300 feet downstream of Discharge Point 001 at Monitoring Location TSMW-1.

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. When discharging to Littlejohns Creek, the Discharger shall monitor discharges from Skyrocket Pit Lake at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level (ML):

Table E-2. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Daily Average Flow Ratio (Littlejohns Creek Flow : Effluent Flow)	--	Calculate	1/Day	--
Conventional Pollutants				
pH	standard units	Grab	1/Day[1]	[2]
Total Suspended Solids	mg/L	Grab	1/Event[3]	[2]
Priority Pollutants				
Antimony, Total Recoverable	µg/L	Grab	1/Event[3]	[2,4]

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Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Arsenic, Total Recoverable	µg/L	Grab	1/Event[5]	[2,4]
Selenium, Total Recoverable	µg/L	Grab	1/Event[3]	[2,4]
	lbs/day	Calculate	1/Event[3]	--
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Meter	1/Event[1,5]	[2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Event[1,5]	[2]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Event[3]	[2]
Sulfate	mg/L	Grab	1/Event[3]	[2]
Total Dissolved Solids	mg/L	Grab	1/Event[5]	[2]

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

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

[3] Monitoring shall occur once per discharge event, with a maximum of once per month if there are multiple discharge events in any given month. The monitoring shall be at least once per month if the discharge is continuous for multiple months.

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

[5] Monitoring shall occur once per discharge event, with a maximum of once per week if there are multiple discharge events in a week. The monitoring shall be at least once per week if the discharge is continuous for multiple weeks.

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.
2. *Sample Types* – The Discharger may use flow-through or static renewal testing. For static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.
3. *Test Species* – Test species shall be rainbow trout (*Oncorhynchus mykiss*).
4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

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

1. *Monitoring Frequency* – The Discharger shall perform routine annual chronic toxicity testing. If the result of the routine chronic toxicity testing event exhibits toxicity, demonstrated by a result greater than 7 chronic toxicity units (TUc) (as 100/NOEC) AND a percent effect greater than 25 percent at 14.3 percent effluent, the Discharger has the option of conducting two additional compliance monitoring events and performing chronic toxicity testing using the species that exhibited toxicity in order to calculate a median. The optional compliance monitoring events shall occur at least one week apart, and the final monitoring event shall be collected no later than 6 weeks from the routine monitoring event that exhibited toxicity.

2. *Sample Types* – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this MRP.

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

4. *Test Species* – 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:

   a. The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);

   b. The fathead minnow, *Pimephales promelas* (larval survival and growth test); and

   c. The green alga, *Pseudokirchneriella subcapitata* (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 (Method Manual).

6. Reference Toxicant – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – The chronic toxicity testing shall be performed using the dilution series identified in Table E-3, below. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-3, 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-3. Chronic Toxicity Testing Dilution Series

Sample	Dilutions[1] (%)					Control
	100	75	50	25	12.5	
% Effluent	100	75	50	25	12.5	0
% Control Water	0	25	50	75	87.5	100

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

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

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

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

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 or an exceedance of the acute toxicity effluent limitation.

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

1. **Chronic WET Reporting.** Routine and compliance chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the self-monitoring report (SMR) required to be submitted on the first day of the second calendar month following the month of sampling, and shall contain, at minimum:

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, as appropriate.

   b. The statistical methods used to calculate endpoints;

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

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

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

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

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. RECYCLED WATER MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS

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

1. When discharging to Littlejohns Creek, the Discharger shall monitor Littlejohns Creek at Monitoring Locations RSW-001, RSW-002, and/or RSW-003 as follows:

Table E-4. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Monitoring Location	Minimum Sampling Frequency	Required Analytical Test Method
Flow	gpm	Meter	RSW-002	Continuous	--
Conventional Pollutants					
pH	standard units	Grab	RSW-002	1/Month	[1, 2]
			RSW-003	1/Month	[1, 2]
Priority Pollutants					
Antimony, Total Recoverable	µg/L	Grab	RSW-001	1/Year	[2, 3]
Arsenic, Total Recoverable	µg/L	Grab	RSW-001	1/Year	[2, 3]
			RSW-003	1/Week	[2, 3]
Selenium, Total Recoverable	µg/L	Grab	RSW-001	1/Year	[2, 3]
Non-Conventional Pollutants					
Dissolved Oxygen	mg/L	Grab	RSW-002	1/Month	[1, 2]
			RSW-003	1/Month	[1, 2]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	RSW-002	1/Month	[1, 2]
			RSW-003	1/Month	[1, 2]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	RSW-002	1/Month	[2]
			RSW-003	1/Month	[2]
Temperature	°C	Grab	RSW-002	1/Month	[1, 2]
			RSW-003	1/Month	[1, 2]
Total Dissolved Solids	mg/L	Grab	RSW-001	1/Year	[2]
			RSW-003	1/Week	[2]
Turbidity	NTU	Grab	RSW-002	1/Month	[1, 2]
			RSW-003	1/Month	[1, 2]

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

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

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

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2. In conducting receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-002 and RSW-003. Attention shall be given to the presence or absence of:

a. Floating or suspended matter;
a. Discoloration;
b. Bottom deposits;
c. Aquatic life;
d. Visible films, sheens, or coatings;
e. Fungi, slimes, or objectionable growths; and
f. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring report.

IX. OTHER MONITORING REQUIREMENTS

A. Effluent and Receiving Water Characterization

1. **Once Per Permit Term Monitoring.** Samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table E-5, below. Monitoring shall be conducted once during the permit term and the results of such monitoring shall be submitted to the Central Valley Water Board with the monthly SMR's. The monitoring event shall provide representative sample results for the effluent and upstream receiving water.

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

3. **Sample Type.** All receiving water samples shall be taken as grab samples. Effluent samples shall be taken as described in Table E-5, below.

Table E-5. Effluent and Receiving Water Characterization Monitoring

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

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Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Vinyl chloride	µg/L	Grab	0.5
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	--
Trichlorofluoromethane	µg/L	Grab	--
1,1,1-Trichloroethane	µg/L	Grab	0.5
1,1,2- Trichloroethane	µg/L	Grab	0.5
1,1-dichloroethane	µg/L	Grab	0.5
1,1-dichloroethylene	µg/L	Grab	0.5
1,2-dichloropropane	µg/L	Grab	0.5
1,3-dichloropropylene	µg/L	Grab	0.5
1,1,2,2-tetrachloroethane	µg/L	Grab	0.5
1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	Grab	0.5
1,2,4-trichlorobenzene	µg/L	Grab	1
1,2-dichloroethane	µg/L	Grab	0.5
1,2-dichlorobenzene	µg/L	Grab	0.5
1,3-dichlorobenzene	µg/L	Grab	0.5
1,4-dichlorobenzene	µg/L	Grab	0.5
1,2-Benzanthracene	µg/L	Grab	5
1,2-Diphenylhydrazine	µg/L	Grab	1
2-Chlorophenol	µg/L	Grab	5
2,4-Dichlorophenol	µg/L	Grab	5
2,4-Dimethylphenol	µg/L	Grab	2
2,4-Dinitrophenol	µg/L	Grab	5
2,4-Dinitrotoluene	µg/L	Grab	5
2,4,6-Trichlorophenol	µg/L	Grab	10
2,6-Dinitrotoluene	µg/L	Grab	5
2-Nitrophenol	µg/L	Grab	10
2-Chloronaphthalene	µg/L	Grab	10
3,3'-Dichlorobenzidine	µg/L	Grab	5
3,4-Benzofluoranthene	µg/L	Grab	10
4-Chloro-3-methylphenol	µg/L	Grab	5
4,6-Dinitro-2-methylphenol	µg/L	Grab	10
4-Nitrophenol	µg/L	Grab	10
4-Bromophenyl phenyl ether	µg/L	Grab	10
4-Chlorophenyl phenyl ether	µg/L	Grab	5
Acenaphthene	µg/L	Grab	1
Acenaphthylene	µg/L	Grab	10
Anthracene	µg/L	Grab	10
Benzidine	µg/L	Grab	5
Benzo(a)pyrene (3,4-Benzopyrene)	µg/L	Grab	2
Benzo(g,h,i)perylene	µg/L	Grab	5
Benzo(k)fluoranthene	µg/L	Grab	2
Bis(2-chloroethoxy) methane	µg/L	Grab	5
Bis(2-chloroethyl) ether	µg/L	Grab	1
Bis(2-chloroisopropyl) ether	µg/L	Grab	10
Bis(2-ethylhexyl) phthalate[2]	µg/L	Grab	5
Butyl benzyl phthalate	µg/L	Grab	10
Chrysene	µg/L	Grab	5
Di-n-butylphthalate	µg/L	Grab	10

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Di-n-octylphthalate	µg/L	Grab	10
Dibenzo(a,h)-anthracene	µg/L	Grab	0.1
Diethyl phthalate	µg/L	Grab	10
Dimethyl phthalate	µg/L	Grab	10
Fluoranthene	µg/L	Grab	10
Fluorene	µg/L	Grab	10
Hexachlorocyclopentadiene	µg/L	Grab	5
Indeno(1,2,3-c,d)pyrene	µg/L	Grab	0.05
Isophorone	µg/L	Grab	1
N-Nitrosodiphenylamine	µg/L	Grab	1
N-Nitrosodimethylamine	µg/L	Grab	5
N-Nitrosodi-n-propylamine	µg/L	Grab	5
Nitrobenzene	µg/L	Grab	10
Pentachlorophenol	µg/L	Grab	1
Phenanthrene	µg/L	Grab	5
Phenol	µg/L	Grab	1
Pyrene	µg/L	Grab	10
Aluminum	µg/L	Grab	--
Antimony[3]	µg/L	Grab	5
Arsenic[3]	µg/L	Grab	10
Asbestos	MFL	Grab	--
Beryllium	µg/L	Grab	2
Cadmium	µg/L	Grab	0.5
Chromium (Total)	µg/L	Grab	50
Chromium (VI)	µg/L	Grab	10
Copper	µg/L	Grab	5
Cyanide	µg/L	Grab	5
Fluoride	µg/L	Grab	--
Iron	µg/L	Grab	--
Lead	µg/L	Grab	2
Mercury	µg/L	Grab	0.5
Manganese	µg/L	Grab	--
Nickel	µg/L	Grab	50
Selenium[3]	µg/L	Grab	5
Silver	µg/L	Grab	2
Thallium	µg/L	Grab	1
Tributyltin	µg/L	Grab	--
Zinc[3]	µg/L	Grab	20
4,4'-DDD	µg/L	Grab	0.05
4,4'-DDE	µg/L	Grab	0.05
4,4'-DDT	µg/L	Grab	0.01
alpha-Endosulfan	µg/L	Grab	0.02
alpha-Hexachlorocyclohexane (BHC)	µg/L	Grab	0.01
Aldrin	µg/L	Grab	0.005
beta-Endosulfan	µg/L	Grab	0.01
beta-Hexachlorocyclohexane	µg/L	Grab	0.005
Chlordane	µg/L	Grab	0.1
delta-Hexachlorocyclohexane	µg/L	Grab	0.005
Dieldrin	µg/L	Grab	0.01

Parameter	Units	Effluent Sample Type	Maximum Reporting Level[1]
Endosulfan sulfate	µg/L	Grab	0.01
Endrin	µg/L	Grab	0.01
Endrin Aldehyde	µg/L	Grab	0.01
Heptachlor	µg/L	Grab	0.01
Heptachlor Epoxide	µg/L	Grab	0.02
Lindane (gamma-Hexachlorocyclohexane)	µg/L	Grab	0.5
PCB-1016	µg/L	Grab	0.5
PCB-1221	µg/L	Grab	0.5
PCB-1232	µg/L	Grab	0.5
PCB-1242	µg/L	Grab	0.5
PCB-1248	µg/L	Grab	0.5
PCB-1254	µg/L	Grab	0.5
PCB-1260	µg/L	Grab	0.5
Toxaphene	µg/L	Grab	--
2,3,7,8-TCDD (Dioxin)	µg/L	Grab	--
Ammonia (as N)	mg/L	Grab	--
Boron	µg/L	Grab	--
Chloride	mg/L	Grab	--
Flow[3]	MGD	Meter	--
Hardness (as $CaCO_3$)[3]	mg/L	Grab	--
Foaming Agents (MBAS)	µg/L	Grab	--
Mercury, Methyl	ng/L	Grab	--
Nitrate (as N)	mg/L	Grab	--
Nitrite (as N)	mg/L	Grab	--
pH[3]	Std Units	Grab	--
Phosphorus, Total (as P)	mg/L	Grab	--
Specific conductance (EC)[3]	µmhos/cm	Grab	--
Sulfate[3]	mg/L	Grab	--
Sulfide (as S)	mg/L	Grab	--
Sulfite (as SO_3)	mg/L	Grab	--
Temperature	°C	Grab	--
Total Dissolved Solids (TDS)[3]	mg/L	Grab	--

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

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

3 The Discharger is not required to conduct effluent monitoring for constituents that have already been sampled in a given month, as required in Table E-2, except for hardness, pH, and temperature, which shall be conducted concurrently with the effluent sampling.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

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

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or non-compliance with the specific date and task. If non-compliance is reported, the Discharger shall state the reasons for non-compliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self-Monitoring Reports (SMR's)

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

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

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

Table E-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/Day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
1/Week	Permit effective date	Sunday through Saturday	Submit with monthly SMR
1/Month	Permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Event	Permit effective date	Commencement of the discharge event through the termination of the discharge event	First day of second calendar month following month of sampling

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
1/Year	Permit effective date	1 January through 31 December	1 February of following year

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

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

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

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

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

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

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

5. **Multiple Sample Data.** When determining compliance with an average monthly effluent limitation (AMEL) or maximum daily effluent limitation (MDEL) for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

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

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

6. The Discharger shall submit 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

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interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

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

c. The Discharger shall attach all laboratory analysis sheets, including quality assurance/quality control information, with all its SMR's for which sample analyses were performed.

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

a. **Mass Loading Limitations**. For selenium, the Discharger shall calculate and report the mass loading (lbs/day) in the SMR's. The mass loading shall be calculated as follows:

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

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

b. **Annual Mass Loading Total Dissolved Solids Effluent Limitation**. The Discharger shall calculate and report the annual (1 August – 31 July) total dissolved solids mass loading for the effluent in the July SMR. The total annual mass loading values shall be calculated as specified in section VII.D of the Waste Discharge Requirements.

c. **Flow Ratio**. The flow ratio shall be calculated as the daily average flow of Littlejohns Creek (measured at Monitoring Location RSW-002) divided by the daily average discharge flow (measured at Monitoring Location EFF-001).

d. **Dissolved Oxygen Receiving Water Limitations**. The Discharger shall report monthly in the self-monitoring report the dissolved oxygen concentrations in the effluent (EFF-001) and the receiving water (RSW-002 and RSW-003).

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

f. **Temperature Receiving Water Limitations**. The Discharger shall calculate and report the temperature increase in the receiving water based on the difference in temperature at Monitoring Locations RSW-002 and RSW-003.

C. Discharge Monitoring Reports (DMR's)

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

D. Other Reports

1. **Special Study Reports and Progress Reports**. Special Provisions contained in section VI of the Waste Discharge Requirements include requirements to submit special study technical reports and progress reports. Table E-7 summarizes the technical reports required by the Special Provisions and due dates for report submittal. All special study technical reports and progress reports shall be submitted electronically via CIWQS submittal. Reports should be uploaded as a PDF, Microsoft Word, or Microsoft Excel file attachment. If there are any discrepancies between the information presented in Table E-7 and the Special Provisions (Section VI of the Waste Discharge Requirements), the information in the Special Provisions shall supersede the information in Table E-7.

Table E-7. Reporting Requirements for Special Provisions Reports

Special Provision	Reporting Requirements
Water Quality Assessment (section VI.C.2.b)	**1 March 2022**

2. Within 60 days of permit adoption, the Discharger shall submit a report electronically via CIWQS submittal outlining RL's, MDL's, and analytical methods for the constituents listed in Tables E-2, E-4, and E-5. The Discharger shall comply with the monitoring and reporting requirements for CTR constituents as outlined in sections 2.3 and 2.4 of the SIP. The maximum required RL's for priority pollutant constituents shall be based on the ML's contained in Appendix 4 of the SIP, determined in accordance with 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 RL's, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4, that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4, for inclusion in the permit. Table E-5 provides required maximum RL's in accordance with the SIP.

3. **Annual Operations Report.** By 30 January of each year, the Discharger shall submit a written report to the Central Valley Water Board Electronically via CIWQS submittal containing the following:

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

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

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

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

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

report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

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ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

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

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

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	5B05NP00009
CIWQS Facility Place ID	253448
Discharger	Meridian Beartrack Co
Name of Facility	Royal Mountain King Mine
Facility Address	4461 Rock Creek Road
	Copperopolis, CA 95228
	Calaveras County
Facility Contact, Title and Phone	Gary Russell, Site Supervisor, (209) 450-6490
Authorized Person to Sign and Submit Reports	Adam Whitman, President, (775) 200-4959 or Mark Trevor, SLR International (510) 451-1761
Mailing Address	P.O. Box 190, Copperopolis, CA 95228
Billing Address	4635 Longley Lane, Unit 110, Suite 4A, Reno, NV 89502
Type of Facility	Industrial – Not Classified
Major or Minor Facility	Major
Threat to Water Quality	2
Complexity	C
Pretreatment Program	Not Applicable
Recycling Requirements	Not Applicable
Facility Permitted Flow	3.0 million gallons per day (MGD), monthly average
Facility Design Flow	43 MGD, peak daily flow
Watershed	Middle San Joaquin-Lower Merced-Lower Stanislaus
Receiving Water	Littlejohns Creek
Receiving Water Type	Inland Surface Water

A. Meridian Beartrack Co (hereinafter Discharger) is the owner of the Royal Mountain King Mine (hereinafter Facility), a reclaimed gold mine site. SLR International Corporation is the operator of the 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.

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B. The Facility discharges wastewater to Littlejohns Creek, a water of the United States and tributary of French Camp Slough and the San Joaquin River, within the Middle San Joaquin-Lower Merced-Lower Stanislaus watershed. The Discharger was previously regulated by Order R5-2013-0071 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0085243 adopted on 31 May 2013 with an expiration date of 1 May 2018. Attachment B provides maps of the area around the Facility. Attachment C provides a flow schematic of the Facility.

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

D. The Discharger filed a complete report of waste discharge (ROWD) for reissuance of its waste discharge requirements (WDR's) and NPDES permit on 26 June 2017. A site visit was conducted on 15 August 2017 to observe operations and collect additional data to develop permit limitations and requirements for waste discharge.

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

II. FACILITY DESCRIPTION

The Facility was a gold mine operated by the Discharger between 1988 and 1994. The Facility was originally regulated by Order 88-176, which addressed the removal, transport, processing, and disposal of mined material. Closure WDR Order R5-2016-0055 regulates the closure of the Facility. The Facility consists of three waste management units (WMU's), three overburden disposal sites (ODS's), three former mining pits, and an administrative building and related facilities.

The WMU's include the flotation tailings reservoir (FTR), process water pond (PWP), and leached concentrate residue facility (LCRF). These WMU's are regulated under separate WDR Order R5-2016-0055. The FTR and LCRF have been closed and the PWP is used for wastewater evaporation but is scheduled for final closure by summer of 2018.

The FTR includes a Leachate Collection and Removal System (LCRS) that underlies the FTR and was designed to drain leachate from the tailings to prevent development of a hydraulic head on the outer clay liner of the FTR. The FTR LCRS was operated during operation of the mine through closure of the FTR until 2003, when it was blocked due to water balance issues. The FTR LCRS was reopened in 2008 upon observation of a surface seep. Since the FTR LCRS has been reopened, the water collected from the LCRS drain has been transferred to Skyrocket Pit Lake. Flow monitoring since the initial drawdown in the FTR indicates that the average flow of FTR LCRS water transferred to Skyrocket Pit Lake is between 45 and 50 gallons per minute (gpm).

The ODS's include the FTR ODS, Gold Knoll ODS, and West ODS. The ODS's have been reclaimed; however, spring water seeps from a spring under the Gold Knoll ODS, referred to as the Gold Knoll spring, and from two springs under the West ODS, referred to as West ODS2 and West ODS5. The Discharger historically recirculated the collected seepage water to the ODS's for

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evaporation via sprinkler systems; however, since November 2005, the Discharger discontinued recirculation of the seepage water and began transferring it to Skyrocket Pit Lake to reduce the risk of unauthorized discharges.

The three former mining pits include Gold Knoll, North Pit Lake, and Skyrocket Pit Lake. The Gold Knoll pit has been backfilled. The North Pit Lake and Skyrocket Pit Lake have been filled with water. A dam is located in the southwest corner of Skyrocket Pit Lake. The emergency spillway for the dam is 973 feet above mean sea level (amsl). Water from Skyrocket Pit Lake discharges to Littlejohns Creek via a multiport diffuser, which includes 48 1-inch ports and three 8-inch flap gates. The discharge rate is controlled using automated control valves designed to maintain TDS and other constituent concentrations below the applicable water quality objectives by providing a proportionate discharge to Littlejohns Creek. A three branch manifold system precisely controls effluent flow across a range of 0 to 30,000 gpm based on receiving water measurements. The NPDES surface water discharge is a part of the overall water management system at the site.

This Order allows the management of the discharges from Skyrocket Pit Lake so as to reduce impacts to beneficial uses caused by natural weathering of native minerals and previous mining operations (predominantly from high total dissolved solids, sulfate, and arsenic concentrations). During high flow periods (i.e., during storm events) there is assimilative capacity in Littlejohns Creek, thus, the volume of water moving through the watershed and into the Sacramento-San Joaquin Delta allows for a reduction in the potential for impacts to beneficial uses.

A. Description of Wastewater and Biosolids Treatment and Controls

The sources of water discharged include spring water emanating from West ODS2, West ODS5, Gold Knoll spring; seepage from the FTR LCRS; and water from Skyrocket Pit Lake. The spring water consists of groundwater that has risen into the ODS's and some storm water that infiltrates through the ODS's. Skyrocket Pit Lake receives natural flows primarily from groundwater, including subsurface flows from North Pit Lake, but also receives some surface water runoff.

1. **Overburden Disposal Sites (ODS's).** Seepage from the Gold Knoll spring and the West ODS2 and West ODS5 springs are collected in subsurface sumps and pumped to Skyrocket Pit Lake. Both the Gold Knoll ODS and West ODS have a series of concrete-lined ditches designed to isolate the spring water from surface water runoff.

2. **Flotation Tailings Reservoir (FTR) Leachate Collection and Removal System (LCRS).** The FTR LCRS collects infiltration through the surface of the FTR that percolates through the tailings as well as groundwater that may migrate across the liner system. FTR LCRS water is pumped from a drain sump at the toe of the FTR embankment to Skyrocket Pit Lake.

3. **Skyrocket Pit Lake and Final Discharge.** Skyrocket Pit also acted as a hydraulic sink when mining operations ceased, drawing groundwater from surrounding areas. In 1998, the Discharger constructed Skyrocket Dam, National ID No. CA01428, in the southwest corner of the Skyrocket Pit Lake, which is operated and maintained under the CA Department of Water Resources (DWR), Division of Safety and Dams (DSOD) Permit No. 1500-004. The current spill level of Skyrocket Pit Lake is 973 feet amsl.

   Discharges from Skyrocket Pit Lake are controlled to ensure a minimum dilution rate. The flow control system includes a 32-inch outside diameter (OD) discharge line, equipped with a three branch manifold system with 13-inch, 20-inch, and 32-inch OD diameter branches and automated flow control valves for each branch. Effluent is discharged to Littlejohns Creek through a multiport diffuser. The diffuser includes 48 1-inch ports and three 8-inch flap gates.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 19, T2N, R12E, MDB&M, as shown in Attachment B, a part of this Order.
2. Wastewater is discharged at Discharge Point 001 to Littlejohns Creek, a water of the United States and tributary to French Camp Slough, which is tributary to the San Joaquin River within the boundaries of the Sacramento-San Joaquin Delta, at a point latitude 37° 59' 22" N and longitude 120° 41' 12" W.

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

Effluent limitations contained in Order R5-2013-0071 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2013-0071 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Monitoring Data (January 2014 – May 2017)			
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge
Flow	MGD	3.0	--	6.9[1]	--
Conventional Pollutants					
pH	standard units	--	6.5 – 8.5	--	7.4 – 8.32
Priority Pollutants					
Antimony, Total Recoverable	µg/L	20	33	6.0	6.0
Arsenic, Total Recoverable	µg/L[2]	69	85	54.3	54.3
	µg/L[3]	77	95	72.6	72.6
	µg/L[4]	86	110	72.0	72.0
	µg/L[5]	94	120	110.7	110.7
Selenium, Total Recoverable	µg/L	14	20	5.3	5.3
	lbs/day	0.35[6]	7.2[7]	0.30	0.10
Non-Conventional Pollutants					
Total Dissolved Solids	mg/L	--	4,000	--	3,500
	tons/year	3,000[8]	--	522[9]	--
Acute Toxicity	% Survival	--	70[10]/90[11]	--	100[12]

Parameter	Units	Monitoring Data (January 2014 – May 2017)			
		Average Monthly	Maximum Daily	Highest Average Monthly Discharge	Highest Daily Discharge

[1] Represents the maximum observed daily discharge.
[2] Applied when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 7:1 and less than 8:1.
[3] Applied when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 8:1 and less than 9:1.
[4] Applied when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 9:1 and less than 10:1.
[5] Applied when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 10:1.
[6] Based on an average monthly flow of 3.0 MGD.
[7] Based on a design capacity of 43 MGD.
[8] Applied as a total annual (1 August through 31 July) mass effluent limitation.
[9] Represents the maximum total annual (1 August through 31 July) mass load.
[10] Minimum percent survival for any one bioassay.
[11] Median percent survival of three consecutive acute bioassays.
[12] Represents the minimum observed percent survival.

D. Compliance Summary

The Discharger was not subject to any enforcement actions during the term of Order R5-2013-0071.

E. Planned Changes

The Discharger has conducted a pilot test to supplement the treatment process for Skyrocket Pit Lake with an oxidizer (potassium permanganate) in order to enhance arsenic removal. The success of the Discharger's pilot test indicates that periodic addition of the oxidizer may be appropriate as part of the treatment process. Such testing and process modification is part of an on-going initiative to evaluate potential refinements and optimize arsenic treatment within Skyrocket Pit Lake.

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.

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

   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 Littlejohns Creek, but does identify present and potential uses for the Sacramento-San Joaquin Delta, to which Littlejohns Creek, via French Camp Slough, 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 (MUN). Thus, beneficial uses applicable to Littlejohns Creek are as follows:

Table F-3. Basin Plan Beneficial Uses

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

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

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effective on 18 May 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

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

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

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

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

8. **Storm Water Requirements.** U.S. EPA promulgated federal regulations for storm water on 16 November 1990 in 40 C.F.R. parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from mining activities. Inactive mining operations are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Facility submitted its Notice of Intent (NOI) to be covered under the State Water Board Water Quality Order 2014-0057-DWQ, General Permit for Strom Water Discharges Associated with Industrial Activities (NPDES General Permit No. CAS000001) on 8 May 2015.

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

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments (WQLS's). The waters on

these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 26 June 2015, U.S. EPA gave final approval to California's 2012 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of WQLS's, which are defined as "*…those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 C.F.R. part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLS's]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The listing for Littlejohns Creek includes *Escherichia coli* (*E. coli*) and unknown toxicity.

2. **Total Maximum Daily Loads (TMDL's).** Table F-4, below, identifies the 303(d) listings and any applicable TMDL's. At the time of this permit renewal, there are no approved TMDL's with waste load allocations (WLA's) that apply to this Facility.

Table F-4. 303(d) List for Littlejohns Creek

Pollutant	Potential Sources	TMDL Status
E. coli	Source Unknown	Planned for Completion (2021)
Unknown Toxicity	Source Unknown	Planned for Completion (2021)

3. The 303(d) listings and TMDL's have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3 of this Fact Sheet.

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

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements

in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 C.F.R. section 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 C.F.R. section 122.44(d) requires that permits include water quality-based effluent limitations (WQBEL's) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00 contains an implementation policy, "*Policy for Application of Water Quality Objectives*," that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*" This Policy complies with 40 C.F.R. section 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) U.S. EPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "*Policy for Application of Water Quality Objectives*") (40 C.F.R. § 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00) 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 (MCL's)*" in Title 22 of the CCR. The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCL's. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

A. Discharge Prohibitions

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

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

3. **Prohibition III.C (No discharge when the daily average flow rate of Littlejohns Creek is less than 1,000 gpm as measured at Monitoring Location RSW-002).** This Order requires a minimum flow in Littlejohns Creek to ensure there is adequate assimilative capacity in the receiving water.

4. **Prohibition III.D (No discharge except when Littlejohns Creek flows provide a flow ratio greater than or equal to 7:1 as a daily average).** This Order allows mixing zones for chronic aquatic life and human health criteria. Dilution is accomplished by discharging through a diffuser only during periods when sufficient flow is present in Littlejohns Creek

to provide the dilution necessary to meet applicable water quality objectives at the edge of the mixing zone. Therefore, a minimum ratio of receiving water flow to effluent flow has been applied as a discharge prohibition in order to protect applicable water quality objectives.

The constituent that requires the highest level of dilution in order to meet applicable water quality objectives at the edge of the mixing zone is arsenic. Based on samples collected between January 2014 and May 2017, observed concentrations of arsenic in Skyrocket Pit Lake ranged from 54.3 µg/L to 110.7 µg/L, and the maximum receiving water level was 0.60 µg/L. The most stringent water quality objective is 10 µg/L, based on the Primary MCL. Within the range of the previously attained effluent concentrations, the discharge would need a dilution ratio of between 7:1 and 15:1 (Littlejohns Creek flow : effluent flow) in order to meet the applicable water quality objective at the end of the approved mixing zone. Typically, the highest effluent concentration would be used to set a single effluent limit and a corresponding flow ratio prohibition. However, due to the Discharger's ability to treat arsenic and in order to maximize surface water discharges, this Order allows tiered effluent limitations for arsenic depending on the flow ratio at the time of discharge. Therefore, a minimum flow ratio of 7:1 is required, which ensures compliance with water quality objectives at the end of the mixing zone for all constituents, except potentially arsenic. The tiered effluent limits for arsenic effectively increase the flow ratio requirement to ensure compliance with the water quality objective for arsenic at the edge of the mixing zone, in the event a 7:1 flow ratio is not sufficient to meet water quality objectives at the edge of the mixing zone.

5. **Prohibition III.E (No discharge of hazardous waste).** This prohibition is based on CCR, Title 22, section 66261.1 et seq., which prohibits the discharge of hazardous waste.

6. **Prohibition III.F (Average Monthly Flow).** This prohibition is based on rainfall over a monthly period with a return of 2 to 5 years, a 10:1 flow ratio, and a maximum total annual dissolved solids discharge of 3,000 tons. Previous Order R5-2013-0071 included flow as an effluent limit. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as in previous Order R5-2013-0071.

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 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

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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 5-day biochemical oxygen demand (BOD_5), 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 ELG's 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 best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELG's 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

ELG's were established at 40 C.F.R. part 440, subpart J for the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores Subcategory of the Ore Mining and Dressing Point Source Category. For the purposes of 40 C.F.R. part 440, "mine" is defined as an active mining area used in or resulting from the work of extracting metal ore or minerals from their natural deposits by any means or method, and "active mining area" is defined as a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted. The Facility consists of land and property previously used in and resulting from the work of extracting metal ore or minerals, specifically gold, from their natural deposits by any means or method. The discharge from the Facility is groundwater and some surface water runoff drained from the Royal Mountain King Mine site, an inactive mine. Therefore, the Facility is not an "active mining area" as defined in 40 C.F.R. part 440 and is not a categorical discharge subject to ELG's. Thus, technology-based effluent limitations for the Facility must be based on BPJ.

40 C.F.R. part 440, subpart J contains ELG's for cadmium, copper, lead, mercury, pH, TSS, and zinc that are applicable to mine drainage at gold ore mines. Because the Facility is not an active mining area as defined in 40 C.F.R. part 440, technology-based effluent limitations representing BPT and BAT for an active mine are not applicable. Therefore, this Order does not contain effluent limitations based on the ELG's for constituents applicable to mine drainage at gold ore mines contained in 40 C.F.R. part 440, subpart J. This Order does, however, require monitoring for these constituents.

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

1. Scope and Authority

CWA section 301(b) and 40 C.F.R. section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

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

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

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

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

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

a. **Receiving Water and Beneficial Uses.** Refer to section III.C.1 above for a complete description of the receiving water and beneficial uses.

b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from January 2014 (i.e., when the Discharger commenced discharges at Discharge

Point 001) through May 2017, which includes effluent and ambient background data submitted in SMR's and the ROWD.

c. **Assimilative Capacity/Mixing Zone**

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

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

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

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

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

A: A mixing zone shall not:

1. compromise the integrity of the entire water body;

2. cause acutely toxic conditions to aquatic life passing through the mixing zone;

3. restrict the passage of aquatic life;

4. adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;

5. produce undesirable or nuisance aquatic life;

6. result in floating debris, oil, or scum;

7. produce objectionable color, odor, taste, or turbidity;

8. cause objectionable bottom deposits;

9. cause nuisance;

10. dominate the receiving water body or overlap a mixing zone from different outfalls; or

11. be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."

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

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

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

ii. **Dilution/Mixing Zone Study Results.** Orders R5-2007-0162-01 and R5-2013-0071 allowed the Discharger to dilute its effluent with water from Littlejohns Creek by discharging through a diffuser when sufficient flows were present in Littlejohns Creek to provide the dilution necessary to meet applicable water quality objectives. Order R5-2007-0162-01 granted a dilution credit of 15:1 for chronic aquatic toxicity and human health criteria based on Facility performance. Order R5-2013-0071 revised the required minimum

dilution ratio from 15:1 to 7:1 based on a 6 June 2008 *Mixing Zone Study Report* (2008 Mixing Zone Study), described in more detail below.

The Discharger discharges water from Skyrocket Pit Lake to Littlejohns Creek via a multiport diffuser. The diffuser includes 48 1-inch ports and three 8-inch flap gates. The discharge rate is controlled using automated control valves designed to maintain total dissolved solids and other constituent concentrations below the applicable water quality objectives by providing a minimum amount of dilution with Littlejohns Creek water. The flow control system includes a 32-inch OD discharge line, equipped with a three-branch manifold system with 13-inch, 20-inch, and 32-inch OD diameter branches and automated flow control valves for each branch. The purpose of the manifold is to precisely control the flow across the range of 0 to 30,000 gpm and allow for fast closing for the discharge line when flows in the creek or water quality standards require it. The flow control valves are controlled based on Littlejohns Creek flow and electrical conductivity measurements. The operating logic is as follows:

(a) When the flow in Littlejohns Creek rises above a present low flow level (flow recorder-low), an activation signal is sent to the control system and the appropriate flow control valve(s) are opened.

(b) If the electrical conductivity measured in Littlejohns Creek is below a predetermined set point when a flow control valve is activated, a control signal is sent to gradually open the flow control valve(s). This allows water from Skyrocket Pit Lake to flow through the discharge line at a controlled rate and mix with Littlejohns Creek water. If the electrical conductivity set point is exceeded, then the flow control valve(s) are gradually closed until the set point is reached.

(c) As long as electrical conductivity in Littlejohns Creek remains below the set point, the flow control valves will slowly respond to allow additional water to be blended into Littlejohns Creek until the electrical conductivity set point is reached, or until all three valves are fully opened.

(d) When the flow in Littlejohns Creek drops below the flow recorder-high, a signal will be sent to reduce the flow. This will occur even if the electrical conductivity is below the set point to prevent a potential upset condition that could result if the flow in Littlejohns Creek were to drop quicker than the control response time of the flow control valves.

(e) When the level in Skyrocket Pit Lake falls below a pre-determined low level, then all three valves would remain closed regardless of the flow in Littlejohns Creek.

The Discharger submitted a 2008 Mixing Zone Study describing the results of a field mixing zone study conducted on 5/6 March 2008. The mixing zone study consisted of evaluating the mixing of water containing a dye discharged from a tank into the water flowing in Littlejohns Creek and measurements of the downstream concentrations of the dye.

Littlejohns Creek is relatively small and mixing occurs fairly rapidly. The Discharger has installed a 28-foot long low concrete sill across the creek at the location of the multi-port diffuser. The stream width at the site of the diffuser varies from 20 feet to 150 feet depending on flow. The stream width at the time of the 2008 Mixing Zone Study was approximately 22 feet and the study

determined that complete mixing would occur within 44 feet of the diffuser (i.e., within two stream-widths of the outfall location).

The mixing zone study included three field tests. The field tests used an experimental low flow diffuser consisting of an 8-inch pipe equipped with 12 2-inch discharge ports, each equipped with a valve. The diffuser was laid across Littlejohns Creek and secured with sandbags to simulate the full-scale diffuser, which includes the concrete sill overlying the diffuser pipe. Near-field mixing is achieved by having the discharge from the nozzles impinge on rip-rap immediately downstream of the diffuser and allowing the creek flow to go over the concrete sill to cascade downstream of the nozzle discharges.

Three measuring profiles were established at 20, 50 and 85 feet downstream of the diffuser to represent approximately one, two, and four stream widths from the diffuser and samples were collected and measured for dye concentration and turbidity to calculate mixing percentage at each location. The initial two field tests did not indicate complete mixing within two stream widths of the diffuser, so the Discharger modified the diffuser for the third field test to include a larger number (24) of smaller (1-inch) diffuser ports located about 9-inches center to center. The test indicated a mixing percentage of 90.4 percent at the 20 foot profile and 97.3 percent at the 50 foot profile. Assuming a linear distribution of mixing between 20 and 50 feet, these mixing percentages yield a mixing percentage of 96 percent 44 feet downstream (i.e., two stream widths downstream).

The mixing zone study simulated worst-case conditions, even though dilution ratios were higher than the minimum dilution ratios required for discharges allowed by this Order. Mixing within the creek is accomplished through turbulence generated by flow in the creek. Mixing at the lower dilution ratios allowed by this Order is only expected to result in a slight increase in length of the mixing zone. At lower stream flows (i.e., less than 5,000 gpm), water cascades over the ledge created by the concrete sill and counteracts the effects of the flow velocity discharging from the orifices. Additionally, the Discharger doubled the number of discharge ports in the diffuser, compared with the test diffuser, to provide a further significant factor of mixing efficiency and result in further reduction in the mixing zone length.

iii. **Evaluation of Available Dilution for Acute and Chronic Life Criteria.** U.S. EPA Region VIII, in its "*EPA Region VIII Mixing Zones and Dilution Policy*", recommends no dilution for acute aquatic life criteria, stating the following, "*In incomplete mix situations, discharge limitations to implement acute chemical-specific aquatic life criteria and narrative (no acute toxicity) criteria shall be based on achieving such acute criteria at the end-of-pipe (i.e., without an allowance for dilution). This approach is intended to implement the narrative requirement prohibiting acutely toxic conditions in the mixing zone.*"

A dilution credit for acute toxicity criteria has not been allowed in this Order. The chronic aquatic life mixing zone is sized to protect the water body as a whole. A mixing zone for chronic aquatic life criteria has been allowed in this Order for development of the WQBEL's for selenium. The chronic aquatic life mixing zone is 22 feet wide and extends 44 feet downstream of the diffuser.

The chronic aquatic life mixing zone meets the requirements of the SIP as follows:

(a) *Shall not compromise the integrity of the entire waterbody* – The TSD states that, "*If the total area affected by elevated concentrations within all mixing zones combined is small compared to the total area of a waterbody (such as a river segment), then mixing zones are likely to have little effect on the integrity of the waterbody as a whole, provided that the mixing zone does not impinge on unique or critical habitats.*"[1] Littlejohns Creek is approximately 28 feet wide at the diffuser. The Discharger's study indicated that complete mixing occurs within 44 feet downstream of the diffuser. The mixing zone is small and does not compromise the integrity of the entire waterbody.

(b) *Shall not cause acutely toxic conditions to aquatic life passing through the mixing zone* – The SIP requires that the acute mixing zone be appropriately sized to prevent lethality to organisms passing through the mixing zone. U.S. EPA recommends that float times through a mixing zone less than 15 minutes ensure that there will not be lethality to passing organisms. This Order does not allow mixing zones for acute criteria. In addition, this Order includes an acute toxicity effluent limitation that requires compliance to be determined based on acute bioassays using 100 percent effluent. Compliance with these requirements ensures that acutely toxic conditions to aquatic life passing through the acute and chronic mixing zones do not occur.

(c) *Shall not restrict the passage of aquatic life* – The Discharger conducted a mixing zone study to evaluate the near-field effects of the discharge. The Discharger evaluated the mixing zone where water quality objectives are met. This Order does not allow a mixing zone for acute criteria. Based on the requirements in this Order, discharges will only occur intermittently during relatively high and flood flow conditions, which occur only for a few days to a few weeks per year. During these times, the width of the creek will vary from 20 feet to 150 feet and high physical stresses to aquatic organisms will be occurring during these periods due to the higher velocity and turbidity of the receiving water.

(d) *Shall not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or state endangered species laws* – The chronic mixing zone will not cause acutely toxic conditions, will allow an adequate zone of passage, and is sized appropriately to ensure that there will be no adverse impacts to biologically sensitive or critical habitats.

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The current discharge has not been shown to result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

(f) *Shall not dominate the receiving water body or overlap a mixing zone from different outfalls* – The chronic mixing zone is small relative to the water body, so it will not dominate the water body. Furthermore, the mixing zone

[1] TSD, pg. 33

does not overlap mixing zones from other outfalls. There are no outfalls or mixing zones in the vicinity of the discharge.

(g) *Shall not be allowed at or near any drinking water intake* – The chronic mixing zone is not near a drinking water intake.

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

iv. **Evaluation of Available Dilution for Human Health Criteria.** Section 1.4.2.2 of the SIP provides that mixing zones should not be allowed at or near drinking water intakes. Furthermore, regarding the application of a mixing zone for the protection of human health, the TSD states that, "*…the presence of mixing zones should not result in significant health risks, when evaluated using reasonable assumptions about exposure pathways. Thus, where drinking water contaminants are a concern, mixing zones should not encroach on drinking water intakes.*" There are no drinking water intakes in the human health mixing zone. Based on the Discharger's 2008 Mixing Zone Study, the human health carcinogen mixing zone extends 44 feet downstream of the diffuser and a dilution credit of 7:1 is allowed. Human health criteria dilution credits have been used in the calculation of WQBEL's for antimony, arsenic, and total dissolved solids.

The human health mixing zone meets the requirements of the SIP as follows:

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

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

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

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

[1] TSD, pg. 33

(e) *Shall not produce undesirable or nuisance aquatic life; result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; cause nuisance* – The allowance of a human health mixing zone will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum; produce objectionable color, odor, taste, or turbidity; cause objectionable bottom deposits; or cause nuisance.

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

(g) *Shall not be allowed at or near any drinking water intake* – There are no drinking water intakes within the human health mixing zone.

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

v. **Evaluation of Available Dilution for Specific Constituents (Pollutant-by-Pollutants Evaluation).** When determining to allow dilution credits for a specific pollutant, several factors must be considered, such as, available assimilative capacity, Facility performance and best practicable treatment or control (BPTC). In this subsection, a pollutant-by-pollutant evaluation of dilution is discussed. The constituents that require the highest level of dilution in order to meet applicable water quality objectives are arsenic and total dissolved solids. As described below, a revised minimum dilution ratio ranging from 7:1 to 15:1 is necessary to comply with effluent limitations for arsenic. Therefore, the required minimum dilution ratio of 7:1 and the applicable dilution ratio for chronic aquatic life of 7:1 have been retained from Order R5-2013-0071; and the applicable dilution ratio for human health has been revised to a range from 7:1 to 15:1 based on recent Facility performance. A pollutant-by-pollutant evaluation is discussed below.

(a) **Antimony, Total Recoverable.** The receiving water contains assimilative capacity for antimony. As discussed above, a human health criteria mixing zone extending 44 feet downstream of the discharge and a dilution credit of 7:1 meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements.*" Order R5-2013-0071 included an average monthly effluent limitation (AMEL) of 20 µg/L and a maximum daily effluent limitation (MDEL) of 33 µg/L for antimony based on Facility performance and a dilution credit of 3:1, which correlates to a smaller mixing zone. Based on modeling conducted by the Discharger, this level of dilution would occur

less than 20 feet downstream of the outfall. This represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP. Therefore, this Order retains the performance-based WQBEL's for antimony from Order R5-2013-007, which reflect a human health dilution credit of 3:1.

Furthermore, the Central Valley Water Board finds that granting of the full dilution credits could allocate an unnecessarily large portion of the receiving water's assimilative capacity for antimony and could violate the Antidegradation Policy. Although the Antidegradation Policy does not apply within a mixing zone, the allowance of a mixing zone allows an increase in the discharge of pollutants. Therefore, when a mixing zone and dilution credits are allowed, it is necessary to ensure the discharge complies with the Antidegradation Policy outside the mixing zone. The Antidegradation Policy requires that any activity which produces a waste or increased volume or concentration of waste which discharges to existing high quality waters is required to meet waste discharge requirements that result in BPTC, which in this case for antimony is, at minimum, existing Facility performance. Allowing the full dilution credit would allow the Discharger to increase its loading of antimony to Littlejohns Creek and reduce the treatment and/or control of the pollutant. Allowing the Discharger to reduce the level of treatment and/or control would not comply with the BPTC requirements of the Antidegradation Policy.

(b) **Arsenic, Total Recoverable.** The receiving water contains assimilative capacity for arsenic. The Discharger began in-situ treatment of arsenic in the summer of 2010. In the Discharger's June 2012 *Skyrocket Pit Lake Arsenic Treatment Pilot Study Report of Results* (Strategic Engineering and Science, Inc.) the in-situ treatment process was shown to reduce arsenic levels in Skyrocket Pit Lake to less than 60 µg/L. The effectiveness of the updated treatment process provided the basis for establishing dilution credits for arsenic ranging from 7:1 to 10:1 in Order R5-2013-0071. However, in the ROWD, the Discharger indicated that Skyrocket Pit Lake experiences "turnover" during the winter months, which causes high arsenic concentrations at the bottom of the lake to rise to the top, where the discharge emanates. The overturning of the lake occurs due to the increased density of the surface layer caused by seasonal cooling. The turnover occurring within Skyrocket Pit Lake has led to an observed increase in arsenic concentrations at the surface. As a result, a minimum dilution ratio ranging from 7:1 to 15:1 is necessary in order for the Discharger to be able to comply with effluent limitations for arsenic. The allowable expansion of the minimum dilution ratio is consistent with federal antidegradation regulations and the State Antidegradation Policy, as described in section IV.D.4 of this Fact Sheet. Table F-5, below, contains WQBEL's for arsenic based on human health dilution credits ranging from 7:1 to 15:1 and calculated using updated background arsenic concentrations observed during the term of Order R5-2013-0071.

Table F-5. Flow Ratios and Associated WQBEL's for Arsenic

Flow Ratio[1]	Effluent Limitations	
	AMEL	MDEL
7:1 ≤ Flow Ratio < 8:1	77	111
8:1 ≤ Flow Ratio < 9:1	87	125
9:1 ≤ Flow Ratio < 10:1	96	139
10:1 ≤ Flow Ratio < 11:1	106	153
11:1 ≤ Flow Ratio < 12:1	115	167
12:1 ≤ Flow Ratio < 13:1	125	181
13:1 ≤ Flow Ratio < 14:1	134	195
14:1 ≤ Flow Ratio < 15:1	144	208
15:1 ≤ Flow Ratio	154	222

1 Daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively.

Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." Observed arsenic concentrations in Skyrocket Pit Lake ranged from 54.3 µg/L to 110.7 µg/L based on 15 samples collected between January 2014 and May 2017. Based on current effluent quality, a mixing zone of 44 feet represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP.

(c) **Selenium, Total Recoverable.** The receiving water contains assimilative capacity for selenium. As discussed above, a chronic aquatic life criteria mixing zone extending 44 feet downstream of the discharge and a dilution credit of 7:1 meets the mixing zone requirements of the SIP. No dilution is allowed for acute aquatic life criteria. For selenium, Order R5-2013-0071 established WQBEL's based on a chronic aquatic life criteria dilution credit of 7:1, which included an AMEL of 14 µg/L and an MDEL of 20 µg/L. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and section 1.4.2.2.B requires, "*The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements*." Based on current effluent quality, a mixing zone of 44 feet represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP. The bioaccumulative nature of selenium was considered in granting dilution credits. Considering the intermittent nature of the discharge, the possibility of impacts to aquatic life due to bioaccumulation is not considered to be significant. Therefore, this Order retains the WQBEL's for selenium from Order R5-2013-0071, which reflect a chronic aquatic life dilution credit of 7:1.

(d) **Total Dissolved Solids.** The receiving water contains assimilative capacity for total dissolved solids. As discussed above, a human health mixing zone extending 44 feet downstream of the discharge and a dilution credit of 7:1 meets the mixing zone requirements of the SIP. Section 1.4.2.2 of the SIP requires that, "*A mixing zone shall be as small as practicable*", and section 1.4.2.2.B requires, "*The RWQCB shall deny*

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or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements." Based on current effluent quality, a mixing zone of 44 feet represents a mixing zone that is as small as practicable for this Facility and that fully complies with the SIP.

vi. **Regulatory Compliance for Dilution Credits and Mixing Zones.** To fully comply with all applicable laws, regulations and policies of the state, the Central Valley Water Board approved mixing zones and the associated dilution credits based on the following:

(a) Mixing zones are allowed under the SIP provided all elements contained in section 1.4.2.2 are met. Based on the mixing zone studies conducted by the Discharger, the Central Valley Water Board has determined that these factors are met.

(b) Section 1.4.2.2.of the SIP requires mixing zones to be as small as practicable. Based on the mixing zone studies conducted by the Discharger, as well as Facility performance, the Central Valley Water Board has determined the mixing zone is as small as practicable.

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

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

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

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

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

(h) The maximum allowed dilution factor is 15:1 for chronic aquatic life and human health criteria. Section 1.4.2.2.B of the SIP, in part states, *"The RWQCB shall deny or significantly limit a mixing zone and dilution credits as necessary to protect beneficial uses, meet the conditions of this Policy, or comply with other regulatory requirements."* The Central Valley Water Board has determined a dilution factor of 15:1 is not needed or necessary for the Discharger to achieve compliance with all constituents in this Order.

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

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

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

The effluent limitations established in the Order for antimony, arsenic, selenium, and total dissolved solids have been adjusted for dilution credits based on Facility performance. The Central Valley Water Board determined the effluent limitations required by this Order will result in the Discharger implementing BPTC of the discharge necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the state will be maintained. The Central Valley Water Board also determined the Discharger will be in immediate compliance with the effluent limitations.

Therefore, the Central Valley Water Board has determined the effluent limitations established in the Order for antimony, arsenic, selenium, and total dissolved solids that have been adjusted for dilution credits are appropriate and necessary to comply with the Basin Plan, SIP, federal antidegradation regulations, and the State Antidegradation Policy.

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. U.S. EPA recommends conversion factors

to translate dissolved concentrations to total concentrations. The default U.S. EPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

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

This Order has established the criteria for hardness-dependent metals based on the hardness of the receiving water (actual ambient hardness) as required by the SIP[1] and the CTR.[2] The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. The CTR requires that the hardness values used shall be consistent with the design discharge conditions for design flows and mixing zones.[3] Where design flows for aquatic life criteria include the lowest 1-day flow with an average reoccurrence frequency of once in 10 years (1Q10) and the lowest average 7 consecutive day flow with an average reoccurrence frequency of once in 10 years (7Q10).[4] This section of the CTR also indicates that the design conditions should be established such that the appropriate criteria are not exceeded more than once in a 3 year period, on average.[5] The CTR requires that when mixing zones are allowed, the CTR criteria apply at the edge of the mixing zone, otherwise the criteria apply throughout the water body including at the point of discharge.[6] The CTR does not define the term "ambient," as applied in the regulations. Therefore, the Central Valley Water Board has considerable discretion to consider upstream and downstream ambient conditions when establishing the appropriate water quality criteria that fully comply with the CTR and SIP.

i. **Summary Findings**

The ambient hardness for Littlejohns Creek is represented by the data in Figure F-1, below, which shows ambient hardness ranging from 31 mg/L to 101 mg/L based on collected ambient data at Monitoring Location RSW-001 from January 2014 through May 2017. Given the high variability in ambient hardness values, there is no single hardness value that describes the ambient receiving water for all possible scenarios (e.g., minimum, maximum). Because of this variability, staff has determined that based on the ambient hardness concentrations measured in the receiving water, the Central Valley Water Board has discretion to select ambient hardness values within the range of 31 mg/L (minimum) up to 101 mg/L (maximum). Staff recommends that the Board use the ambient hardness values shown in Table F-6 for the following reasons.

(a) Using the ambient receiving water hardness values shown in Table F-6 will result in criteria and effluent limitations that ensure protection of beneficial uses under all ambient receiving water conditions.

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

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

[3] 40 C.F.R. §131.3(c)(4)(ii)

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

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

[6] 40 C.F.R. §131.38(c)(2)(i)

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

(c) Using an ambient hardness that is higher than the minimum of 31 mg/L will result in limits that may allow increased metals to be discharged to Littlejohns Creek, but such discharge is allowed under the State Antidegradation Policy (State Water Board Resolution 68-16). The Central Valley Water Board finds that this degradation is consistent with the antidegradation policy (see antidegradation findings in section IV.D.4 of the Fact Sheet). The Antidegradation Policy requires the Discharger to meet waste discharge requirements that will result in BPTC of the discharge necessary to assure that: a) a pollution or nuisance will not occur, and b) the highest water quality consistent with maximum benefit to the people of the state will be maintained.

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

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

CTR Metals	Ambient Hardness (mg/L)[2]	CTR Criteria (µg/L, total recoverable)[1]	
		acute	chronic
Copper	101	14	9.4
Chromium III	101	1,800	210
Cadmium	101 (acute) 101 (chronic)	4.6	2.5
Lead	101	83	3.2
Nickel	101	470	53
Silver	101	4.1	--
Zinc	101	120	120

[1] Metal criteria rounded to two significant figures in accordance with the CTR (40 C.F.R. section 131.38(b)(2)).
[2] The ambient hardness values in this table represent actual observed receiving water hardness measurements from the dataset shown in Figure F-1.

ii. **Background**

The State Water Board provided direction regarding the selection of hardness in two precedential water quality orders; WQO 2008-0008 for the City of Davis Wastewater Treatment Plant (Davis Order) and WQO 2004-0013 for the Yuba City Wastewater Treatment Plant (Yuba City Order). The State Water Board

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

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

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

Where:

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

WER = water-effect ratio

m, b = metal- and criterion-specific constants

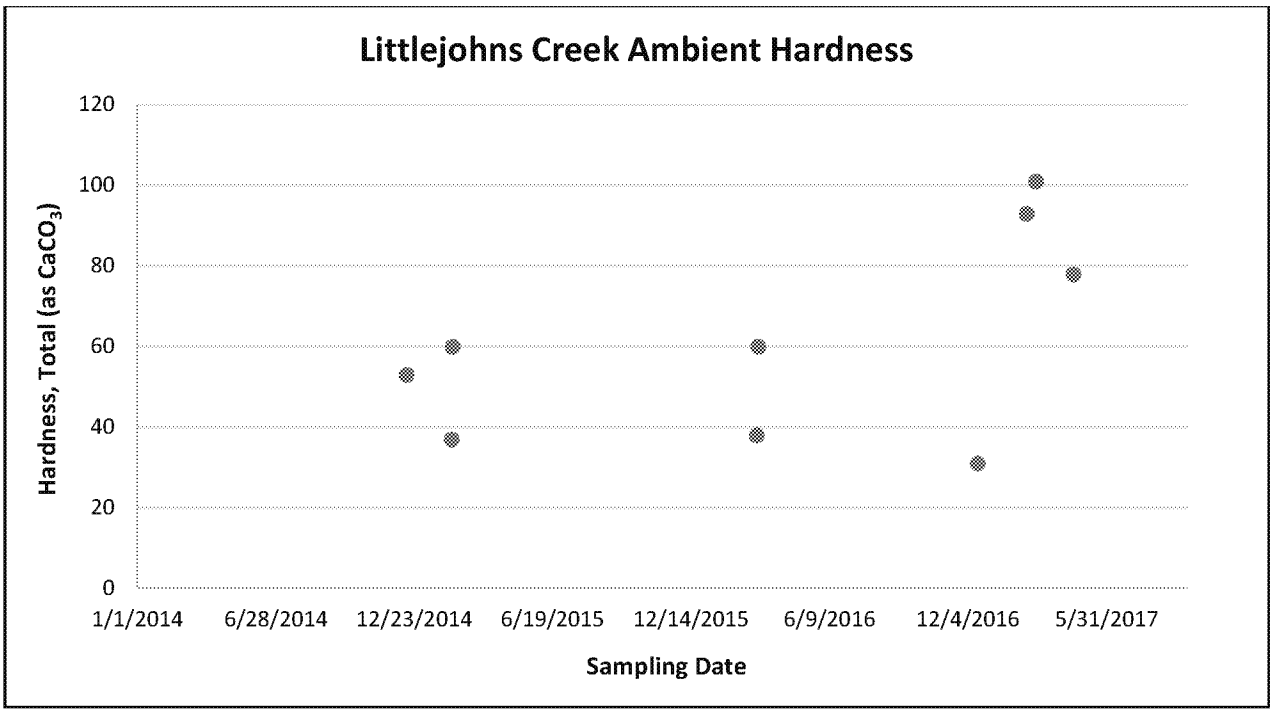
The direction in the CTR regarding hardness selection is that it must be based on ambient hardness and consistent with design discharge conditions for design flows and mixing zones. Consistent with design discharge conditions and design flows means that the selected "design" hardness must result in effluent limitations under design discharge conditions that do not result in more than one exceedance of the applicable criteria in a 3 year period.[2] Design flows for aquatic life criteria include the 1Q10 and 7Q10. The 1Q10 and 7Q10 Littlejohns Creek flows are 0.0072 cfs and 0.00936 cfs, respectively.

iii. **Ambient Conditions**

The ambient receiving water hardness varied from 31 mg/L to 101 mg/L, based on 9 samples collected at Monitoring Location RSW-001 from January 2014 through May 2017 (see Figure F-1).

[1] For this discussion, all hardness values are expressed in mg/L as $CaCO_3$.
[2] 40 C.F.R. §131.38(c)(2)(iii) Table 4, notes 1 and 2

Figure F-1. Observed Ambient Hardness Concentrations 31 mg/L – 101 mg/L



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

iv. **Approach to Derivation of Criteria**

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

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

Reasonable worst-case ambient conditions:

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

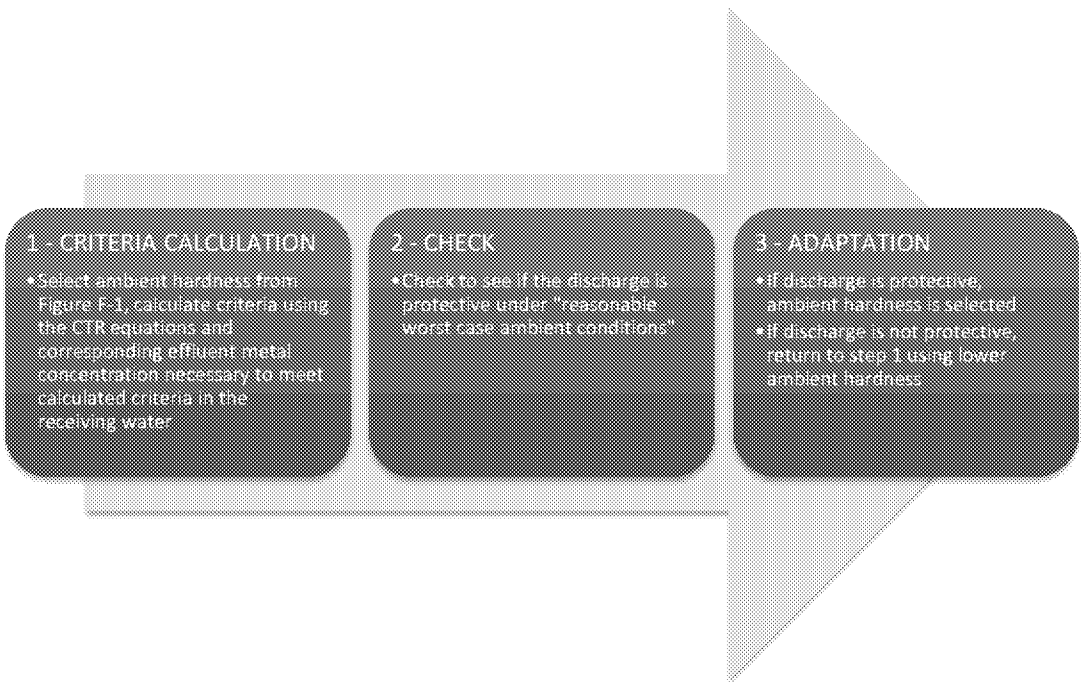
(b) "High receiving water flow (maximum receiving water flow)." This additional flow condition has been selected consistent with the Davis Order, which required that the hardness selected be protective of water quality criteria under all flow conditions.

(c) "Low receiving water hardness." The minimum receiving water hardness condition of 31 mg/L was selected to represent the reasonable worst-case receiving water hardness.

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

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

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



(a) CRITERIA CALCULATION. CTR criteria are calculated using the CTR equations based on actual measured ambient hardness sample results, starting with the maximum observed ambient hardness of 101 mg/L. Effluent metal concentrations necessary to meet the above calculated

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

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

(c) ADAPT. If step 2 results in:

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

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

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

v. **Results of Iterative Analysis**

The above iterative analysis for each CTR hardness-dependent metal results in the selected ambient hardness values shown in Table F-6, above. Using these hardness values to calculate criteria, which are actual sample results collected in the receiving water, will result in effluent limitations that are protective under all ambient flow conditions. Copper and silver are used as examples below to illustrate the results of the analysis. Tables F-7 and F-8 below summarize the numeric results of the three-step iterative approach for copper and silver. As shown in the example tables, an ambient hardness value of 101 mg/L was used in the CTR equations to derive criteria and effluent limitations. Then under the "check" step, worst-case ambient receiving water conditions are used to test whether discharge results in compliance with CTR criteria and protection of beneficial uses.

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

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

Table F-7. Verification of CTR Compliance for Copper

Receiving water hardness used to compute effluent limitations				101 mg/L
Effluent Concentration Allowance (ECA) for Copper[1]				9.4 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Copper Concentration[2] (µg/L)	
1Q10	649	31[3]	9.4	Yes
7Q10	649	31[3]	9.4	Yes
Max receiving water flow	70	6.9	3.8	Yes

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

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

3 CTR criteria calculated using a hardness of 400 mg/L (as $CaCO_3$). The CTR requires that, for waters with a hardness of over 400 mg/L (as $CaCO_3$), a hardness of 400 mg/L shall be used with a default WER of 1, or the actual hardness of the ambient surface water shall be used with a WER. (40 C.F.R. § 131.38(c)(4)).

Table F-8. Verification of CTR Compliance for Silver

Receiving water hardness used to compute effluent limitations				101 mg/L
Effluent Concentration Allowance (ECA) for Silver[1]				4.1 µg/L
	Downstream Ambient Concentrations Under Worst-Case Ambient Receiving Water Conditions			Complies with CTR Criteria?
	Hardness	CTR Criteria (µg/L)	Ambient Silver Concentration[2] (µg/L)	
1Q10	649	44[3]	4.1	Yes
7Q10	649	44[3]	4.1	Yes
Max receiving water flow	70	2.2	0.77	Yes

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

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

3 CTR criteria calculated using a hardness of 400 mg/L (as $CaCO_3$). The CTR requires that, for waters with a hardness of over 400 mg/L (as $CaCO_3$), a hardness of 400 mg/L shall be used with a default WER of 1, or the actual hardness of the ambient surface water shall be used with a WER. (40 C.F.R. § 131.38(c)(4)).

3. Determining the Need for WQBEL's

Federal regulations at 40 C.F.R section 122.44(d)(1)(i) state, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" The process to determine whether a WQBEL is required is referred to as a *reasonable*

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

a. **Constituents with 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 antimony, arsenic, pH, selenium, and total dissolved solids. WQBEL's for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Antimony**

(a) **WQO.** The State Water Board, Division of Drinking Water (DDW) has adopted a Primary MCL for the protection of human health for antimony of 6 µg/L, which is protective of the Basin Plan's chemical constituent objective. Order R5-2013-0071 included performance-based effluent limitations for antimony.

(b) **RPA Results.** The MEC for antimony was 6.0 µg/L based on 11 samples collected between January 2014 and May 2017. Antimony was not detected in the upstream receiving water based on 10 samples collected between January 2014 and May 2017. Therefore, antimony in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL.

(c) **WQBEL's.** The receiving water contains assimilative capacity for antimony; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, a dilution credit of 3:1 is allowed in the development of WQBEL's for antimony. Based on the allowable dilution credit, this Order retains the more stringent performance-based effluent limitations for antimony from Order R5-2013-0071, which include an AMEL of 20 µg/L and an MDEL of 33 µg/L.

(d) **Plant Performance and Attainability.** Based on the analysis of existing effluent data, the Central Valley Water Board concludes that immediate compliance with the performance-based WQBEL's for antimony is feasible.

ii. **Arsenic**

(a) **WQO.** DDW has adopted a Primary MCL for the protection of human health for arsenic of 10 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(b) **RPA Results.** The MEC for arsenic was 110.7 µg/L based on 15 samples collected between January 2014 and May 2017. The maximum observed upstream receiving water concentration for arsenic was 0.60 µg/L based on 10 samples collected between January 2014 and May 2017. Therefore,

arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL.

(c) **WQBEL's.** The receiving water contains assimilative capacity for arsenic; therefore, as discussed further in section IV.C.2.c of this Fact Sheet, dilution credits ranging from 7:1 to 15:1 are allowed in the development of WQBEL's for arsenic. Based on the allowable dilution credits, this Order includes tiered effluent limitations for arsenic, which are included in Table F-5 of this Fact Sheet.

(d) **Plant Performance and Attainability.** The tiered effluent limitations for arsenic established in this Order are based on existing effluent quality and Facility performance. The Central Valley Water Board concludes, therefore, that immediate compliance with these WQBEL's is feasible.

iii. **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."*

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

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.*" (TSD, p. 50)

The Facility is a reclaimed gold mine site. Based on 24 samples taken from January 2014 to May 2017, the maximum pH reported was 8.32 and

the minimum was 7.4. The Facility does not include controls to regulate effluent pH and the Facility's effluent varies due to the nature of spring water emanating from the ODS's and seepage from the FTR LCRS, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's numeric objective for pH in the receiving water. Therefore, WQBEL's for pH are required in this Order.

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

(c) **Plant Performance and Attainability.** The effluent pH ranged from 7.4 to 8.32. The Central Valley Water Board concludes, therefore, that immediate compliance with the WQBEL's for pH is feasible.

iv. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCL's, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The U.S. EPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate. Additionally, there are no U.S. EPA numeric water quality criteria for the protection of agricultural, livestock, and industrial uses. Numeric values for the protection of these uses are typically based on site-specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin 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-9. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Objective[1]	Secondary MCL[2]	U.S. EPA NAWQC	Effluent	
				Average[3]	Max
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	N/A	N/A
Electrical Conductivity (µmhos/cm) or Total Dissolved Solids (mg/L)	Varies	900, 1,600, 2,200 or 500, 1,000, 1,500	N/A	4,343 or 3,465	4,444 or 3,500

Parameter	Agricultural WQ Objective[1]	Secondary MCL[2]	U.S. EPA NAWQC	Effluent	
				Average[3]	Max
Sulfate (mg/L)	Varies	250, 500, 600	N/A	1,737	1,830

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

2 The Secondary MCL's are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.

3 Maximum calendar annual average.

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

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

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

(b) **RPA Results**

(1) **Chloride.** Chloride was not monitored in the effluent over the term of Order R5-2013-0071. The maximum observed receiving water chloride concentration was 62.7 mg/L based on seven samples collected between January 2014 and May 2017.

(2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows a maximum observed annual average electrical conductivity of 4,343 µmhos/cm, with a range from 3,937 µmhos/cm to 4,444 µmhos/cm. These levels exceed the Secondary MCL recommended level. The maximum observed receiving water electrical conductivity was 235 µmhos/cm based on seven samples collected between January 2014 and May 2017.

Total dissolved solids concentrations in the effluent ranged from 740 mg/L to 3,500 mg/L, with a maximum annual average of 3,465 mg/L based on 12 samples collected between January 2014 and May 2017. These levels exceed the Secondary MCL recommended level. The maximum observed receiving water total dissolved solids concentration was 146 mg/L based on seven samples collected between January 2014 and May 2017.

(3) **Sulfate.** Sulfate concentrations in the effluent ranged from 1,580 mg/L to 1,830 mg/L, with a maximum annual average of 1,737 mg/L based on eight samples collected between January 2014 and May 2017. These levels exceed the Secondary MCL recommended level. The maximum observed receiving water sulfate concentration was 50 mg/L based on seven samples collected between January 2014 and May 2017.

(c) **WQBEL's.** Total dissolved solids is an indicator parameter for salinity, and establishing an effluent limitation for total dissolved solids is expected to effectively control the constituents that contribute to salinity, including chloride, electrical conductivity, and sulfate. Due to the short-term nature of discharges from the Facility, effluent limitations for total dissolved solids are based on the upper level Secondary MCL of 1,000 mg/L. As described further in section IV.C.2.c of this Fact Sheet, assimilative capacity is available and a dilution credit of 7:1 is appropriate for calculating the effluent limitations for total dissolved solids. However, effluent limitations may only be as high as is justified under state and federal antidegradation policies. The maximum annual average total dissolved solids effluent concentration was 3,465 mg/L with concentrations ranging from 740 mg/L to 3,500 mg/L. However, as the level of Skyrocket Pit Lake decreases and with the addition of high total dissolved solids flows from the ODS's, the Discharger anticipates that the total dissolved solids of Skyrocket Pit Lake will increase over time. Based on the projections, an MDEL for total dissolved solids of 4,000 µg/L is included in this Order, consistent with Order R5-2013-0071. Furthermore, since Littlejohns Creek is tributary to the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to the Delta. Therefore, this Order includes an annual total dissolved solids mass-based limitation of 3,000 tons/year, based on the expected annual discharge during an extremely wet year. Compliance with the annual total dissolved solids loading limitation shall be determined based on the applicable discharge season (i.e., 1 August through 31 July).

(d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC for total dissolved solids of 3,500 mg/L is less than the applicable MDEL. The Central Valley Water Board concludes, therefore, that immediate compliance with the WQBEL's is feasible.

v. **Selenium**

(a) **WQO.** The CTR includes maximum 1-hour average and 4-day average criteria of 20 µg/L and 5 µg/L, respectively, for selenium for the protection of freshwater aquatic life. Order R5-2013-0071 included performance-based effluent limitations for selenium.

(b) **RPA Results.** The MEC for selenium was 5.3 µg/L based on 11 samples collected between January 2014 and May 2017. The maximum observed upstream receiving water concentration for selenium was 0.60 µg/L based on 10 samples collected between January 2014 and May 2017. Therefore, selenium in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of aquatic life.

(c) **WQBEL's.** The receiving water contains assimilative capacity for selenium; therefore, as discussed further in section IV.C.2.c of this Fact

Sheet, a dilution credit of 7:1 is allowed in the development of WQBEL's for selenium. Based on the allowable dilution credit this Order retains the WQBELs from the previous Order, which includes an AMEL of 14 µg/L and MDEL of 20 µg/L.

(d) **Plant Performance and Attainability.** The MEC of 5.3 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these WQBEL's is feasible.

4. WQBEL Calculations

a. This Order includes WQBEL's for antimony, arsenic, pH, selenium, and total dissolved solids. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

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

$ECA = C + D(C - B)$ *where C>B, and*
$ECA = C$ *where C≤B*

where:

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

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

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

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

d. **Aquatic Toxicity Criteria.** For constituents with acute and chronic aquatic toxicity criteria, the WQBEL's are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e. LTAacute and LTAchronic) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. **Human Health Criteria.** For constituents with human health criteria, the WQBEL's are calculated in accordance with Section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP.

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

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

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

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

Summary of Water Quality-Based Effluent Limitations
Discharge Point 001

Table F-10. 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
Priority Pollutants					
Antimony, Total Recoverable	µg/L	20	33	--	--
Arsenic, Total Recoverable	µg/L[1]	77	111	--	--
	µg/L[2]	87	125	--	--
	µg/L[3]	96	139	--	--
	µg/L[4]	106	153	--	--
	µg/L[5]	115	167	--	--
	µg/L[6]	125	181	--	--
	µg/L[7]	134	195	--	--
	µg/L[8]	144	208	--	--
	µg/L[9]	154	222	--	--
Selenium, Total Recoverable	µg/L	14	20	--	--
	lbs/day	0.35[10]	7.2[11]	--	--
Non-Conventional Pollutants					
Total Dissolved Solids	mg/L	--	4,000	--	--
	tons/year	3,000[12]	--	--	--

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum

[1] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 7:1 and less than 8:1.
[2] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 8:1 and less than 9:1.
[3] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 9:1 and less than 10:1.
[4] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 10:1 and less than 11:1.
[5] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 11:1 and less than 12:1.
[6] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 12:1 and less than 13:1.
[7] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 13:1 and less than 14:1.
[8] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 14:1 and less than 15:1.
[9] Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 15:1.
[10] Based on an average monthly flow of 3.0 MGD.
[11] Based on a design peak daily flow of 43 MGD.
[12] The effluent annual (1 August through 31 July) total dissolved solids load shall not exceed 3,000 tons.

5. Whole Effluent Toxicity (WET)

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

a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at 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. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA. U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available…A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" Although the discharge has been consistently in

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compliance with the acute toxicity effluent limitations, the Facility is a reclaimed gold mine site that discharges wastewater containing acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "*Guidance for NPDES Permit Issuance*", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*" Consistent with Order R5-2013-0071, effluent limitations for acute toxicity have been included in this Order as follows:

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

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

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) The table below includes results from chronic WET testing performed by the Discharger from January 2014 through May 2017. This data was used to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

Table F-11. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow *Pimephales promelas*		Water Flea *Ceriodaphnia dubia*		Green Algae *Selenastrum capricornutum*
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
16 December 2014	1	1	1	>1	>1
20 January 2015	--	--	--	4	2
11 February 2015	--	--	--	--	2
8 March 2016	1	1	1	1.3	1.3
22 February 2017	1	1	1	1.3	1.4

i. **RPA.** A dilution ratio of 7:1 is available for chronic WET. Chronic toxicity testing results exceeding 7 chronic toxicity units (TUc) (as 100/NOEC) and a percent effect at 14.3 percent effluent exceeding 25 percent demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective.

Based on chronic toxicity testing conducted between January 2014 and May 2017, the maximum chronic toxicity result was 4 TUc on 20 January 2015 with a percent effect of -10.69% at 12.5% effluent (note that testing was not conducted at 14.3% effluent). Therefore, the discharge does not have

reasonable potential to cause or contribute to an in-stream exceedance of the Basin Plan's narrative toxicity objective.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

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

Mass-based effluent limitations have been established for selenium because it is a bioaccumulative pollutant. In addition, a mass-based effluent limitation for total dissolved solids has been established because it is a pollutant of concern for salt contributions to the Sacramento-San Joaquin Delta. Except for selenium and total dissolved solids, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated by multiplying the concentration limitation by the Facility's reasonable measure of actual flow and the appropriate unit conversion factor. Consistent with 40 C.F.R. section 122.45(b)(2)(i), the reasonable measures of actual flow for the Facility are an average monthly flow of 3.0 MGD and a design peak daily flow of 43 MGD. Unless otherwise noted, all mass limitations in this Order were calculated using the reasonable measures of actual flow.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45 (d) requires AMEL's and MDEL's for all dischargers other than publicly owned treatment works unless impracticable. The rationale for using alternative averaging periods for total dissolved solids and pH is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

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

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for arsenic. The effluent limitations for arsenic are less stringent than those in Order R5-2013-0071. 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 WQBEL's "*except in compliance with section 303(d)(4).*" CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.

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

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

Littlejohns Creek is considered an attainment water for arsenic because the receiving water is not listed as impaired on the 303(d) list for this constituent.[1] As discussed in section IV.D.4, below, relaxation of the effluent limits complies with federal and state antidegradation requirements. Thus, relaxation of the effluent limitations for arsenic from Order R5-2013-0071 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 of this Fact Sheet, updated information that was not available at the time Order R5-2013-0071 was issued indicates that less stringent effluent limitations for arsenic based on Facility performance and available assimilative capacity satisfy requirements in CWA section 402(o)(2). The updated information that supports the relaxation of effluent limitations for arsenic includes the updated effluent data collected between January 2014 and May 2017, which indicates that the Facility cannot consistently comply with the existing performance-based effluent limitations. In addition, background receiving water data collected between January 2014 and May 2017 indicates Littlejohns Creek has more assimilative capacity for arsenic than was used to calculate WQBEL's in Order R5-2013-0071. Therefore, this Order includes less stringent effluent limitations for arsenic based on the performance of the Facility and the updated assimilative capacity of the receiving water.

c. **Flow.** Previous Order R5-2013-0071 included flow as an effluent limit based on rainfall over a monthly period with a return of 2 to 5 years, a 10:1 flow ratio, and a maximum total annual dissolved solids discharge of 3,000 tons. In accordance with Order R5-2013-0071, compliance with the flow limit was calculated as the total volume of wastewater discharged to Littlejohns Creek during a given month divided by the number of days in the month. Flow is not a pollutant and, therefore, has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as in previous Order R5-2013-0071. Flow as a discharge prohibition adequately regulates the Facility, does not allow for an increase in the discharge of pollutants, and does not constitute backsliding.

[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.

4. Antidegradation Policies

Order R5-2007-0162-01 provided antidegradation findings and authorized an overall increase in the volume and mass of pollutants discharged to Littlejohns Creek by allowing discharges to the creek that were not previously present. The findings in Order R5-2007-0162-01 were based on the Discharger's February 2007 *Antidegradation Analysis for the Royal Mountain King Mine Spring and Storm Water Discharge* (2007 Antidegradation Analysis).

At the time the 2007 Antidegradation Analysis was developed, it was thought that groundwater seepage into Littlejohns Creek occurred when the level of Skyrocket Pit Lake was above 955 feet above mean sea level, resulting in the creek flowing year round with high concentrations of total dissolved solids, sulfate, and arsenic. Closure WDR Order R5-2008-0021 included a water level objective for Skyrocket Pit Lake to prevent water from flowing into Littlejohns Creek. During high flow periods (i.e., during storm events) there is assimilative capacity in Littlejohns Creek due to upstream runoff; thus, Order R5-2007-0162-01 was issued allowing seasonal discharges to Littlejohns Creek in order to lower Skyrocket Pit Lake. This was thought to be beneficial because lowering the lake level would improve water quality during the dry season due to a reduction in groundwater seepage in Littlejohns Creek. The 2007 Antidegradation Analysis based compliance with the Antidegradation Policy on assumed overall improvement in the water quality of Littlejohns Creek. It was determined that allowing degradation during the high flow periods was consistent with the Antidegradation Policy, because it would allow the reduction of groundwater with high total dissolved solids concentrations from entering Littlejohns Creek during dry periods.

Order R5-2013-0071 did not allow for an increase in flow or mass of pollutants to the receiving water and continued to find that the permitted discharge was consistent with antidegradation requirements.

Based on updated information, the level of Skyrocket Pit Lake is no longer believed to have an effect on groundwater seepages into Littlejohns Creek and the Skyrocket Pit Lake water level objective from WDR Order R5-2008-0021 was discontinued in WDR Order R5-2016-0055. Because the underlying basis of the 2007 Antidegradation Analysis has changed, an updated antidegradation analysis is necessary to confirm that discharges from the Facility are consistent with the Antidegradation Policy based on the current understanding of interactions between Skyrocket Pit Lake and Littlejohns Creek.

The Discharger prepared a report titled *Antidegradation Analysis for the Royal Mountain King Mine Skyrocket Pit Lake Water Discharge*, August 2017 (2017 Antidegradation Analysis) to address the new information about surface and groundwater hydrologic conditions at the site. The 2017 Antidegradation Analysis provides rationale for continued authorization of discharge from Skyrocket Pit Lake to Littlejohns Creek and indicates that the discharge continues to be consistent with the Antidegradation Policy.

Pursuant to the Administrative Procedures Update (APU) 90-004, the 2017 Antidegradation Analysis evaluated whether changes in water quality resulting from the discharge are consistent with the maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not cause water quality to be less than water quality objectives, and also evaluated socioeconomic factors. Findings from the 2017 Antidegradation Analysis are summarized below.

a. **Water quality parameters and beneficial uses that will be affected by this Order and the extent of the impact.** Compliance with this Order will not adversely impact beneficial uses of the receiving water or downstream receiving waters. All

beneficial uses will be maintained and protected. 40 C.F.R. section 131.12 defines the following tier designations to describe water quality in the receiving water body.

Tier 1 Designation: Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. (40 C.F.R. § 131.12)

Tier 2 Designation: Where the quality of waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control. (40 C.F.R. § 131.12)

The tier designation is assigned on a pollutant-by-pollutant basis. The 2017 Antidegradation Analysis did not delineate the tier designation for pollutants, but instead conducted an analysis of the potential impact of arsenic and total dissolved solids, as these are the constituents with the highest potential for degradation. Littlejohns Creek is not identified on the 2012 303(d) list as impaired for arsenic or total dissolved solids. Therefore, Littlejohns Creek is considered a Tier 2 receiving water for the pollutants of concern.

The source of surface water flows into and within Littlejohns Creek are the result of rainfall runoff, upstream flow and surface flow from the Facility, and surfacing groundwater due, in part, to geologic conditions. To evaluate the impacts on water quality posed by the discharge of arsenic and total dissolved solids from Skyrocket Pit Lake, the Discharger compared groundwater and surface water data from 1987 to 1990, recorded as baseline data prior to the construction of the Facility, to monitoring data collected during mining activities, post-mining activities during periods of discharge, and post-mining activities during periods in which no discharge occurred. Table F-12, below, provides a timeline summary of surface water quality in Littlejohns Creek.

Table F-12. Timeline Summary of Water Quality in Littlejohns Creek

Time Period	Range of TDS Concentrations (mg/L)	Range of Arsenic Concentrations (µg/L)
Pre-RMK Mine (1987 – November 1990)	552 – 15,150	10 – 150
Mining and Dewatering (December 1990 – September 1993)	52 – 1,210	5.0 – 100
Post-Mining (both pit filling and full) – Periods of No Discharge (January 1999 – Present)	130 – 3,960	ND[1] – 14.2
Post-Mining (both pit filling and full) – Periods of Discharge (January 1999 – Present)	150 – 1,970	ND[1] – 9.3

Time Period	Range of TDS Concentrations (mg/L)	Range of Arsenic Concentrations (µg/L)
Water Quality Objectives	1,000[2]	10[3]

1 ND = Non-detect
2 Based on the upper limit Secondary MCL for total dissolved solids adopted by DDW.
3 Based on the Primary MCL for arsenic adopted by DDW.

As shown in Table F-12, prior to the commencement of mining activities at the Facility, arsenic and total dissolved solids concentrations within Littlejohns Creek typically exceeded the applicable Primary MCL and Secondary MCL, respectively. Prior to Facility construction, salty springs and seeps flowed into ephemeral drainages, which would continue to flow after rainfall events and into Littlejohns Creek, supporting seasonal flows. As a result, high total dissolved solids conditions were noticed in Littlejohns Creek prior to construction of the Facility. Table F-12 also indicates that arsenic and total dissolved solids concentrations within Littlejohns Creek during periods of discharge are in the same range as the respective wet season concentrations when no discharge was occurring and/or during the pre-mining baseline period.

The 2017 Antidegradation Analysis also references *Technical Memorandum: Calculation of TDS Loadings*, drafted by TRC Environmental, Inc. in November 2004, which calculated the pre-project total dissolved solids loadings to Littlejohns Creek from the project site to be approximately 3,400 tons/year. Although total dissolved solids loading decreased during mining operations due to dewatering, post-mining loading from the site has returned to slightly less than 3,400 tons/year. Consistent with Order R5-2013-0071, this Order includes an annual mass loading effluent limitation for total dissolved solids of 3,000 tons/year. The results of the evaluations indicate that when excess pit lake water and spring water are discharged, the salt loading is of the same order of magnitude or less than the pre-mine loadings. While the loading may be similar, the timing of the loading is more favorable for water quality because the water stored in Skyrocket Pit Lake is only discharged during the wet season when the flows and assimilative capacity of the receiving water are higher, resulting in lower average TDS concentrations in receiving stream.

The Discharger monitors Littlejohns Creek downstream of Discharge Point 001 at Monitoring Location RSW-003. The Discharger's 2017 Antidegradation Analysis evaluated monitoring data collected at Monitoring Location RSW-003 in order to determine if concentrations of arsenic and total dissolved solids within the downstream receiving water are below applicable water quality objectives. Based on samples collected at Monitoring Location RSW-003 between December 2014 and March 2017 (during periods of discharge only), the maximum arsenic and total dissolved solids concentrations were in compliance with the applicable water quality objectives. Therefore, the Discharger's 2017 Antidegradation Analysis indicates the current discharge from Skyrocket Pit Lake is not degrading existing water quality and is protective of the beneficial uses of Littlejohns Creek.

This Order includes limits for arsenic based on an increased dilution credit of 15:1, which will result in the use of additional assimilative capacity and increased loading to Littlejohns Creek. Order R5-2007-0162-01 also allowed for a dilution credit of 15:1, which was supported by the 2007 Antidegradation Analysis. Order R5-2013-0071 restricted the dilution credit for arsenic to 10:1 based on the

assumption that in-situ treatment would result in lower arsenic concentrations in Skyrocket Pit Lake, those reductions have not occurred due to turnover in the lake.

As discussed below, the 2017 Antidegradation Analysis evaluated whether allowance of the current discharge and an increase in constituent concentrations and loadings in this Order will result in the best practicable treatment or control of the discharge necessary to assure a pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the State will be maintained.

b. **Scientific Rationale for Determining Potential Lowering of Water Quality.** The rationale used in the 2017 Antidegradation Analysis is based on 40 C.F.R. section 131.12, the State Antidegradation Policy, and State Water Board APU 90-004. Pursuant to APU 90-004, the 2017 Antidegradation Analysis provided a "simple" analysis and evaluated whether the proposed discharge will produce significant changes in the water quality of the receiving water that would adversely impact beneficial uses. The 2017 Antidegradation Analysis included an evaluation of pre- and post-mine receiving water conditions upstream and downstream of the Facility, effluent quality, and other sources of arsenic and total dissolved solids to the receiving water, as well as an assessment of the impacts of the discharge on existing beneficial uses. Based on the Discharger's analysis, the continued discharge from the Facility and increased concentration and loading of arsenic allowed under this Order will not result in an exceedance of water quality objectives outside the mixing zone and will not cause measurable degradation in the receiving water as compared to the pre-RMK Mine condition. Details of the rationale are discussed in the 2017 Antidegradation Analysis.

   The Central Valley Water Board concurs with this scientific approach.

c. **Alternative Control Measures.** As part of the 2017 Antidegradation Analysis, the Discharger considered the findings from the September 2006 *Royal Mountain King Mine Alternatives Analysis Report, Management of Spring and Pit Lake Water* (Alternatives Analysis) to compare treatment alternatives for the discharge based on water quality, economic, implementation feasibility, and social factors. The Discharger concluded in the 2017 Antidegradation Analysis that the conclusions in the 2006 Alternatives Analysis are still relevant and applicable based on current conditions at the Facility.

   In the 2006 Alternatives Analysis and the 2017 Antidegradation Analysis, the Discharger considered several alternatives for managing or treating the proposed discharge and for managing storm water onsite to minimize the amount of water that would need to be discharged. The analysis demonstrates that the selected alternative (i.e., collection, storage, and discharge under this Order) represents best practicable treatment and control. The alternatives considered in the 2006 Alternatives Analysis fall into four groups:

   i. The "no further action alternative," which was included as a baseline for comparison;

   ii. Alternatives that involve spring flow collection, storage, and treatment options;

   iii. Alternatives that involve the removal of spring flows and excess pit lake water (e.g., through land disposal); and

   iv. Alternatives that include combinations of source control measures combined with different treatment technologies.

In the 2017 Antidegradation Analysis, the Discharger indicated that mixing/blending and discharge (Alternative 2A) and treatment with reverse osmosis and discharge (Alternative 2B) were relevant for the updated analysis. Treatment with reverse osmosis was not considered to be a viable alternative due to concerns with brine disposal and water and electricity consumption.

d. **Socioeconomic Evaluation.** A socioeconomic evaluation was performed as part of the 2017 Antidegradation Analysis to compare three potential water management methods with respect to their impact on resources, health, and aesthetics within the region. The evaluation is summarized in Table 4 of the 2017 Antidegradation Analysis. The socioeconomic evaluation considered:

   i. Energy needed to operate and maintain the systems;

   ii. Effects on water supply and groundwater recharge projects in the vicinity of the discharge;

   iii. Aesthetic impacts;

   iv. Risk of wastewater releases or treatment failure; and

   v. Solid or hazardous waste generation.

   Socioeconomic considerations were also included as criteria within the Alternative Analysis, which was used by the Discharger to determine which treatment method would be implemented at the Facility. The factors considered and the procedures used to include those factors are detailed in section 5 of the Alternatives Analysis.

e. **Justification for Socioeconomic Considerations.** Potential degradation identified in the 2017 Antidegradation Analysis due to this Order is justified by the following socioeconomic considerations:

   i. Of the three potential water management methods considered, the current method stands out as the best use of limited resources, including labor, water, and electricity, in the local region.

   ii. The proposed loadings will produce no observable effects within Littlejohns Creek and, therefore, are not likely to impair existing or future beneficial uses.

   iii. Arsenic and total dissolved solids concentrations within Littlejohns Creek at the point of compliance during discharge have been, and are expected to be, indistinguishable from concentrations observed in the wet season during periods of no discharge and/or from conditions prior to the construction of the Facility.

   iv. During dry weather months, when discharges are not occurring, the mass loading of arsenic and total dissolved solids are lower than levels observed during the pre-mine baseline period.

   v. The discharge process and timing will have a positive impact on water supply and groundwater recharge beneficial uses by increasing the volume of available water.

   The Central Valley Water Board concurs with the findings of the 2017 Antidegradation Analysis and finds that the discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the best practicable treatment or control of the discharges from the Facility. The impact on existing water quality will be insignificant.

5. Stringency of Requirements for Individual Pollutants

This Order contains WQBEL's for individual pollutants. Technology-based effluent limitations are not applicable to the discharge. The WQBEL's consist of restrictions on pH, antimony, arsenic, selenium, and total dissolved solids. These requirements include some limitations that are more stringent than required by the CWA.

WQBEL's have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBEL's were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual WQBEL's for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by U.S. EPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to U.S. EPA prior to 30 May 2000, but not approved by U.S. EPA before that date, are nonetheless "*applicable water quality standards for purposes of the CWA*" pursuant to 40 C.F.R. section 131.21(c)(1).

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for antimony, arsenic, and selenium that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C of this Fact Sheet.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-13. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Conventional Pollutants						
pH	standard units	--	--	6.5	8.5	BP
Priority Pollutants						
Antimony, Total Recoverable	µg/L	20	33	--	--	MCL
Arsenic, Total Recoverable	µg/L[2]	77	111	--	--	MCL
	µg/L[3]	87	125	--	--	
	µg/L[4]	96	139	--	--	
	µg/L[5]	106	153	--	--	
	µg/L[6]	115	167	--	--	
	µg/L[7]	125	181	--	--	
	µg/L[8]	134	195	--	--	
	µg/L[9]	144	208	--	--	
	µg/L[10]	154	222	--	--	
Selenium, Total Recoverable	µg/L	14	20	--	--	CTR
	lbs/day	0.35[11]	7.2[12]	--	--	

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Non-Conventional Pollutants						
Total Dissolved Solids	mg/L	--	4,000	--	--	SEC MCL
	tons/year	3,000[13]	--	--	--	
Acute Toxicity	% survival	--	70[14]/90[15]	--	--	BP

1 BP – Based on water quality objectives contained in the Basin Plan.
MCL – Based on the Primary Maximum Contaminant Level.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
SEC MCL – Based on Secondary Maximum Contaminant Level.

2 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 7:1 and less than 8:1.

3 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 8:1 and less than 9:1.

4 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 9:1 and less than 10:1.

5 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 10:1 and less than 11:1.

6 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 11:1 and less than 12:1.

7 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 12:1 and less than 13:1.

8 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 13:1 and less than 14:1.

9 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 14:1 and less than 15:1.

10 Applies when the daily average flow ratio (Littlejohns Creek flow : effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 15:1.

11 Based on an average monthly discharge flow of 3.0 MGD.

12 Based on a design peak daily discharge flow of 43 MGD.

13 The effluent annual (1 August through 31 July) total dissolved solids load shall not exceed 3,000 tons.

14 70% minimum of any one bioassay.

15 90% median for any three consecutive bioassays.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Recycled Water Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

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

radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

2. This Order contains a receiving surface water limitation for total dissolved solids of 1,000 mg/L, based on the upper level Secondary MCL, which is protective of the Basin Plan's chemical constituents objective.

3. This Order contains a receiving surface water limitation for total recoverable arsenic of 10 µg/L, based on the Primary MCL, which is protective of the Basin Plan's chemical constituents objective.

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 40 C.F.R. section 122.42.

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

B. Special Provisions

1. Reopener Provisions

a. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a site-specific TRE. This Order may be reopened to include a new chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE.

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 WER's and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

c. **Flow Ratio.** The purpose of the discharge is to allow management of the site-wide water balance and to lower Skyrocket Pit Lake to an operating level that would allow the lake to act as a groundwater sink to prevent groundwater seepage into Littlejohns Creek. The main issue related to groundwater and surface water at this site is that water has come into contact with mining waste, dissolved metals, and other inorganic constituents associated with localized naturally-occurring mineralized rock, some of which has been relocated to the WMU's as a result of

mining. Groundwater associated with these WMU's contains dissolved inorganic constituents that exceed background concentrations and beneficial use criteria.

The Discharger's model suggests that a flow ratio of 7:1 is needed to reduce the level of Skyrocket Pit Lake to ensure it acts as a groundwater sink. Due to uncertainty in the background receiving water and effluent constituent concentrations after the lowering of Skyrocket Pit Lake, the required flow ratio required by Discharge Prohibition III.D has been conservatively established at 7:1. Should the Discharger provide additional information that indicates a lower dilution ratio would be adequately protective of the beneficial uses of the receiving water, this Order may be reopened to modify the Discharge Prohibition.

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

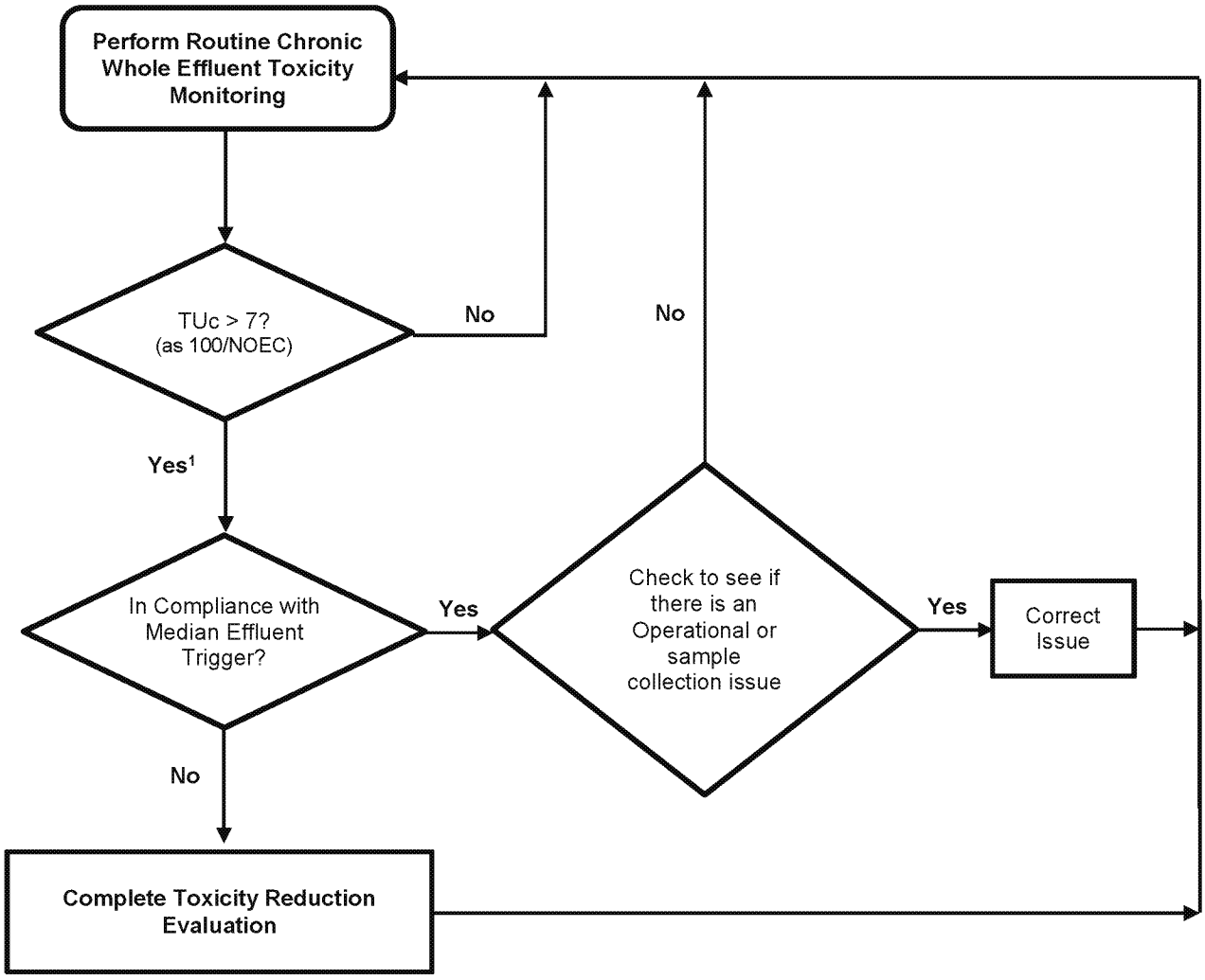
2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity (WET) Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) Based on whole effluent chronic toxicity testing performed by the Discharger from January 2014 through May 2017, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

The MRP of this Order requires chronic WET monitoring to demonstrate compliance with the Basin Plan's narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring trigger, this provision requires the Discharger to conduct a site-specific TRE.

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

Figure F-2
WET Monitoring Flow Chart



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

b. **Water Quality Assessment.** This Order requires the Discharger to assess total dissolved solids and arsenic levels in Skyrocket Pit Lake and in Littlejohns Creek at Monitoring Locations RSW-001 and RSW-002. The Discharger's modeling analysis has indicated that water quality is expected to improve in the creek, thereby providing potentially more dilution than is currently available. It is necessary to assess the levels of total dissolved solids and arsenic in Littlejohns Creek in order to evaluate the effects of the lowering of Skyrocket Pit Lake on water quality in Littlejohns Creek. This Order includes a reopener provision to allow the permit to be reopened to lower or raise the required flow ratio based on the changes in constituent concentrations in Skyrocket Pit Lake and Littlejohns Creek.

3. Best Management Practices and Pollution Prevention – Not Applicable

4. Construction, Operation, and Maintenance Specifications – Not Applicable

5. Special Provisions for Publicly-Owned Treatment Works (POTW's) – Not Applicable

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

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

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring

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

2. Effluent monitoring frequencies and sample types for flow (continuous), daily average flow ratio (daily), pH (daily), TSS (once per discharge event), antimony (once per discharge event), arsenic (once per discharge event), selenium (once per discharge event), dissolved oxygen (once per discharge event), electrical conductivity (once per discharge event), hardness (once per discharge event), sulfate (once per discharge event), and total dissolved solids (once per discharge event) at Monitoring Location EFF-001 have been retained from Order R5-2013-0071 to determine compliance with effluent limitations for these parameters.

3. In accordance with section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires effluent monitoring for priority pollutants and other constituents of concern once during the permit term. This monitoring frequency has been reduced from annually, as required in Order R5-2013-0071. The Central Valley Water Board finds that this frequency is sufficient to characterize the effluent. See section IX.A

of the MRP (Attachment E) for more detailed requirements related to performing priority pollutant monitoring.

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

   Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the CWA. (Wat. Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with CWA requirements (Wat. Code § 13372, subd. (a)). The holding time requirements are 15 minutes for 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 (WET) Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2013-0071, annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2013-0071, annual chronic WET testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

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

b. This Order establishes requirements for the Discharger to conduct receiving water monitoring for electrical conductivity and hardness once per month at Monitoring Locations RSW-002 and RSW-003 in order to provide sufficient data to assess the impacts of the discharge on the receiving water for the next permit renewal.

c. This Order establishes requirements for the Discharger to conduct receiving water monitoring for arsenic, selenium, antimony, and total dissolved solids once per year at Monitoring Location RSW-001 in order to have sufficient data to evaluate mixing zones and dilution for these constituents at the next permit renewal.

d. This Order establishes requirements for the Discharger to conduct receiving water monitoring for arsenic and total dissolved solids once per week at Monitoring Location RSW-003 in order to determine compliance with applicable receiving water limitations for these parameters.

e. This Order establishes requirements for the Discharger to conduct receiving water monitoring for flow continuously at Monitoring Location RSW-002 in order to calculate the receiving water flow-to-effluent flow ratio and evaluate compliance with Discharge Prohibitions III.C and III.D.

f. This Order establishes requirements for the Discharger to conduct receiving water monitoring for pH, temperature, dissolved oxygen, and turbidity once per month at Monitoring Locations RSW-002 and RSW-003 in order to determine compliance with applicable receiving water limitations for these parameters.

g. In accordance with section 1.3 of the SIP, periodic monitoring is required for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order requires upstream receiving water monitoring for priority pollutants and other pollutants of concern at Monitoring Location RSW-001 once during the permit term, concurrent with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See section IX.A of the MRP (Attachment E) 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 Meridian Beartrack Co, Royal Mountain King Mine. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDR's and has encouraged public participation in the WDR adoption process.

A. Notification of Interested Persons

The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe WDR's for the discharge and provided an opportunity to submit written comments and recommendations. Notification was provided through the posting of the Notice of Public Hearing concerning the WDR's at the Calaveras County Courthouse (government center), the Copperopolis, CA Post Office, and at the entrance to the Facility on 17 November 2017. The Notice of Public Hearing was also published in the Calaveras Enterprise on 22 November 2017 and posted on the Central Valley Water Board's website on 9 November 2017.

The public had access to the agenda and any changes in dates and locations through the Central Valley Water Board's website at:
http://www.waterboards.ca.gov/centralvalley/board_info/meetings/

B. Written Comments

Interested persons were invited to submit written comments concerning tentative WDR's as provided through the notification process. Comments were due either in person or by mail to the Executive Office at the Central Valley Water Board at the address on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, the written comments were due at the Central Valley Water Board office by 5:00 p.m. on **11 December 2017**.

C. Public Hearing

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

Date:	1/2 February 2018
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 ROWD, other supporting documents, and comments received are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (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 Tyson Pelkofer at (916) 464-4853.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Antimony, Total Recoverable	µg/L	6.0	<0.05	6.0	--	--	14	4,300	--	6.0	Yes
Arsenic, Total Recoverable	µg/L	110.7	0.60	10	340	150	--	--	--	10	Yes
Electrical Conductivity @ 25°C	µmhos/cm	4,343[3]	135[3]	900	--	--	--	--	--	900	Yes
Selenium, Total Recoverable	µg/L	5.3	0.60	5.0	20	5.0	170	4,200	--	50	Yes
Sulfate	mg/L	1,737[3]	19.5[3]	250	--	--	--	--	--	250	Yes
Total Dissolved Solids	mg/L	3,465[3]	120[3]	500	--	--	--	--	--	500	Yes

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour average.
(2) U.S. EPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 4-day average.
(3) Represents the maximum observed annual average concentration for comparison with the MCL.

ATTACHMENT H – CALCULATION OF WQBEL'S

Human Health WQBEL's Calculations										
Parameter	**Units**	**Criteria**	**Mean Background Concentration**	**CV Eff**	**Dilution Factor**	**MDEL/AMEL Multiplier**	**AMEL Multiplier**	**AMEL**	**MDEL**	**AWEL**
Antimony, Total Recoverable	µg/L	6.0	0.63	0.60	3	2.01	1.55	22[1]	44[1]	--
Arsenic, Total Recoverable	µg/L[2]	10	0.43	0.27	7	1.45	1.24	77	111	--
	µg/L[3]	10	0.43	0.27	8	1.45	1.24	87	125	--
	µg/L[4]	10	0.43	0.27	9	1.45	1.24	96	139	--
	µg/L[5]	10	0.43	0.27	10	1.45	1.24	106	153	--
	µg/L[6]	10	0.43	0.27	11	1.45	1.24	115	167	--
	µg/L[7]	10	0.43	0.27	12	1.45	1.24	125	181	--
	µg/L[8]	10	0.43	0.27	13	1.45	1.24	134	195	--
	µg/L[9]	10	0.43	0.27	14	1.45	1.24	144	208	--
	µg/L[10]	10	0.43	0.27	15	1.45	1.24	154	222	--

Human Health WQBEL's Calculations										
Parameter	Units	Criteria	Mean Background Concentration	CV Eff	Dilution Factor	MDEL/AMEL Multiplier	AMEL Multiplier	AMEL	MDEL	AWEL

[1] This Order retains the performance-based effluent limitations from Order R5-2013-0071, which include an AMEL of 20 µg/L and an MDEL of 33 µg/L.

[2] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 7:1 and less than 8:1.

[3] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 8:1 and less than 9:1.

[4] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 9:1 and less than 10:1.

[5] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 10:1 and less than 11:1.

[6] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 11:1 and less than 12:1.

[7] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 12:1 and less than 13:1.

[8] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 13:1 and less than 14:1.

[9] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 14:1 and less than 15:1.

[10] Applied when the daily average flow ratio (Littlejohns Creek flow: effluent flow), as measured at Monitoring Locations RSW-002 and EFF-001, respectively, is greater than or equal to 15:1.

Aquatic Life WQBEL's Calculations																
Parameter	Units	Criteria		B	CV Eff	Dilution Factors		Aquatic Life Calculations							Final Effluent Limitations	
		CMC	CCC			CMC	CCC	ECA Multiplier$_{acute}$	LTA$_{acute}$	ECA Multiplier$_{chronic}$	LTA$_{chronic}$	AMEL Multiplier$_{95}$	AWEL Multiplier	MDEL Multiplier$_{99}$	AMEL[1]	MDEL[3]
Selenium, Total Recoverable	µg/L	20	5.0	0.6	0.12[4]	--	7	0.765	15.3	0.873	31.2	1.10	--	1.31	17[5]	20

1. Average Monthly Effluent Limitations are calculated according to section 1.4 of the SIP using a 95th percentile occurrence probability.
2. Average Weekly Effluent Limitations are calculated according to section 1.4 of the SIP using a 98th percentile occurrence probability.
3. Maximum Daily Effluent Limitations are calculated according to section 1.4 of the SIP using a 99th percentile occurrence probability.
4. Coefficient of Variation (CV) was established in accordance with section 1.4 of the SIP.
5. This Order retains the AMEL from Order R5-2013-0071 of 14 µg/L.