

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2011-_____
FOR

SHASTA GOLD CORPORATION
AND
FRENCH GULCH (NEVADA) MINING CORPORATION

TAILINGS AND WASTE ROCK DISPOSAL FACILITIES
WASHINGTON MINE
SHASTA COUNTY

Pursuant to Water Code section 13267, the Discharger shall comply with this Monitoring and Reporting Program (“MRP”), and with the companion *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D* (Cal. Code Regs., tit. 27, §20005 et seq. and 40 C.F.R., § 258), dated April 2000 (“Standard Provisions”), as ordered by Waste Discharge Requirements (“WDRs”) Order R5-2011-XXXX. Failure to comply with this MRP, or with the Standard Provisions, constitutes noncompliance with the WDRs and with the Water Code, which can result in the imposition of civil monetary liability. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

A. REPORTING

The Discharger shall submit quarterly monitoring reports with the data and information required in this MRP and as required the Standard Provisions and Order R5-2011-XXXX. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Method detection limits (“MDLs”) and practical quantitation limits (“PQLs”) shall be reported. All peaks shall be reported, including those that cannot be quantified or specifically identified. Field and laboratory tests shall be reported in the quarterly monitoring reports. The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Central Valley Water Board.

B. REQUIRED MONITORING REPORTS AND SUBMITTAL DATES

1. Quarterly Monitoring Reports

All Quarterly Monitoring Reports shall include all water quality data and observations collected during the reporting period and submitted per the **Reporting Due Date** in Section B.6 of this Monitoring and Reporting Program. At a minimum, the sampling and data collection required in Section D of this Monitoring and Reporting Program, as well as in the Standard Provisions and WDRs shall be reported.

2. Annual Monitoring Report

The Discharger shall submit an Annual Monitoring Report to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions, Section VIII.B, "*Reports to be Filed to the Board.*"

3. Facility Monitoring Report

Annually, prior to the anticipated rainy season, **but no later than 30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the Waste Management Units ("WMUs"), precipitation and drainage control systems, and groundwater monitoring wells, and shall include the Standard Observations contained in Section XII.S of the Standard Provisions.

4. Response to a Release

If the Discharger determines that there is statistical evidence of a release (i.e., the initial comparison or non-statistical comparison indicates, for any Constituent of Concern or Monitoring Parameter, that a release is tentatively identified), the Discharger shall **immediately** notify the Regional Water Board verbally as to the Monitoring Point(s) and constituent(s) or parameters(s) involved, shall provide written notification by certified mail **within seven days** of such determination and shall implement the Response to Release section of the Standard Provisions.

5. Water Quality Protection Standard Report

For any proposed changes in a statistical method or concentration limits for a constituent of concern or monitoring parameter, a Water Quality Protection Standard Report shall be submitted and include information required in Section C.1 of this Monitoring Reporting Program. Any changes to Water Quality

Protection Standards shall be approved by the Executive Officer in a Revised Monitoring and Reporting Program.

6. Submittal Dates

The Discharger shall submit reports to the Regional Water Board Redding Office at the schedule shown in the following table:

Table B1, Report Submittal Dates

Reporting Type	Sampling Frequency and Data Reported	Reporting Period	Report Due Date
Quarterly	Daily, Weekly, Monthly, and Quarterly	1 January-31 March 1 April – 30 June 1 July – 30 September 1 October – 31 December	30 April 31 July 31 October 31 January
Annual Summary	All data from Quarterly Reports	1 January – 31 December	31 January
Facility Monitoring Report	As required in Standard Provisions and Reporting Requirements		15 November
Response to a Release	As required in Standard Provisions and Reporting Requirements		As necessary
Water Quality Protection Standard Report			As necessary

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For the Group B and Group C WMUs, the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Water Quality Protection Standard, or any modification thereto, shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all distinct bodies of surface water and groundwater** that could be affected in the event of a release from the WMU or portion thereof. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for groundwater monitoring program. The map shall include the point of compliance in accordance with California Code of Regulations, title 27 ("Title 27"), section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

The Water Quality Protection Standard shall be certified by a California Professional Civil Engineer or Certified Engineering Geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Group B WMU. The constituents of concern are those listed in Table D-2. The Discharger shall monitor all constituents of concern at the frequencies listed in Table D-2.

a. Monitoring Parameters

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Table D-2.

b. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

4. Point of Compliance

The point of compliance for the water standard at the Group B WMU is a vertical surface located at the hydraulically down-gradient limit of a unit of interest that extends through the uppermost water bearing zone underlying the unit. For the purposes of this MRP, the uppermost water bearing zone may be considered as perched groundwater in colluvium near its contact with underlying bedrock beneath the existing mill tailings and Group C waste rock disposal areas, and the new Group B WMU. However, because insufficient free seepage may occur in colluvium to allow sampling in monitoring wells, the uppermost water bearing zone may also be considered as seepage within the I-Level Adit as encountered beneath these areas.

5. Compliance Period

The compliance period shall be the number of years equal to the active life of the Group B plus the post-closure maintenance period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Group B WMU. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

D. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for waste discharge and groundwater in accordance with the Standard Provisions. **Prior to** the discharge of waste into the Group B WMU, the Discharger shall install a network of monitoring wells that are appropriate for detecting, at the earliest time possible, a release from the existing mill tailings and Group C waste rock disposal areas and the Group B WMU, and that comply with applicable provisions of Title 27, section 20415. Based both on the

monitoring wells and relevant data from local mine drainage, if applicable, the Discharger shall establish background concentrations for Constituents of Concern and monitoring parameters pursuant to Title 27, sections 20395 and §20415(e)(10) and submit a Sample Collection and Analysis Plan for groundwater monitoring that is acceptable to the Executive Officer. The plan should include appropriate field sampling methods, and quality assurance and quality controls.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, and leachate shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables D-2 and D-3.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Specific metals shall be analyzed in accordance with the methods listed in Table D-3.

The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. Waste Discharge Monitoring

The Discharger shall monitor all wastes discharged to the Group B and Group C WMUs on a monthly basis and report the results in the quarterly Monitoring Reports as shown in the following table:

Table D.1. Waste Discharge Monitoring

Parameters	Units	Frequency
Quantity of waste deposited	Cubic yards	Monthly
Quantity of Group B Waste Rock	Cubic yards	Monthly
Remaining Capacity	Cubic yards	Monthly

2. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of Title 27, section 20415, in accordance

with a Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

For each sampling event, Discharger shall determine the groundwater flow rate and direction in the uppermost water bearing zone, as defined herein in Section C.4, and identify times of highest and lowest elevations of water levels in monitoring wells, and peak-flows and base-flows in the I-Level adit. Hydrographs from wells and appropriate stations in I-Level adit shall be prepared quarterly and reported semi-annually.

Groundwater samples shall also be evaluated each reporting period with regards to cation/anion balance, and the results shall be graphically presented on appropriate Piper, Stiff, or Schoeller Diagrams. The following tables show required field and monitoring parameters, constituents of concern, and required monitoring frequencies:

Table D-2. Field and Monitoring Parameters

Parameter	Units	Frequency
Field Parameters:		
Static Water Level	Feet above mean sea level	Quarterly ¹
Temperature	°C	Quarterly ¹
Electrical Conductivity (EC)	µmhos/cm	Quarterly ¹
pH	pH units	Quarterly ¹
Methylene Blue Active Substances (MBAS)	mg/l	Quarterly ¹
Turbidity	Nephelometric turbidity units	Quarterly ¹
Monitoring Parameters:		
Total Dissolved Solids (TDS)	mg/l	Quarterly ¹
Carbonate	mg/L	Quarterly ¹
Bicarbonate	mg/L	Quarterly ¹
Chloride	mg/L	Quarterly ¹
Nitrate-Nitrogen	mg/L	Quarterly ¹
Sulfate	mg/L	Quarterly ¹
Sulfide	mg/L	Quarterly ¹
Calcium	mg/L	Quarterly ¹
Magnesium	mg/L	Quarterly ¹
Potassium	mg/L	Quarterly ¹

Sodium	mg/L	Quarterly ¹
Iron	mg/L	Quarterly ¹
Manganese	mg/L	Quarterly ¹
Aluminum	mg/L	Quarterly ¹
Heavy Metals ²	mg/L	Quarterly ¹

¹Samples shall be collected and analyzed on a quarterly basis for two years and semi-annually thereafter.

²Heavy Metals shall constitute the list of metals contained in Table D-3.

Table D-3. Constituents of Concern

Dissolved Constituent:	USEPA Method:
Antimony	7041
Arsenic	7062
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Lead	7421
Mercury	7470A
Molybdenum	7480
Nickel	7521
Silver	6010
Vanadium	6010
Zinc	6010
Sulfide	9030B

3. Leachate Monitoring

The above ground leachate collection tank at the Group B WMU shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry collection tank, leachate shall be sampled **immediately** and analyzed for the field and monitoring parameters, and constituents of concern listed in Tables D-2 and D-3. The volume of leachate removed from the tank shall be measured each time the tank is emptied and the total volume reported quarterly.

Leachate that seeps to the surface from the Group B or Group C WMU shall be sampled **immediately** and analyzed for the Monitoring Parameters and Constituents of Concern listed in Tables D-2 and D-3 upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day).

4. Tailings and Group B Waste Rock Monitoring

Representative composite samples of tailings and waste rock shall be obtained on a quarterly basis and analyzed as follows:

The acid-base account shall be determined in accordance with the methods described in USEPA Publication 600/2-78/054 (Sobek et. al. 1978) or by alternative methods approved by the Executive Officer. The acid-base account shall consist of neutralization potential and maximum potential acidity by total sulfur determination.

The heavy metals listed in Table D-3 shall be determined by the WET procedure described California Code of Regulations, title 22, Appendix II. If the acid-base account indicates a net acid-generating potential ("AGP"), the WET procedure shall use the citrate acid solution as the extracting agent for all metals. If the acid-base account indicates the absence of a net AGP, all metals shall be analyzed using de-ionized water as the extracting agent.

The third quarter sample of each year shall also be analyzed for total metals using nitric acid as the extracting agent regardless of the acid-base account.

After the two years of operations under this Order, the Executive Officer may consider the Discharger's recommendations for alternative sampling frequencies and methods.

5. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, **but no later than 30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system and groundwater monitoring equipment, and shall include the Standard Observations described in Standard Provisions. Any necessary construction, maintenance, or repairs shall be completed **by 31 October**. **By 31 January** of each year, the Discharger shall include in the annual report results of the inspection and the repair measures implemented, including photographs of any problems and repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following major storm events. Necessary repairs shall be

completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

E. REPORTING REQUIREMENTS

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure maintenance period.

The Discharger shall implement the above monitoring program on the effective date of this Order. The transmittal letter accompanying monitoring reports submitted under this Order shall, as required under the Standard Provisions (*Provision 5, General Requirements*, REPORTING REQUIREMENTS), contain a statement by the Discharger, or the Discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge, the report is, true, accurate, and complete.

Ordered by:

PAMELA C. CREEDON,
Executive Officer

(Date)

EJR/PVW: