

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM NO. R5-2008-0021  
FOR  
MERIDIAN BEARTRACK COMPANY  
MERIDIAN GOLD COMPANY  
AND FELIX MINING COMPANY  
ROYAL MOUNTAIN KING MINE  
CALAVERAS COUNTY

Pursuant to Section 13267 of the California Water Code, the Discharger shall comply with this Monitoring and Reporting Program, and with the companion Standard Provisions and Reporting Requirements, as ordered by Waste Discharge Requirements Order No. R5-2008-0021. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements dated September 2003, 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.

Monitoring data indicate that mining activities have resulted in continued impacts to groundwater and surface water quality. Concentrations of arsenic, ammonia, chloride, nitrate, selenium, sulfate, and total dissolved solids (TDS) have been detected in groundwater and surface water at the site, which exceed pre-mining background concentrations or water quality objectives. Previous WDRs required the Discharger to develop evaluation and corrective action programs to mitigate these impacts.

The Discharger shall maintain water quality monitoring systems that are appropriate for detection monitoring, flow monitoring, and corrective action that comply with the provisions of Title 27, California Code of Regulations, Division 2, Subdivision 1 (Title 27), Subchapter 3, Article 1.

#### **A. REPORTING**

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs. 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. Historical and current monitoring data shall be graphed at least once annually. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data. A short discussion of the monitoring results, including notations of any water quality violations shall precede the tabular summaries. Data shall also be submitted in a digital format acceptable to the Executive Officer.

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. 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 Regional Water Board.

## **B. REQUIRED MONITORING REPORTS AND SUBMITTAL DATES**

### **1. Semi-Annual Groundwater, Vadose Zone and Leachate Monitoring Reports**

All semi-annual monitoring reports shall include all water quality data and observation collected during the reporting period and submitted per the **Reporting Due Dates** in Section B.6. of this Monitoring and Reporting Program. At a minimum the sampling and data collection in Sections D. III through IX of this Monitoring and Reporting Program, Standard Provisions and Reporting Requirements (2003), and Waste Discharge Requirements shall be reported.

### **2. Annual Monitoring Summary Report**

The Discharger shall submit an Annual Monitoring Summary Report to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in Standard Provisions and Reporting Requirements (2003), Section VIII.B. of the *"Reports to be Filed with the Board."*

The annual report shall be a comprehensive document assessing groundwater and surface water quality compliance with waste discharge requirements and the pre-mining water quality protection standard over the previous year. Trend analysis graphical plots and statistical comparisons to pre-mining concentration limits shall be included in the annual report for naturally occurring detectable constituents of concern. Proposed updated pre-mining background or baseline concentrations for naturally occurring detectable constituents of concern shall be included in the annual report. The annual report shall also include an isoconcentration map for TDS in groundwater and an evaluation of ground water flow directions including contour maps and/or flow nets of water level data from the past year. Pre-mining groundwater and surface water concentration limits are presented in Table 2.

### **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 drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section XII.S. of Standard Provisions and Reporting Requirements for Discharges of Mining Wastes (2008).

### **4. Response to a Release**

If the Discharger determines that there is new significant statistical evidence of a release (i.e.

the initial statistical 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 parameter(s) involved, shall provide written notification by certified mail within seven days of such determination and implement Response to Release section of the Standard Provisions and Reporting Requirements for Discharges of Mining Wastes (2008).

**5. Water Quality Protection Standard Report**

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 the 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**

**Semi-Annual Groundwater, Unsaturated Zone and Leachate Monitoring Reports**

<b>Reporting Type</b>	<b>Sampling Frequency and Data Reported</b>	<b>Reporting Period</b>	<b>Report Date Due</b>
Semi-Annual	Daily, Weekly, Monthly, Quarterly and Semi-Annual	1 January – 30 June	<b>31 July</b>
		1 July – 31 December	<b>31 January</b>

<b>First Semester Sampling Event</b>	<b>April</b>
<b>Second Semester Sampling Event</b>	<b>October</b>
<b>Annual Monitoring Summary Report</b>	<b>31 January</b>
<b>Facility Monitoring Report</b>	<b>15 November</b>
<b>Response to a Release</b>	<b>as necessary</b>
<b>Water Quality Protection Standard Report</b>	<b>as necessary</b>

**C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

**1. Water Quality Protection Standard Report**

For each waste management unit (Unit), 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.

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 Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

The report shall:

- a. Identify **all distinct bodies of surface and groundwater** that could be affected in the event of a release from a Unit or portion of a Unit. 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 the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

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 Unit. The constituents of concern for all Units at the facility are those listed in Section D. III through IX for the specified monitored medium, excluding the monitoring parameters.

### **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 calcium, magnesium, sodium, sulfate, bicarbonate, carbonate and chloride.

## 3. **Concentration Limits**

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

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or
- b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

The established concentration limits for naturally occurring constituents of concern are listed in Table 2.

#### **4. Point of Compliance**

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

#### **D. REQUIRED MONITORING PROGRAMS**

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Monitoring Specifications in Standard Provisions and Reporting Requirements for Discharges of Mining Wastes (2008). All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection, evaluation and corrective action monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Section D. III through IX.

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. Metals shall be analyzed in accordance with the methods listed in Table 1.

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.

#### **I. GENERAL FACILITY MONITORING**

General facility monitoring shall be reported on an annual basis with the annual monitoring report and shall include the continuous measurement of precipitation and

reporting of monthly precipitation and 24-hour precipitation for the most significant storm events of the period.

## **II. STANDARD OBSERVATIONS**

Each monitoring report shall include a summary and certification of completion of all applicable Standard Observations for receiving waters, and along the perimeter and for the WMUs. The standard observations shall be performed on a quarterly basis and shall include the following.

1. Receiving Waters:
  - a. Discoloration and turbidity: description of color, source, and size of affected area.
  - b. Evidence of water uses: presence of water-associated wildlife (lakes, ponds, springs, streams).
  - c. Flow rate (springs and streams).
  - d. Weather conditions: wind direction and estimated velocity, total precipitation during recent days and on the day of the observation.
  
2. Along the Perimeter of Waste Management Unit:
  - a. Evidence of liquid leaving or entering the Unit (i.e., runoff, run-on, seepage, transfers), estimated size of affected area, and flow rate (show affected area on map).
  - b. Evidence of erosion.
  
3. For the Waste Management Unit:
  - a. Evidence of ponded water at any point on the waste management unit (show affected area on map).
  - b. Evidence of erosion.

### III. GROUNDWATER WATER QUALITY MONITORING

Groundwater Monitoring stations include the following:

Monitoring Station	Sampling Frequency	Water Level Frequency
<b>FLOTATION TAILINGS RESERVOIR STATIONS</b>		
GWM-01	Semi-Annual	Semi-Annual
GWM-02	Semi-Annual	Semi-Annual
FPZ-1a, -1b & -2 <sup>(1)</sup>	Semi-Annual	Monthly
FPZ-3 – FPZ-6	Semi-Annual	Semi-Annual
FPZ-7a, -7b, -8a, -8b, -9a & -9b <sup>(1)</sup>	NS	Monthly
<b>LCRF &amp; PWP STATIONS</b>		
GWM-3	Semi-Annual	Semi-Annual
GWM-4	NS	Semi-Annual
GWM-5	Semi-Annual	Semi-Annual
GWM-6	NS	Semi-Annual
GWM-15	NS	Semi-Annual
GWM-24R	Semi-Annual	Semi-Annual
GWM-25	Semi-Annual	Semi-Annual
<b>OVERBURDEN DISPOSAL &amp; SKYROCKET PIT STATIONS</b>		
GWM-09	Annual	Semi-Annual
GWM-10	Semi-Annual	Semi-Annual
GWM-11	Semi-Annual	Semi-Annual
GWM-12	Semi-Annual	Semi-Annual
GWM-16	Semi-Annual	Semi-Annual
GWM-19	Semi-Annual	Semi-Annual
GWM-20	Semi-Annual	Semi-Annual
GWM-21	Semi-Annual	Semi-Annual
GWM-26	Annual	Semi-Annual
GWM-30R	Semi-Annual	Semi-Annual
GWM-31	Annual	Semi-Annual
GWM-32	Semi-Annual	Semi-Annual
GWM-33	Semi-Annual	Semi-Annual
GWM-34	Semi-Annual	Semi-Annual
GWM-35A/B	Semi-Annual	Semi-Annual
GWM-36A/B	Semi-Annual	Semi-Annual
GWM-37	Semi-Annual	Semi-Annual
GWM-38 <sup>(2)</sup>	Quarterly/Semi-Annual	Quarterly/Semi-Annual
PZ-1	Semi-Annual	Semi-Annual
PZ-4	Semi-Annual	Semi-Annual

Notes:

- (1) Water levels measured monthly or more often if necessary to manage water transfers from the FTR.
- (2) Samples collected quarterly for a total of 12 quarters (3 years after the initial sampling event), semi-annually thereafter.

The following constituents shall apply to the groundwater quality monitoring stations:

<u>Constituents</u>	<u>Units</u>	Type of <u>Sample</u>
<b>Field Parameters</b>		
Pumping or flow rate	gpm	Measured
Static Water Level	Feet MSL	Measured (Wells)
Temperature	°C	Measured
pH (field)	number	Measured
EC	µmhos	Measured
<b>Lab Parameters</b>		
Lab pH	number	Grab
TDS	mg/l	Grab
Chloride	mg/l	Grab
Sulfate	mg/l	Grab
Calcium	mg/l	Grab
Sodium	mg/l	Grab
Magnesium	mg/l	Grab
Nitrate	mg/l	Grab
Chromium	mg/l	Grab
Copper	mg/l	Grab
Arsenic <sup>2</sup>	mg/l	Grab
Bicarbonate	mg/l	Grab
Iron <sup>1</sup>	mg/l	Grab
Manganese <sup>1</sup>	mg/l	Grab
Selenium <sup>2</sup>	mg/l	Grab
Nickel <sup>2</sup>	mg/l	Grab
Zinc	mg/l	Grab

#### IV. SURFACE WATER MONITORING

Flow data from all surface water flow gauging stations within or adjacent to the facility site shall be reported to the Regional Water Board on a quarterly basis. Surface water monitoring shall be performed at the following stations:

<u>Station</u>	<u>Location</u>
SWM-1	Littlejohns Creek – upstream of FTR storm water runoff channel
SWM-2 <sup>1</sup>	Littlejohns Creek - downstream
SWM-3	Littlejohns Creek - downstream
SWM-6 <sup>1</sup>	Littlejohns Creek – upstream of diversion ditch
SWM-8 <sup>1</sup>	Unnamed drainage to Clover Creek
SWM-9 <sup>1</sup>	Gold Knoll Creek – downstream – Guage Station #1
SWM-10 <sup>1</sup>	Littlejohns Creek Diversion – Guage Station #5
SWM-12	Base of Skyrocket Lake Dam
SWM-13	Littlejohns Creek Diversion – downstream of pond outflow
SWM-14	Unnamed creek above pond
SWM-15	Littlejohns Creek Diversion – Guage Station #3
SWM-16	Littlejohns Creek Diversion – Guage Station #6
SWM-17	Love Pond – downstream spot flow
TSWM-1	Littlejohns Creek downstream – Guage Station #2
TSWM-02	Edge of facility property, downstream of SWM-08
Stockpond	Stockwater Pond southeast of Gold Knoll ODS
Love Pond Spring	Base of FTR-ODS – upstream of Littlejohns Creek Diversion

<sup>1</sup> Points of Compliance

These surface water monitoring stations shall be analyzed quarterly for the constituents listed under Section III above, excluding chromium, copper, and zinc. In addition, the following constituents shall be analyzed at the indicated frequencies for all surface water stations.

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Pumping or flow rate	gpm	Field estimate	Monthly
Dissolved Oxygen	mg/l	Field Measured	Monthly
Temperature	°C	Measured	Monthly
pH (field)	number	Measured	Monthly
EC	µmhos	Measured	Monthly
TDS	mg/l	Grab	Quarterly
Suspended Solids	mg/l	Grab	Quarterly

**V. SKYROCKET PIT AND NORTH PIT WATER QUALITY MONITORING**

Samples shall be collected from the pool surface of the Skyrocket and North pits at the following frequency:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Static Water Level	Feet MSL	Measured	Weekly
pH (field)	number	Measured	Semi-Annual
Temperature	°C	Grab	Semi-Annual
EC	µmhos	Grab	Semi-Annual
Lab pH	number	Grab	Semi-Annual
TDS	mg/l	Grab	Semi-Annual
Chloride	mg/l	Grab	Semi-Annual
Sulfate	mg/l	Grab	Semi-Annual
Sodium	mg/l	Grab	Semi-Annual
Magnesium	mg/l	Grab	Semi-Annual
Calcium	mg/l	Grab	Semi-Annual
Nitrate	mg/l	Grab	Semi-Annual
Carbonate	mg/l	Grab	Semi-Annual
Bicarbonate	mg/l	Grab	Semi-Annual
Arsenic <sup>1</sup>	mg/l	Grab	Semi-Annual
Iron	mg/l	Grab	Semi-Annual
Manganese	mg/l	Grab	Semi-Annual
Nickel <sup>1</sup>	mg/l	Grab	Semi-Annual
Selenium <sup>1</sup>	mg/l	Grab	Semi-Annual

<sup>1</sup> An appropriate Atomic Absorption (AA) method shall be used for analysis of this constituent.

**VI. ODS SEEPAGE**

Seepage from the West and Gold Knoll ODSs at the locations listed below shall be monitored quarterly for the constituents listed above in Section III excluding copper, chromium, and zinc.

<u>Station</u>	<u>Location</u>
GK Seep	Southwest side of Gold Knoll ODS
West ODS 1	Northwest of northern portion of West ODS
West ODS 2	West side of northern portion of West ODS
West ODS 3	Southwest side of northern portion of West ODS
West ODS 4	Northwest side of southern portion of West ODS
West ODS 5	Southeast of southern portion of West ODS

**VII. FLOTATION TAILINGS RESERVOIR (FTR) TO SKYROCKET PIT WATER QUALITY TRANSFER MONITORING**

In accordance with WDRs No. R5-2008-0021, leachate collected from the FTR LCRS shall be discharged to Skyrocket Pit Lake or handled in some other manner consistent with Title 27, Section 20340 (g). If the Discharger chooses to discharge leachate to Skyrocket Pit Lake then wastewater will be transferred directly from the FTR LCRS pump. The sampling station location will be the outlet pipe from the FTR to the Skyrocket Pit.

The following constituents shall apply to the Flotation Tailings Reservoir transfer water to Skyrocket Pit water quality monitoring station:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Frequency</u>
Pumping or flow rate	gpm	Measured	Daily
pH (field)	number	Measured	Monthly
Temperature	°C	Grab	Monthly
EC	µmhos	Grab	Monthly
TDS	mg/l	Grab	Monthly
Sulfate	mg/l	Grab	Monthly
Sodium	mg/l	Grab	Monthly
Calcium	mg/l	Grab	Monthly
Magnesium	mg/l	Grab	Monthly
Bicarbonate	mg/l	Grab	Monthly
Chloride	mg/l	Grab	Monthly
Arsenic <sup>1</sup>	mg/l	Grab	Monthly
Chromium (Total)	mg/l	Grab	Monthly
Copper <sup>1</sup>	mg/l	Grab	Monthly
Nickel <sup>1</sup>	mg/l	Grab	Monthly
Selenium <sup>1</sup>	mg/l	Grab	Monthly

<sup>1</sup> An appropriate Atomic Absorption (AA) method shall be used for analysis of this constituent.

**VIII. Land Application of Captured ODS Seepage and Springs**

1. During periods of discharge to the land application areas, the Discharger shall monitor the quantity and quality of the discharge. The Discharger shall establish one or more permanent monitoring stations within the wastewater conveyance system as needed to ensure that all samples are representative of the actual discharge to the fields. At a minimum, the Discharger shall monitor the effluent wastewater as follows:

Constituent/ Parameter	Units	Sample Type	Sampling Frequency	Reporting Frequency
Flow to each field	gallons	Measurement	Daily	Monthly
pH	pH units	Grab	Weekly	Monthly
Total dissolved solids	mg/L	Grab	Monthly	Semi-Annual

2. Daily Pre-Application Inspections

The Discharger shall inspect the land application areas at least **once daily** prior to and during irrigation events, and observations from those inspections shall be documented for inclusion in the quarterly monitoring reports. The following items shall be documented for each check or field to be irrigated on that day:

- a. Evidence of erosion;
- b. Containment system condition;
- c. Condition of each standpipe and flow control valve (if applicable);
- d. Proper use of valves;
- e. Soil saturation;
- f. Ponding;
- g. Tailwater collection system and potential runoff to off-site areas;
- h. Potential and actual discharge to surface water;
- i. Odors that have the potential to be objectionable at or beyond the property boundary; and
- j. Insects.

Temperature; wind direction and relative strength; and other relevant field conditions shall also be observed and recorded. The notations shall also document any corrective actions taken based on observations made. A copy of entries made in the log during each month shall be submitted as part of the Semi-Annual Monitoring Report. If no irrigation with wastewater takes place during a given month, then the monthly monitoring report shall so state.

3. Routine monitoring

The Discharger shall perform the following routine monitoring and loading calculations during all months when land application occurs, and shall present the data in the Semi-Annual Monitoring Reports.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Precipitation	0.1 in.	Rain Gauge <sup>1</sup>	Daily	Semi-Annually
Irrigation fields and checks receiving wastewater	--	Observation	Daily	Semi-Annually
Hydraulic loading rate				
ODS Seepage and Spring Water	in/ac/mo	Calculated <sup>2</sup>	Daily	Semi-Annually
Total dissolved solids loading rate	lb/ac/mo	Calculated <sup>2</sup>	Monthly	Semi-Annually

<sup>1</sup> Data obtained from the nearest National Weather Service rain gauge is acceptable.

<sup>2</sup> Rate shall be calculated for each irrigation check.

## IX. 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, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section XII.S. of Standard Provisions and Reporting Requirements and D.II. of this MRP. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the 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.

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 and Reporting Requirements (Section VIII.A.5.), 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

27 October 2009

\_\_\_\_\_  
(Date)

**Table 1 – Metals Analysis**

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Chromium	7196A
Copper	6020
Vanadium	6020
Zinc	6020
Iron	6020
Manganese	6020
Arsenic	7062
Nickel	6020
Selenium	7742
Cyanide	9010B

**Table 2 – Water Quality Protection Standards**

Intrawell standards based on pre- and early mining concentrations.

<b>Greenstone Wells</b>			
Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
GWM-02	Arsenic	0.0179	
	Chloride	38	
	Nickel	0.056	
	Nitrate	4.9	
	pH (lab)	8.23	6.75
	Selenium	0.0107	
	Sulfate	31.7	
	TDS	495	
GWM-04	Arsenic	0.0179	
	Chloride	13.3	
	Nickel	0.056	
	Nitrate	3.64	
	pH (lab)	8.33	6.78
	Selenium	0.011	
	Sulfate	43.9	
	TDS	463	
GWM-11	Arsenic	0.0183	
	Chloride	10.1	
	Nitrate	5.32	
	pH (lab)	8.17	6.91
	Selenium	0.011	
	Sulfate	13.4	

Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
	TDS	306	
GWM-15	Arsenic	0.0186	
	Chloride	90.1	
	Nickel	0.0567	
	Nitrate	4.15	
	pH (lab)	9.66	4.62
	Selenium	0.0113	
	Sulfate	119	
	TDS	689	
GWM-26	Arsenic	0.0189	
	Chloride	11.4	
	Nickel	0.0572	
	Nitrate	2.43	
	pH (lab)	7.87	7.13
	Selenium	0.0115	
	Sulfate	15	
	TDS	396	
GWM-30	Arsenic	0.0182	
	Chloride	37.7	
	Nickel	0.056	
	Nitrate	5.54	
	pH (lab)	8.29	6.86
	Selenium	0.0109	
	Sulfate	30.4	
	TDS	514	

<b>Phyllite Wells</b>			
<b>Sample Point</b>	<b>Constituent</b>	<b>Upper Concentration Limit</b>	<b>Lower Concentration Limit</b>
GWM-10	Ammonia	6.65	
	Arsenic	0.0182	
	Chloride	3859	
	Nickel	0.057	
	Nitrate	3.83	
	pH (lab)	7.96	7.07
	Selenium	0.0164	
	Sulfate	3734	
	TDS	11630	
GWM-19	Ammonia	0.556	
	Arsenic	0.0182	
	Chloride	418	
	Copper	0.0377	
	Nickel	0.056	
	Nitrate	3.83	
	pH (lab)	7.81	6.86
	Selenium	0.0109	
	Sulfate	427	
	TDS	2078	
GWM-20	Ammonia	12.7	
	Arsenic	0.0249	
	Chloride	6409	
	Copper	0.0377	
	Nickel	0.056	
	Nitrate	14.3	
	pH (lab)	7.94	6.61
	Selenium	0.0109	
	Sulfate	4916	
	TDS	17660	

<b>Other Wells</b>			
Sample Point	Constituent	Upper Concentration Limit	Lower Concentration Limit
GWM-06	Arsenic	0.018	
GWM-06	Chloride	34.1	
GWM-06	Nickel	0.056	
GWM-06	Nitrate	21.8	
GWM-06	pH (lab)	8.26	6.38
GWM-06	Selenium	0.011	
GWM-06	Sulfate	144	
GWM-06	TDS	898	
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GWM-16	Arsenic	0.052	
GWM-16	Chloride	20.9	
GWM-16	Nickel	0.0564	
GWM-16	Nitrate	4.01	
GWM-16	pH (lab)	8.47	5.96
GWM-16	Selenium	0.011	
GWM-16	Sulfate	82.6	
GWM-16	TDS	1106	
<hr/>			
GWM-25	Arsenic	0.0189	
GWM-25	Chloride	10.8	
GWM-25	Nickel	0.0572	
GWM-25	Nitrate	4.37	
GWM-25	pH (lab)	8.22	6.58
GWM-25	Selenium	0.0115	
GWM-25	Sulfate	165	
GWM-25	TDS	2368	

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**MINING WASTES**  
For Title 27 (27CCR §20005 et seq.)  
DECEMBER 2008

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS  
FOR  
WASTE DISCHARGE REQUIREMENTS  
FOR  
DISCHARGES OF MINING WASTES  
REGULATED BY TITLE 27  
(27 CCR §20005 et seq.)  
MINING FACILITIES

DECEMBER 2008

**I. APPLICABILITY**

- A. These Standard Provisions and Reporting Requirements are applicable to “mining waste” disposal sites that are regulated pursuant to the provisions of the California Code of Regulations, title 27 section 20005 et seq. (27 CCR or Title 27). The term “Mining waste” is defined in title 27 section 22480.
- B. For this document, WMU is defined as a waste management unit containing mining waste.
- C. “Order,” as used throughout this document, means the Waste Discharge Requirements to which these Standard Provisions and Reporting Requirements are incorporated.
- D. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
- E. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
- F. If there is any conflicting or contradictory language between the Waste Discharge Requirements (WDRs), the Monitoring and Reporting Program (MRP), or the Standard Provisions and Reporting Requirements (SPRR), then language in the WDRs shall govern over either the MRP or the SPRR, and language in the MRP shall govern over the SPRR.
- G. Unless otherwise stated, all terms are as defined in California Water

Code (CWC) section 13050 and in title 27 section 20164.

## II. TERMS AND CONDITIONS

- A. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Resources Control Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of these waste discharge requirements and the California Water Code, which can result in the imposition of civil liability [CWC §13350(a)]
- B. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [CWC §13381]:
  - 1. Violation of any term or condition contained in this Order;
  - 2. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
  - 3. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
  - 4. A material change in the character, location, or volume of discharge.
- C. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge, or other appropriate joint technical document, with the Central Valley Regional Water Quality Control Board (hereafter Central Valley Water Board) [CWC §13260(c) and §13264(a)]. A material change includes, but is not limited to, the following:
  - 1. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
  - 2. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment); or
  - 3. A change in the type of waste being accepted for disposal.

- D. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [CWC §13267(c)].
- E. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [CWC §13263(e) and 27 CCR §21720(b)].
- F. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [CWC §13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
- G. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [CWC §13263(g)].
- H. The Discharger shall submit to the Central Valley Water Board for review and approval a closure and post-closure maintenance plan and this plan has been prepared in accordance with Closure and Post-Closure for Mining WMUs [27 CCR §22510].

### III. GENERAL PROVISIONS

- A. The discharge shall neither cause nor contribute to the contamination, degradation, or **pollution of groundwater** via the release of waste constituents in either liquid or gaseous phase.
- B. Wastes shall not be discharged to any surface water body without a Stormwater Permit or a NPDES permit.
- C. The discharge shall neither cause nor contribute to any **surface water pollution**, contamination, or nuisance, including, but not limited to:
  - 1. floating, suspended, or deposited macroscopic particulate matter or foam;

2. increases in bottom deposits or aquatic growth;
  3. an adverse change in temperature, turbidity, or apparent color beyond natural background levels;
  4. the creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin;
  5. the introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of waters of the State.
- D. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the waste management unit (WMU) if such waste constituents could migrate to waters of the State—in either the liquid or the gaseous phase—and cause **a condition of contamination, pollution, degradation, or nuisance**.
- E. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of contamination, pollution, degradation, or nuisance to occur, as indicated by the most appropriate statistical or non-statistical data analysis method and retest method listed in the Monitoring and Reporting Program.
- F. The Discharger shall take **all reasonable steps to minimize any adverse impact** to the waters of the state resulting from noncompliance with this Order. (“Order,” as used throughout this document, means the Waste Discharge Requirements). Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
- G. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [27 CCR §21710(c)(1)].
- H. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged;

site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [27 CCR §21710(a)(4)].

- I. The Discharger shall maintain legible records of the volume and type of each waste discharged at each WMU or portion of a WMU, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Resources Control Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Resources Control Board or Central Valley Water Board at any time during normal business hours. [27 CCR §21720(f)].
- J. All WMUs shall be protected from flooding [27 CCR §22490(b)].
- K. Diversion and drainage facilities shall be designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff as follows [27 CCR §22490(h)(1)]:
  1. Group A – one 25 year, 24 hour storm;
  2. Group B – one 10 year, 24 hour storm; and
  3. Group C – one 10 year, 24 hour storm.
- L. Precipitation on Group A and B waste piles that is not diverted by containment structures shall be collected and managed through the leachate collection and removal system (LCRS). The Central Valley Water Board can make exemptions to this requirement if the collected fluid does not contain indicator parameters or waste constituents in excess of applicable water quality objectives [27 CCR §22490(h)(2)].
- M. Dischargers shall comply with special requirements for surface impoundments given in title 27 section 20375. Nevertheless, for Mining Units, Dischargers shall use the precipitation conditions in title 27 section 22490(h)(1),

#### IV. **FINANCIAL ASSURANCE PROVISIONS**

- A. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified WMU in accordance with an approved closure and post-closure maintenance plan [27 CCR §22510(f)].
- B. If a lead agency acting under the authority of §2774(a) of the Public Resources code requires assurances of financial responsibility, these assurances can be used to fulfill all comparable requirements provided that:
  - 1. the Central Valley Water Board approves the assurance; and
  - 2. the Central Valley Water Board is named as alternate payee. [27 CCR §22510(g)]

#### V. **DISCHARGE SPECIFICATIONS**

- A. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the WMU and whether or not the wastes are required to be managed as a Group A, Group B or Group C mining waste [27 CCR §22480]
- B. All WMUs shall be designed, constructed, and operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [27 CCR §20240(c)], including the capillary fringe.
- C. The Discharger shall submit operation plans describing those WMU operations which could affect water quality, including, but not limited to [27 CCR §21760(b)]:
  - 1. A description of proposed treatment, storage, and disposal methods;
  - 2. Contingency plans for the failure or breakdown of waste handling facilities or containment systems, including notice or any such failure, or any detection of waste or leachate in monitoring facilities, to the Central Valley Water Board, local governments, and water users downgradient of the WMU(s); and

3. A description of inspection and maintenance programs which will be undertaken regularly during disposal operations and the post-closure maintenance period.

## VI. FACILITY SPECIFICATIONS

- A. Surface and subsurface drainage from outside of a WMU shall be diverted from the WMU [27 CCR §20365(e)].
- B. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [27 CCR §20365(d)].
- C. The Discharger shall promptly notify the Central Valley Water Board of any slope failure occurring at a WMU. Any failure which threatens the integrity of containment features or the WMU shall be promptly corrected in accordance with an approved method [27 CCR §21710(c)(2)].

## VII. CONSTRUCTION SPECIFICATIONS

- A. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge. WMUs shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the WMU commences [27 CCR §22490(d)].
- B. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a WMU's containment features or monitoring systems shall be approved by a registered civil engineer or a certified engineering geologist [27 CCR §21710(d)].
- C. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [27 CCR §22490(e) and §20320(a)].
- D. WMUs shall be designed and constructed to contain the fluid, including

gas, waste, and leachate [27 CCR §20330(a)].

- E. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [27 CCR §20320(c)].
- F. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [27 CCR §20320(b)].
- G. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the WMU and during the post-closure maintenance period. The systems shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [27 CCR §20340(d)].
- H. Leachate collection and removal systems shall be designed and constructed to ensure that there is no buildup of hydraulic head on the liner. The depth of fluid in the collection sump shall be kept at the minimum needed to ensure efficient pump operation [27 CCR §20340(c)].
- I. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [27 CCR §20323] and approved by the Executive Officer.
- J. Containment structures shall be designed by a registered civil engineer, and construction shall be supervised and certified by a registered civil engineer or a certified engineering geologist. [27 CCR § 22490(d)].

## VIII. REPORTING REQUIREMENTS

### A. General Requirements

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall **notify the Central Valley Water Board by telephone** as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within two weeks. The written notification shall state the nature, time and cause of **noncompliance**, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. The Discharger shall **immediately notify the Central Valley Water Board** of any **evidence of a release**, or of any flooding, equipment failure, slope failure, or other **change in site conditions** which could impair the integrity of waste or leachate containment facilities or of precipitation and drainage control structures.
3. The Discharger shall **mail a copy of each monitoring report** and any other reports required by this Order to the appropriate office or the current address if an office relocates. Addresses for each office as of November 2008 are:

California Regional Water Quality Control Board  
Central Valley Region  
11029 Sun Center Drive #200  
Rancho Cordova, CA 95670

California Regional Water Quality Control Board  
Central Valley Region  
1685 "E" Street  
Fresno, CA 93706-2007

California Regional Water Quality Control Board  
Central Valley Region  
415 Knollcrest Drive, Suite 100  
Redding, CA 96002

4. The Discharger shall **retain records of all monitoring information**, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, 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 for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Central Valley Water Board Executive Officer.

Such records shall show the following for each sample:

- a. Identity of sample and of the Monitoring Point or Background Monitoring Point from which it was taken, along with the identity of the individual who obtained the sample;
- b. Date, time, and manner of sampling;
- c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e. Calculation of results; and
- f. Results of analyses, and the method detection limit (MDL) and practical quantitation limit (PQL) for each analysis.

Such records shall also include legible records of the volume and type of each waste discharged at each WMU and the manner and location of discharge. These waste discharge records shall be maintained at the facility until the beginning of the post-closure maintenance period, at which time copies of these records shall be sent to the Central Valley Water Board.

5. **All reports and transmittal letters shall be signed** by persons identified below:
  - a. *For a corporation:* by a principal executive officer of at least the level of senior vice-president.
  - b. *For a partnership or sole proprietorship:* by a general partner or the proprietor.
  - c. *For a municipality, state, federal or other public agency:* by either a principal executive officer or ranking elected or appointed official.

- d. A duly authorized representative of a person designated in a, b or c above if;
  - i. the authorization is made in writing by a person described in a, b, or c of this provision;
  - ii. 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 WMU, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
  - iii. the written authorization is submitted to the Central Valley Water Board.

Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

6. In reporting the monitoring data, 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 lack thereof.
7. 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. **Reports to be Filed with the Central Valley Water Board**

1. A transmittal **letter** explaining the essential points in each report shall accompany each report. Such a letter shall include a discussion of any violations found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations. If the Discharger has previously

submitted a detailed time schedule for correcting the violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal.

2. Each monitoring report (e.g., Detection Monitoring Report, Constituents of Concern 5-Year Report) shall include a **compliance evaluation summary**. The summary shall contain at least:
  - a. For each monitored ground water body, a description and graphical presentation of the gradient and direction of **ground water flow** under/around the WMU, based upon water level elevations taken during the collection of the water quality data submitted in the report.
  - b. For each monitoring well addressed by the report, a description of the method and time of water level measurement, the type of pump used for **purging** and the placement of the pump in the well, and the method of purging (pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of pH, temperature, conductivity, and turbidity testing, well recovery time, and method of purge water disposal).
  - c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the type of pump (or other device) used and its placement for **sampling**, and a detailed description of the sampling procedure (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations).
  - d. A **map or aerial photograph** showing the locations of observation stations, Monitoring Points, and Background Monitoring Points.
  - e. **Laboratory** statements of results of all analyses evaluating compliance with requirements.

- f. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
  - g. A summary and certification of completion of all Standard Observations for the WMU, for the perimeter of the WMU, and for the receiving waters. The terms 'Standard Observations' and 'receiving waters' as used in this document are defined below in section **XII. Definitions**.
  - h. The quantity and types of wastes discharged and the locations in the WMU where waste has been placed since submittal of the last such report.
3. The Discharger shall report by telephone concerning any **seepage from the disposal area** immediately after it is discovered. A written report shall be filed with the Central Valley Water Board within seven days, containing at least the following information:
- a. a map showing the location(s) of seepage;
  - b. an estimate of the flow rate;
  - c. description of the nature of the discharge (e.g., all pertinent observations and analyses); and
  - d. corrective measures underway or proposed, and corresponding time schedule.

See **RESPONSE TO A RELEASE** below.

4. The Discharger shall submit an **Annual Monitoring Summary Report** to the Central Valley Water Board summarizing the monitoring results from the previous year. This report shall contain:
- a. For each Monitoring Point and Background Monitoring Point, submit in **graphical format** the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given Monitoring Point or Background Monitoring Point, at a scale

appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

- b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month Reporting Periods, presented in tabular form as well as on computer disk, either in EXCEL format or in another file format acceptable to Central Valley Water Board staff. Data may be submitted in commonly available compressed format. The Central Valley Water Board regards the submittal of data in hard copy and electronic format as "...the form necessary for..." statistical analysis (§20420(h)), in that this facilitates periodic review by the Central Valley Water Board's statistical consultant.
- c. A **comprehensive discussion of the compliance record**, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
- d. A **map** showing the area and elevations in which filling has been completed during the previous calendar year.
- e. A **written** summary of the monitoring results, indicating any changes made or observed since the previous annual report.
- f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

## IX. PROVISIONS FOR MONITORING

### A. General

- 1. The Discharger shall maintain a **written sampling and analysis plan** sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the Discharger shall be familiar with the sampling and analysis plan.
- 2. All monitoring instruments and devices used by the Discharger to

fulfill the prescribed monitoring program shall be properly maintained and regularly **calibrated** to ensure their continued accuracy.

3. The Discharger shall construct or abandon all **monitoring wells** to meet or exceed the standards stated in the State Department of Water Resources Bulletin 74-81 and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code Sections 13750 through 13755.
4. All sample analyses shall be conducted at a **laboratory accredited** for such analyses by the State Department of Health Services. The **Quality Assurance-Quality Control Program** must conform to EPA guidelines (e.g., "Laboratory Documentation Requirements for Data Validation," January 1990, USEPA Region 9) or to procedures approved by the Central Valley Water Board.
5. The director **of the laboratory** whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Central Valley Water Board.
6. Unless samples are from water supply wells or unless otherwise specified by Central Valley Water Board staff, all ground water samples to be analyzed for **metals** shall be field-filtered. Filtration methods shall minimize the entrainment of air into the sample (by using, for example, in-line pressure filtration).

#### B. **Sampling and Analytical Methods**

1. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken within a span not to exceed 30 days, unless the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods

for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.

2. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.
3. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
4. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied by both the estimated MDL and PQL values for that analytical run.
5. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
6. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs

should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

7. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
8. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
9. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to §20415(e)(7) of Title 27 that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to §20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

10. Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under 27 CCR §20415(e)(8)(A-D)] in accordance with §20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer.
11. The Discharger may propose an alternate statistical method [to the methods listed under title 27 section 20415(e)(8)(A-D)] in accordance with title 27 section 20415(e)(8)(E), for review and approval by the Executive Officer. Upon receiving written approval, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
12. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
  - a. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
    - i. The data contains two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDLs; or
    - ii. The data contains one or more analyte that equals or exceeds its PQL.
  - b. **Discrete Retest** [27 CCR §20415(e)(8)(E):
    - i. In the event that the Discharger concludes (pursuant to paragraph 12.a., above) that there is a preliminary indication of a release, then the Discharger shall

immediately notify Central Valley Water Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated.

- ii. For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample**. As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:
    - a. **Immediately** notify the Central Valley Water Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
    - b. Comply with section **IX.B.14** of this document, **Sampling and Analytical Methods**, if any constituent or constituents were verified to be present.
  - iii. Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.
13. If the Executive Officer determines, after reviewing the submitted report in 12.b. above, that the detected constituent most likely originated from the WMU(s), the Discharger shall **immediately** implement the requirements of section **X.C., Release Has Been Verified**, of this document.
  14. If the Discharger determines that there is measurably significant evidence of a release from the WMU at any monitoring point, the Discharger shall **immediately** implement the requirements of section **X.C., Release Has Been Verified**, of this document.

X. **RESPONSE TO A RELEASE**

A. **Monitoring Point Evidence of a Release**

If the Discharger determines that there is “measurably significant” evidence of a release from the WMU (i.e. the initial statistical comparison or nonstatistical comparison indicates, for any constituent of concern or monitoring parameter, that a release is tentatively identified), the Discharger shall [27 CCR §20420(j)]:

- a. **Notification — immediately notify Central Valley Water Board staff verbally** of the finding and **provide** written notification by certified mail **within seven days** of such determination. The notification shall, for each affected monitoring point, identify the monitoring parameters and constituents of concern that have indicated “measurably significant” evidence of a release from the WMU [27 CCR §20420(j)(1)];
- b. **Retest Optional** — can immediately initiate the verification (retest) procedure pre-approved by the Central Valley Water Board [pursuant to §20415(e)(8)(E) of Title 27] to verify that there is “measurably significant” evidence of a release from the WMU for a parameter or constituent which has indicated a release at a monitoring point [27 CCR §20420(j)(2)]; and
- c. **Next Step** — immediately following detection of a release [or after completing the retest pursuant to b) above and confirming the existence of a release], shall comply with the requirements of C. (Release Has Been Verified) below [27 CCR §20420(j)(3)].

B. **Physical Evidence of a Release**

If the Discharger determines there is significant **physical** evidence of a release, the Discharger shall notify the Central Valley Water Board **by certified mail within 7 days** of such determination, and within 90 days shall submit an amended report of waste discharge to make any appropriate changes to the detection monitoring program [27 CCR §20420(l)(1) & (2)].

C. **Release Has Been Verified**

1. If the detection was made based upon sampling and analysis for

monitoring parameters, **immediately** sample all monitoring points in the affected medium at that WMU and determine the concentration of all constituents of concern. Because this constituent of concern scan does not involve statistical testing, the Discharger need collect and analyze only a single water sample from each monitoring point in the affected medium [27 CCR §20420(k)(1)].

2. The Discharger, **within 90 days** of determining “measurably significant” evidence of a release, shall submit an amended report of waste discharge to establish an evaluation monitoring program meeting the requirements of §20425 of Title 27 [27 CCR §20420(k)(5)].
3. The Discharger, **within 180 days** of determining “measurably significant” evidence of a release, shall submit to the Central Valley Water Board an initial engineering feasibility study for a corrective action program necessary to meet the requirements of §20430 of Title 27. At a minimum, the engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [27 CCR §20420(k)(6)].
4. If the Discharger determines that there is “measurably significant” evidence of a release from the WMU at any monitoring point, the Discharger may demonstrate that a source other than the WMU caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to §20420(k)(7) of Title 27 in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements of §20420(k)(6) & (7) of Title 27 unless the demonstration successfully shows that a source other than the WMU caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In making this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining “measurably significant” evidence of a release. The report shall be submitted

to the Central Valley Water Board **within 90 days** of determining “measurably significant” evidence of a release demonstrating that a source other than the WMU caused the evidence [27 CCR §20420(k)(7)].

5. The Discharger, **within 90 days** of establishing an Evaluation Monitoring Program, shall conduct an evaluation monitoring program to assess the nature and extent of the release from the WMU and to design a corrective action program meeting the requirements of §20430 of Title 27. At a minimum, an evaluation monitoring program for a WMU shall include:
  - a. An assessment of the nature and extent of the release from the WMU. This assessment shall include a determination of the distribution and concentration of each constituent of concern throughout the zone affected by the release. The Discharger shall submit this assessment to the Central Valley Water Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(b)].
  - b. Update the initial engineering feasibility study for corrective action based on the data collected to delineate the release and from the ongoing monitoring program. The Discharger shall submit this updated engineering feasibility study to the Central Valley Water Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(c)].
  - c. Submit an amended report of waste discharge to establish a corrective action program meeting the requirements of §20430 of Title 27 based on the data collected to delineate the release and on the updated engineering feasibility study. The Discharger shall submit this report to the Central Valley Water Board **within 90 days** of establishing an evaluation monitoring program [27 CCR §20425(d)].

**D. Release Beyond Facility Boundary**

1. Any time the Discharger concludes that a release from the WMU has proceeded beyond the facility boundary, the Discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).
2. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a

description of the Discharger's current knowledge of the nature and extent of the release.

3. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
4. Each time the Discharger sends a notification to Affected Persons, the Discharger shall provide the Central Valley Water Board, within seven days of sending such notification, with both a copy of the notification and a current mailing list of Affected Persons.

## XI. STANDARD CONDITIONS

### A. Supervision and Certification

1. All WMUs shall be **designed and constructed** under the direct supervision of a California registered civil engineer or a certified engineering geologist and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, and performance goals of Title 27 prior to waste discharge.
2. Designs of WMUs shall include a **Construction Quality Assurance Plan**, which shall:
  - a. be submitted for review and approval by the Central Valley Water Board prior to construction;
  - b. demonstrate that the WMU has been constructed according to the specifications and plans as approved by the Central Valley Water Board; and
  - c. provide quality control on the materials and construction practices used to construct the WMU and prevent the use of inferior products and/or materials which do not meet the approved design plans or specifications.
3. **Closure** of each WMU shall be performed under the direct supervision of a California registered civil engineer or California certified engineering geologist.

## B. Operations

1. The Discharger shall maintain in **good working order** and operate as efficiently as possible any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
2. For any **electrically** operated equipment at the site, the **failure** of which could cause loss of control or containment of waste materials, or violation of this Order, the Discharger shall employ safeguards to prevent loss of control over wastes. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.
3. The fact that it would have been necessary to halt or reduce the permitted activity in Order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
4. The discharge shall remain within the designated disposal area at all times.
5. By the effective date of waste discharge requirements, the Discharger shall have a plan for preventing and controlling **accidental discharges**, and for minimizing the effect of such events. This plan shall:
  - a. Identify the possible sources of accidental loss or leakage of wastes from each waste storage, treatment, or disposal unit.
  - b. Evaluate the effectiveness of present WMUs and operational procedures, and identify needed changes or contingency plans.
  - c. Predict the effectiveness of the proposed changes in waste management facilities and procedures and provide an implementation schedule containing interim and final dates when changes will be implemented.

The Central Valley Water Board, after review of the plan, may establish conditions that it deems necessary to control leakage and minimize its effects.

6. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overflowing.
7. Surface impoundments shall be designed, constructed and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the waterline.
8. Leachate removed from a surface impoundment LCRS shall be discharged to the impoundment from which it originated.
9. Solids which accumulate in a surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for the surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to the Central Valley Water Board for review. The solids will be discharged to an appropriate WMU based on characterization.
10. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control.

**C. Siting**

1. New WMUs for Group A and B wastes shall not be located on Holocene faults. Units for Group C wastes may be located on Holocene faults if displacement will not allow escape of wastes or cause irreparable damage to containment structures [27 CCR §22490(a)(1)].
2. New WMUs shall be outside areas of rapid geologic change. Exemptions may be allowed by the RWQCB if containment structures are designed and constructed to preclude failure [27 CCR §22490(a)(2)].
3. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes, and shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

#### D. Closure

1. New and existing WMUs shall be closed so that they no longer pose a threat to water quality. No post closure land uses shall be permitted that might impair the integrity of containment structures [27 CCR §22510(a)].
2. WMUs shall be closed according to an approved closure and post closure maintenance plan which provides for continued compliance with applicable standards for waste containment, precipitation and drainage controls and monitoring throughout closure and the post closure maintenance period [27 CCR §22510(b)].
3. Closed WMUs shall be provided with at least two **permanent monuments**, installed by a licensed land surveyor or by a registered civil engineer authorized to perform land surveying, from which the location and elevation of all wastes, containment structures, and monitoring facilities can be determined throughout the post-closure maintenance period [27 CCR §20950(d)].
4. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one, and shall have minimum of one fifteen-foot wide bench for every fifty feet of vertical height [27 CCR §21090(a)].

#### E. Post-Closure

5. WMUs shall be closed so that they no longer pose a threat to water quality. No post closure land uses shall be permitted that might impair the integrity of containment structures [27 CCR §22510(a)].
6. The post-closure maintenance period shall end when the Central Valley Water Board determines that water quality aspects of reclamation are complete and waste no longer poses a threat to water quality [27 CCR §22510(h)].
7. The owner of the mine shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the WMUs and during subsequent use of the property for other purposes.

## XII. DEFINITIONS

Unless otherwise stated, all terms are as defined in Chapter 2, Division 7, of the California Water Code (Section 13050 et seq.), in Article 2, Chapter 2, Division 2, Title 27 of the California Code of Regulations (27 CCR §20005 et seq.), and in Section 258.2, and elsewhere in Part 258, Title 40 of the Code of Federal Regulations.

The following additional definitions apply to the Order:

- A. **“Affected Persons”** means all individuals who either own or occupy land outside the boundaries of the parcel upon which the WMU is located that has been or may be affected by the **release** of leachate or waste constituents (in gas or liquid phase) from a WMU.
- B. **“Background Monitoring Point”** means a device (e.g., well) or location (e.g., a specific point along a lakeshore), upgradient or sidegradient from the WMU, or as otherwise approved by the Executive Officer, where water quality samples are taken that are not affected by any release from the WMU and that are used as a basis of comparison against samples taken from downgradient Monitoring Points.
- C. **“Composite liner”** means a liner that consists of two or more components, which include a Synthetic Liner in direct and uniform contact with an underlying layer of prepared, low-permeability soil such that the net permeability of the resulting combination is significantly less than would be expected by reference to the permeability of the individual components layers.
- D. Unless otherwise specified, **“composite sample”** means a combination of individual samples either collected over a specified sampling period or collected over an area at one time (synoptically):
  - 1. at equal time intervals,
  - 2. at varying time intervals so that each sample represents an equal portion of the media to be sampled.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results. **“Constituents of Concern (COC)”** means those constituents which are likely to be in the waste in the WMU or which are likely to be derived from waste constituents in the event of a release.

- E. **“Daily maximum concentration”** means the highest measurement made on any single discrete sample or composite sample.
- F. **“Grab sample”** means a discrete sample collected in less than 15 minutes.
- G. **“Matrix effect”** means any change in the method detection limit or practical quantitation limit for a given analyte as a result of the presence of other constituents - either of natural origin or introduced **by** humans as a result of a release or spill - that are present in the sample of water or soil-pore gas being analyzed.
- H. **“Method detection limit (MDL)”** means the lowest constituent concentration associated with a 99% reliability of a “non-zero” analytical result. The MDL shall reflect the detection capabilities of the specific analytical procedure and equipment used by the laboratory. MDLs reported by the laboratory shall not simply be restated from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs are expected to closely agree with published USEPA MDLs. If the lab suspects that, due to matrix or other effects, the detection limit for a particular analytical run differs significantly from the laboratory-derived MDL, the results should be flagged accordingly, along with an estimate of the detection limit achieved.
- I. **“Monitoring Parameters”** means the short list of constituents and parameters used for the majority of monitoring activity at a given WMU. Monitoring for the short list of Monitoring Parameters constitutes “indirect monitoring,” in that the results are used to indicate indirectly the success or failure of adequate containment for the longer list of Constituents of Concern.
- J. **“Monitored Media”** means those water-, solid-, or gas-bearing media that are monitored pursuant to the Monitoring and Reporting Program. The Monitored Media may include:
  - 1. Ground water in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the WMU could be detected, and in any perched zones underlying the WMU,
  - 2. Any bodies of surface water that could be measurably affected by a release,
  - 3. Soil pore liquid beneath and/or adjacent to the WMU, and

4. Soil pore gas beneath and/or adjacent to the WMU.

- K. **“Monitoring Point”** means a device (e.g., well) or location (e.g., a specific point along a lakeshore), downgradient from the WMU and that is assigned in this Order, at which samples are collected for the purpose of detecting a release by comparison with samples collected at Background Monitoring Points.
- L. **“Monthly average concentration”** means the arithmetic mean of measurements made during the month.
- M. **“Monthly average discharge”** means the total discharge by volume during a calendar month divided by the number of days in the month that the facility was discharging (e.g. gallons per day, cubic feet per day).

Where less than daily sampling is required by this Order, the monthly average shall be determined by the summation of all the measured discharges divided by the number of days during the month when the measurements were made.

- N. **“Order,”** as used throughout this document, means the Waste Discharge Requirements. The Monitoring and Reporting Program and Standard Provisions and Reporting Requirements are incorporated by reference into the Waste Discharge Requirements.
- O. **“Practical quantitation limit (PQL)”** means the lowest constituent concentration at which a numerical concentration can be assigned with reasonable certainty that its value represents the constituent’s actual concentration in the sample. Normally PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure. The PQL shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply be restated from U.S. EPA analytical method manuals. In relatively interference-free water, laboratory-derived PQLs are expected to closely agree with published U. S. EPA PQLs. If the lab suspects that, due to matrix or other effects, the quantitation limit for a particular analytical run differs significantly from the laboratory-derived PQL, the results should be flagged accordingly, along with an estimate of the quantitation limit achieved.
- P. **“Reporting Period”** means the time interval during which samples are collected and analyzed, and the results then reported to the Central Valley Water Board, to comply with a specified monitoring and reporting

frequency. The maximum reporting period for analysis of all Constituents of Concern is five years; for Monitoring Parameters it is six months (generally, Spring/Summer = April 1 to September 30, and Fall/Winter = October 1 to March 31). The Reporting Period for the Annual Summary Report extends from April 1 of the previous year to March 31 of the current year. The due date for the submittal of any given report will be 15 days after the end of its Reporting Period, unless otherwise stated.

Q. **“Receiving Waters”** refers to any surface or ground water which actually or potentially receives waste constituents, leachate, or surface or ground waters which come in contact with waste materials or contaminated soils.

R. **“Sample size”**:

1. For Monitoring Points, means the number of data points obtained from a given Monitoring Point during a given Reporting Period used for carrying out the statistical or non-statistical analysis of a given analyte during a given Reporting Period; or
2. For Background Monitoring Points, means the number of new and existing data points collected under §20415(e)(11 and 12) from all applicable Background Monitoring Points in a given monitored medium—used to collectively represent the background concentration and variability of a given analyte in carrying out statistical or non-statistical analysis of that analyte during a given Reporting Period.

S. **“Standard Observations”** means:

1. For Receiving Waters:
  - a. Floating and suspended materials of waste origin: presence or absence, source, and size of affected area;
  - b. Discoloration and turbidity: description of color, source, and size of affected area;
  - c. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
  - d. Evidence of water uses: presence of water-associated wildlife;

- e. Flow rate; and
  - f. Weather conditions: wind direction and estimated velocity, total precipitation during recent days and on the day of observation;
- 2. Along the perimeter of the WMU:
    - a. Evidence of liquid leaving or entering the WMU, estimated size of affected area, and flow rate (show affected area on map);
    - b. Evidence of odors: presence or absence, characterization, source, and distance of travel from source; and
    - c. Evidence of erosion and/or of daylighted refuse.
  - 3. For the WMU:
    - a. Evidence of ponded water at any point on the waste management facility (show affected area on map);
    - b. Evidence of odors: presence or absence, characterization, source, and distance of travel from source;
    - c. Evidence of erosion and/or of daylighted refuse; and
- T. **“Standard Analysis and Measurements”** means:
- 1. Turbidity, in NTU;
  - 2. Water elevation to the nearest 1/100th foot above mean sea level; and
  - 3. Sampling and statistical/non-statistical analysis of the Monitoring Parameters.
- U. **“Synthetic Liner”** means a layer of flexible, man-made material that is installed in accordance with the standard of the industry over an area of land prior to the discharge of waste there.
- V. **“VOC<sub>water</sub>”** (Volatile Organics Monitoring Parameter for Water) means the composite monitoring parameter encompassing all VOCs that are detectable in less than ten percent of applicable background samples from a monitored water-bearing medium (e.g., the unsaturated zone,

the uppermost aquifer, a zone of perched groundwater, or a surface water body). This parameter is analyzed via the non-statistical analytical method described elsewhere in this Order to identify a release to waters of the state of VOCs whose presence in background water is detected too infrequently to allow statistical analysis.

- W. “**VOC<sub>spg</sub>**” (Volatile Organics Monitoring Parameter for Soil Pore Gas) means Monitoring Parameters addressing all volatile organic constituents detectable in a sample of soil pore gas.
- X. “**Volatile organic constituents (VOCs)**” means the suite of organic constituents having a high vapor pressure. The term includes at least the 47 organic constituents listed in Appendix I to 40 CFR Part 258.