

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**REVISED  
MONITORING AND REPORTING  
PROGRAM NO. R6V-2010 [TENTATIVE]**

**WDID NO. 6B362098001**

**FOR**

**MOLYCORP MINERALS LLC  
MOUNTAIN PASS MINE AND MILL OPERATIONS**

San Bernardino County

**I. WATER QUALITY PROTECTION STANDARD**

Pursuant to California Code of Regulations (CCR), title 27, section 22500, subsection (a) new Group B Mining Units shall comply with the monitoring provisions contained in CCR, title 27, sections 20385 through 20430. A Water Quality Protection Standard (WQPS) is required by CCR, title 27, section 20390, to assure the earliest possible detection of a release from the Group B Tailings Waste Pile (NWTDF) and Group B Surface Impoundments (Reclaim and Clarification Ponds) to the underlying soil and/or groundwater. The WQPS 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.

**II. MONITORING**

The Discharger must comply with the Detection Monitoring Program (DMP) monitoring provisions pursuant to CCR, title 27, section 20385. The Discharger must also monitor the Group B Surface Impoundments water and solids quality (grab samples), and freeboard, the NWTDF solids content, the leachate collection and recovery systems, and liner integrity of all three Group B waste management units (WMUs).

**A. Wastewater – Paste Tailings Discharge Monitoring**

The Discharger must measure and record the following:

1. Monthly, the volume of paste tailings, which includes the percent of amendments discharged to the NWTDF, in million gallons/tons/cubic yards, that occurred each month;
2. Quarterly, the cumulative total of paste tailings discharged to the NWTDF, in million gallons/tons/cubic yards;
3. Quarterly, the remaining capacity for the NWTDF, in cubic yards;
4. Monthly, the average influent flow rate, in gallons per day (GPD) of wastewater to the Reclaim Pond; and

5. Monthly, the average effluent flow rate, in gallons per day (GPD) of wastewater from the Reclaim Pond.

B. Group B Waste Management Units Monitoring

1. Dikes and Liners

- a. Weekly, measure and record the freeboard, as measured from the top of the lowest part of the dike to the wastewater surface, in the Reclaim, reclaim channel, and Clarification Ponds. Indicate if either or both are dry, if applicable.
- b. Weekly, inspect the integrity of the Reclaim and Clarification Ponds dikes and liners. Should the inspection indicate that any unauthorized discharge has occurred, or may occur, the Water Board must be notified by phone within 48 hours, followed by confirmation in writing within seven days.
- c. Quarterly, inspect the integrity of the side slopes, liner system, and all drainage structures and LCRS sump of the NWTDF. Should the inspection indicate that any unauthorized discharge has occurred, or may occur; the Water Board must be notified by phone within 48 hours, followed by confirmation in writing within seven days.

C. Product Pond Monitoring

Weekly, inspect the integrity of the Product Pond dikes and liners.

D. Leachate Collection and Recovery System

The Discharger shall conduct the following inspections and testing of the leachate collection and recovery system (LCRS) for the Reclaim and Clarification Ponds and report results in the Quarterly Monitoring Reports:

1. Weekly, visual inspection for liquid in the leakage detection sumps must be conducted. The results of those inspections must be recorded in a permanent log book.
2. Any volume of liquid pumped out of the leakage detection sumps must be recorded along with date, time and discharge location, in a permanent log book kept on-site.
3. Annually, each LCRS shall be tested to demonstrate proper operation. The results of the testing shall be submitted in the annual monitoring reports. The annual report shall include a description of the method used to test each LCRS.

4. Action Response Plan

If liquids are detected in the LCRS Surface Impoundment sumps, the Discharger shall respond as set out in Table 1 Action/Response Levels below:

TABLE 1 - ACTION/RESPONSE LEVELS – LCRS FOR SURFACE IMPOUNDMENTS	
Flow (gpd/acre)	Action/Response
<20 <sup>1</sup>	No action required. Record weekly flow rate and submit recorded flow rates with the next Quarterly Report.
>20 <240 <sup>1</sup>	Notify the Water Board immediately. Record daily flow rate and watch for trends. Submit recorded flow rates with the next regularly scheduled Quarterly Report.
>520 <sup>2</sup>  > 1,156 <sup>2</sup>	Notify the Water Board immediately. Remove process solutions. Inspect and repair liner. The Discharger shall immediately collect a grab sample of the leachate and shall sample and analyze for the parameters, and at the frequencies identified in Table 1 – LCRS Monitoring Surface Impoundments, Attachment “A,” which is attached to and made part of this Monitoring and Reporting Program.
<sup>1</sup> Applicable to the Reclaim and Clarification Ponds LCRS. <sup>2</sup> Applicable to the Reclaim Pond LCRS. <sup>3</sup> Applicable to the Clarification Pond LCRS.	

E. Group B Surface Impoundments Wastewater Monitoring

1. Wastewater

When wastewater is present, liquid grab samples must be collected at three (3) sample locations in each of the Group B Surface Impoundments, composited into one sample per Surface Impoundment by the laboratory, and analyzed for the parameters and constituents and at the frequencies in Table 2-Surface Impoundment Monitoring, Attachment “B,” which is made part of this MRP. Indicate in the Quarterly Report if no wastewater is present in each Surface Impoundment, as applicable, for that period.

2. Solid Wastes

Two (2) representative grab samples of the settled solids in each wastewater Surface Impoundment, if present, must be collected and

analyzed for the constituents and at the frequencies listed in Table 2-Surface Impoundment Monitoring, Attachment "B".

F. Paste Tailings Solid Waste Monitoring

1. Quarterly, a representative number of samples required to adequately characterize the volume of paste tailings solids discharged to the NWTDF during that reporting period must be collected and analyzed for the constituents listed in Table 3-Paste Tailings Monitoring, Attachment "C," which is made part of this MRP. Indicate in the Quarterly Report if no Paste Tailings discharge occurred for that period.
2. For each lift of paste tailings placed, the following will be measured in the field on in-place tailings after the tailings have consolidated approximately two weeks:
  - a. the percent moisture (%); and
  - b. dry density (pounds per cubic foot).
3. Weekly, test for free water in paste tailings discharged at the discharge point to the NWTDF, using the method defined in this Order.

G. Solid Waste Sampling

Solid waste samples shall be tested and analyzed in accordance with CCR, title 22, section 66261.24, using, where applicable:

1. The Waste Extraction Test (WET) if the total concentration for a constituent in the sample exceeds 10 times the Soluble Threshold Limit Concentration (STLC), and
2. The Toxicity Characteristic Leaching Procedure (TCLP) if the total concentration for a constituent in the sample exceeds 20 times the TCLP limit (as listed in U.S. Code Part 40, 261.24).

H. Detection Monitoring

Monitoring of the groundwater and unsaturated zone must be conducted in accordance with the Detection Monitoring Program (DMP) to provide the best assurance of the early detection of any releases from the discharge sites. All samples, with the exception of field parameters, must be analyzed by a California state-certified laboratory. Using statistical or non-statistical data analysis methods approved in Board Order No. R6V-2010[Tentative] (Board Order), the Discharger must, for each groundwater monitoring event, compare the concentration of each monitoring parameter with its respective concentration limit to determine if there has been a release from the NWTDF. Monitoring must be completed as follows:

1. Unsaturated Zone Monitoring - Lysimeters

- a. Weekly, the Discharger must monitor the unsaturated zone beneath the Reclaim and Clarification Ponds and the NWTDF. The Discharger must check for moisture using pan lysimeters (or equivalent monitoring device) installed beneath the LCRS collection sumps. Unsaturated Zone monitoring beneath the NWTDF may be reduced to quarterly after the first year, post discharge, provided leachate release has not been detected. The locations of the proposed lysimeters are shown on Attachment "C" to the Board Order. If liquid is detected in the lysimeters, field verification testing must be performed and the Discharger must notify the Water Board and report a preliminary physical evidence of a release (see notification procedures below). Verification testing must include laboratory analyses of liquids drawn from the lysimeter. Liquid quality must be compared to the wastewater monitoring parameters in the Surface Impoundment and/or the liquid collected from the LCRS, if present. The results of this comparison must be part of a release evaluation report submitted to the Water Board.
- b. Annually, the Discharger must submit documentation of unsaturated zone monitoring instrument maintenance and performance checks, including quality assurance/quality controls.

2. Groundwater Monitoring

a. Point of Compliance and Monitoring Points

The Point of Compliance as defined in CCR, title 27, section 20405, is "a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit." Groundwater monitoring wells installed at monitoring points upgradient of the NWTDF, Reclaim Pond, and Product Pond P-28, at the Point of Compliance as part of the DMP are listed in the Table below. Monitoring well locations are shown on Attachments "D" Groundwater Monitoring Points, NWTDF and Reclaim Pond, and Attachment "E" Groundwater monitoring Points, Product Pond P-28, attached to and made a part of this MRP. Replacement of any monitoring wells must provide equal performance for complying with the Water Quality Performance Standards and must be approved by the Water Board.

<b>Well</b>	<b>Type</b>	<b>WMU</b>	<b>Status</b>	<b>Frequency</b>
98-9MW	Upgradient	NWTDF	Existing	Quarterly
98-5MW	Upgradient	NWTDF	Existing	Quarterly
98-2MW	Compliance	NWTDF/ Reclaim Pond	Existing	Quarterly
TDFWM-1	Compliance	NWTDF	Proposed	Quarterly
TDFWM-1	Compliance	NWTDF	Proposed	Quarterly
2001-3MW	Upgradient	P-28	Existing	Quarterly
2001-4RMW	Compliance	P-28	Existing	Quarterly

b. Monitoring Parameters and Constituents of Concern

Water samples must be collected at the frequency and locations listed in Table 2 - Groundwater Monitoring Points and Monitoring Frequencies, and for the monitoring parameters and constituents of concern (COCs) as listed in Table 4–Groundwater Monitoring Constituents, in Attachment “F” Quarterly Groundwater Monitoring, which is attached to and made part of this Monitoring and Reporting Program.

c. Concentration Limits

The Discharger has not collected background water quality data for the monitoring parameters and constituents of concern contained in this Monitoring and Reporting Program (MRP) for the proposed two compliance wells downgradient of the NWTDF. The Discharger must collect at least eight quarters of groundwater quality data to determine background concentration limits for the monitoring parameters and constituents of concern. The Discharger must submit a complete Water Quality Protection Standard to the Water Board, which includes concentration limits that define background water quality for all monitoring parameters and constituents of concern and the point of compliance monitoring points.

d. Aquifer Characteristics

Quarterly, the most recent groundwater potentiometric surface must be illustrated on an 8.5- by 11-inch copy of a site plan showing the parameters listed in the Table 3 in this MRP, and include the monitoring well locations, the NWTDF, Surface Impoundments, and Product Storage Ponds.

Table 3 - Aquifer Characteristics

<u>Parameter</u>	<u>Units</u>
Depth to Groundwater	Feet below ground surface (bgs)
Static Water Level	Feet above mean sea level
Slope of Groundwater Gradient	Feet/feet
Direction of Groundwater Gradient	Degrees from North
Velocity of Groundwater Flow	Feet/year

- e. Annually, water quality analyses of samples from the monitoring wells listed in Table 2 of this MRP (or their replacement), must be reported in the annual report in both tabular and graphical form. Each table must summarize the historical and most recently detected constituents of concern concentrations and monitoring parameters for all wells sampled using an appropriate statistical analysis method. Graphs must be plotted at a scale appropriate to show trends or variations in water quality. For graphs showing the trends of similar constituents, the scale must be the same.

I. Monitoring for Windblown Tailings Solids

Quarterly, the Discharger must monitor for windblown tailings solids from the NWTDF. Monitoring must include both visual inspection and at least two (2) particle sampling stations downwind (based on prevailing wind pattern at the site) of the NWTDF. Additional weather data to be collected and included in the monitoring report are wind speed, wind direction, and precipitation at a minimum.

If monitoring results show significant particulate detections are occurring downwind as compared to upwind of the site, the Discharger shall describe such incidents in quarterly monitoring reports. If the source of particulate matter is determined to be windblown tailings solids from the NWTDF, the Discharger will improve controls for windblown tailings and report any significant changes made to the system.

III. DATA ANALYSIS

A. General Nonstatistical Data Analysis Methods

Non-statistical evidence of a release from the NWTDF, Surface Impoundments product storage ponds, and associated tailings waste conveyance system shall also be evaluated. The Discharger must notify the Water Board immediately of a release and include results in each quarterly report. Non-statistical analysis shall be as follows:

1. Unsaturated Zone Pore Liquid

For detected liquid in the unsaturated zone, laboratory analyses of the liquid sampled in the unsaturated zone monitoring devices are to be compared to water quality to tailings wastewater sampling. Results of this evaluation must be reported as described in section IV. B.1. of this MRP.

2. Physical Evidence

Physical evidence of a release can include liquid detected in unsaturated zone monitoring devices, vegetation loss, soil discoloration, or groundwater mounding.

B. Statistical Data Analysis Methods

In order to determine if any new releases have occurred from the NWTDF, Reclaim Pond, and P-28, evaluation of data will be conducted using statistical analyses methods. The Discharger has proposed to use intra-well analysis for the groundwater monitoring detection monitoring program. Background water quality for the constituents of concern and monitoring parameters have been established for existing monitoring wells. Background data for the compliance wells will be updated and evaluated in two-year intervals after qualifying for inclusion using appropriate statistical methods. If detection frequency of a constituent of concern in a compliance monitoring point is less than 25 percent, a verified exceedance is indicated when a nonparametric control limit is exceeded for two consecutive sampling events (pass 2 of 2 verification resampling procedures).

IV. RECORD KEEPING AND REPORTING REQUIREMENTS

A. Scheduled Reports To Be Filed With The Water Board

Periodic reports must be submitted to the Water Board as specified below.

1. Quarterly Monitoring Reports

The Discharger must submit the following quarterly monitoring data:

- a. Results of groundwater sampling analyses, including statistical limits for each monitoring parameter and constituent of concern at each groundwater compliance monitoring point;
- b. A description and graphical presentation of the velocity and direction of groundwater flow under/around the NWTDF, Surface Impoundments and product storage ponds, and be based upon the water-level elevations taken during the collection of the water quality data submitted in the report;

- c. A map and/or aerial photograph showing the locations of observation stations, monitoring points, background monitoring points, and the point of compliance along the downgradient boundary of the, Reclaim Pond, NWTDF and P-28;
- d. Surface Impoundments monitoring, flow monitoring, liquid quality analyses, and an evaluation of the effectiveness of the leachate monitoring and control facilities, and of the runoff/runon control facilities;
- e. NWTDF monitoring, waste discharge volumes, and solids analyses;
- f. Data collected in accordance with an approved Monitoring and Reporting Plan and Sampling and Analysis Plan for unsaturated zone monitoring and groundwater monitoring wells; and
- g. A letter transmitting the essential points in each report, including a discussion of any requirement violations found since the last report was submitted and describing actions taken or planned for correcting those violations. If the Discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting this schedule will be satisfactory. If no violations have occurred since the last submittal, this must be stated in the letter of transmittal.

2. Annual Monitoring Reports

The Discharger must submit an annual report to the Water Board. The annual report can be combined with the monitoring report for the last reporting period of that year. If so, the report must include (for that last reporting period) the information under Section IV.A.1 of this MRP, plus the following annual summary information:

- a. A list of all monitoring point/monitoring parameter (MPt/MPar) pairs, by medium, that have exhibited a verified measurably significant increase, together with the respective date (for each) when that increase occurred. Any MPt/Mpar pairs that have shown an increase within that (prior) year shall be bolded-and-underlined. In addition, by medium, list any COCs that have been detected above background and which are now included with the list of monitoring parameters during that (prior) year, together with the date when that transition occurred.
- b. Time-series data graphs for each MPt/Mpar showing historical groundwater, and pore-soil liquid analyses. Graphs must show trends and sample data compared to their respective control limit calculated from the MPt background dataset.

- c. Four maps, one for each quarter of the last reporting year, showing the groundwater elevation iso-contours determined for that quarter and showing the Surface Impoundments perimeter and the groundwater monitoring point and background monitoring point locations.
- d. Graphical and tabular displays of the monitoring data obtained for the historical monitoring data.
- e. Calibration methods and any flow discrepancies of the wastewater flow meters after calibration is performed, if applicable.
- f. The compliance record and any corrective actions taken or planned, which may be needed to bring the discharge into full compliance with the discharge requirements.
- g. Evidence that adequate financial assurances for closure, post-closure maintenance is still in effect. Evidence may include a copy of the renewed financial instrument or a copy of the receipt for payment of the financial instrument. Evidence of adequate financial assurance must be signed by the Corporate Officer.
- h. Evidence that the financial assurance amount is adequate or increase the amount of financial assurance by an appropriate amount if necessary, due to inflation, a change in the approved closure plan, or other unforeseen events.
- i. The Discharger must review the preliminary closure plan, post-closure maintenance plan, annually to determine if significant changes in the operation of the WMU warrant an update to any of these plans. Changes to these plans must be submitted to the Water Board in the annual report.

3. Five Year Monitoring

Every five years sample and analyze for the constituents in the Surface Impoundments and groundwater as described in Tables 2 and 4 (Attachments B and F, respectively)

B. Unscheduled Reports To Be Filed With The Water Board

The following reports must be submitted to the Water Board as specified below:

1. Release from the WMUs

The Discharger must perform the procedures contained in this subsection whenever there is evidence of a release from the WMUs.

a. Physical or Measurably Significant Evidence of a Release from WMUs

The Discharger must immediately notify the Water Board verbally whenever a determination is made that there is physical or measurably significant evidence of a release from any of the WMUs. This verbal notification must be followed by written notification via certified mail within seven days of such determination. Upon such notification, the Discharger may initiate verification procedures or demonstrate that another source other than the WMUs caused evidence of a release (see below).

The notification must include the following information:

- i. The WMU that may have released or be releasing;
- ii. General information including the date, time, location, and cause of the release;
- iii. An estimate of the flow rate and volume of waste involved;
- iv. A procedure for collecting samples and description of laboratory tests to be conducted;
- v. Identification of any water-bearing media affected or threatened;
- vi. A summary of proposed corrective actions; and
- vii. For measurably significant evidence of a release – the monitoring parameters and/or constituents of concern that are involved in the measurably significant evidence of a release from the WMUs;
- viii. For physical evidence of a release – physical and chemical factors that indicate physical evidence of a release.

b. Other Source That May Cause Evidence of a Release From WMUs

The Discharger may make a demonstration that a source other than the WMUs caused evidence of a release. For this case, the Discharger must notify the Water Board of the intention to make this demonstration. The notification must be sent to the Water Board by certified mail within seven days of determining physical or measurably significant evidence of a release.

2. Exceeding the Action Leakage Rate

Exceeding the Action Leakage Rate in Section II.D. of this Board Order is an Adverse Condition. The Discharger must immediately notify the Water Board verbally within 24-hours whenever a determination is made that leakage into the LCRS exceeds the Action Leakage Rate. This verbal

notification must be followed by written notification via certified mail within 7-days of such determination. This written notification must be followed by a technical report via certified mail within 30 days of such determination. The technical report must describe the actions taken to abate the adverse condition and must describe any proposed future actions to abate the adverse condition.

3. Unsaturated Zone Release

The Discharger must immediately notify the Water Board verbally within 24 hours whenever a determination is made that a release into the unsaturated zone has occurred. This verbal notification must be followed by written notification via certified mail within 7 days of such determination. This written notification must be followed by a technical report via certified mail within 30 days of such determination. The technical report must describe corrective actions taken and must describe any proposed future corrective actions.

4. Evaluation Monitoring Program

The Discharger must, within 90 days of verifying a release, submit a technical report, pursuant to the California Water Code, section 13267, subsection (b), proposing an Evaluation Monitoring Program (EMP). If the Discharger decides not to conduct verification procedures, or decides not to make a demonstration that a source other than the WMU is responsible for the release, the release will be considered verified.

The Discharger must, within 90 days of determining “measurably significant” evidence of a release, submit to the Water Board an amended report of waste discharge to establish an evaluation monitoring program meeting the provisions of CCR, title 27, section 20420, subsection (k)(5). The report must include the following information:

- a. Constituents of Concern (COC) Concentrations — the maximum concentration of each COC at each Monitoring Point as determined during the most recent COC sampling event (i.e., under CCR, title 27, section 20420 subsection (g) or (k)(1));
- b. Proposed Monitoring System Changes — any proposed changes to the water quality monitoring systems at the Surface Impoundments necessary to meet the provisions of CCR, title 27, section 20425;
- c. Proposed Monitoring Changes — any proposed additions or changes to the monitoring frequency, sampling and analytical procedures or methods, or statistical methods used at the Surface Impoundments necessary to meet the provisions of CCR, title 27, section 20425; and

- d. Proposed Delineation Approach — a detailed description of the measures to be taken by the Discharger to assess the nature and extent of the release from the Surface Impoundments.

5. Preliminary Engineering Feasibility Study

The Discharger must, within 180 days of verifying the release, submit a Preliminary Engineering Feasibility Study (CCR, title 27, section 20420, subsection (k)[6]) for corrective action.

6. Adverse Conditions

The Discharger must notify the Water Board of any adverse condition in accordance with the notification procedures specified in Item 2.a of the attached "Standard Provisions for Waste Discharge Requirements."

Adverse conditions include but are not limited to:

- a. Slope failure,
- b. Discharge of wastes outside of WMUs, or
- c. Evidence of any release from the WMUs.

V. REPORTING

The Discharger must comply with the following reporting requirements:

A. General Provisions

The Discharger must comply with the "General Provisions for Monitoring and Reporting," dated September 1, 1994, in Attachment "E," which is attached to and made part of this Monitoring and Reporting Program.

B. Violations

If monitoring data indicate violation of Board Order, the Discharger must provide information indicating the cause of violation(s) and action taken or planned to bring the discharge into compliance.

C. Failure to Furnish Reports

Any person failing or refusing to furnish technical or monitoring reports or falsifying any information provided therein is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under California Water Code, section 13268.

D. Summary of Reporting Frequency

On **January 30, 2011**, the first of the regular Quarterly Monitoring Reports, including any data collected prior to this date, must be submitted to the Water Board. Subsequent monitoring reports must be submitted to the Water Board by the **30<sup>th</sup>** day of the month following each monitoring period, according to the following schedule:

TENTATIVE

**Quarterly Report**

<u>Quarter</u>	<u>Monitoring Period</u>	<u>Due Date</u>
1 <sup>st</sup>	January 1 — March 31	April 30
2 <sup>nd</sup>	April 1 — June 30	July 30
3 <sup>rd</sup>	July 1 — September 30	October 30
4 <sup>th</sup>	October 1 — December 31	January 30

**Annual Report**

January 1 — December 31                      January 30

E. Technical Reports

Pursuant to California Water Code, section 13267, subdivision (b):

1. The Discharger must submit to Water Board, for review and acceptance, any revisions to the following documents at least 90 days prior to the start of construction of the proposed WMUs: Construction Design Plans; Construction Drawings and Specifications; Cut and Fill Plans, Slope Stability Analysis, and Construction Quality Assurance Plan.
2. As required in CCR, title 27, section 20324, the Discharger must prepare a Final Documentation Report concerning the construction and placement of the containment system for each WMU. This document must provide all reports previously prepared during construction that show evidence that the Construction Quality Assurance Plan was implemented, as proposed, and that the construction proceeded in accordance with design criteria, plans, and specifications. The Discharger must submit copies of the Final Documentation Report to the Water Board, and certified as prepared by the Construction Quality Assurance officer.
3. No **later than 45 days following** installation of the monitoring wells, and any future monitoring well replacements, the Discharger must submit a technical report discussing the installation of the monitoring system. The report must summarize all work activities associated with the installation of the monitoring system. The report must be certified by a registered civil engineer or a certified engineering geologist. It must contain sufficient information to verify that construction was in accordance with State and/or County well standards.

4. **No later than the 30<sup>th</sup> day following the first eight quarters** of monitoring of any new compliance well, the Discharger must propose for approval by the Water Board's Executive Officer concentration limits that define background water quality for all constituents of concern and monitoring parameters for each point of compliance. The report must be certified by a registered civil engineer or a certified engineering geologist.

Ordered by: \_\_\_\_\_  
HAROLD J. SINGER  
EXECUTIVE OFFICER

Dated: \_\_\_\_\_

Attachments:

- A. Table 1 – LCRS Monitoring Surface Impoundments
- B. Table 2 – Surface Impoundment Monitoring
- C. Table 3 – Paste Tailings Monitoring
- D. Groundwater Monitoring Points-NWTDF, Reclaim Pond
- E. Groundwater Monitoring Point-Product Pond P-28
- F. Table 4 - Quarterly Groundwater Monitoring
- G. General Provisions for Monitoring and Reporting

**ATTACHMENT A**

<b>TABLE 1 – LCRS MONITORING SURFACE IMPOUNDMENTS</b>		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Flow Rate	gallons per day	Weekly
pH	Units	Quarterly (unless dry)
Specific Conductance	µmhos/cm	Quarterly (unless dry)
<u>Monitoring Parameters</u>		
Total Dissolved Solids	mg/L	Once per Event
Chloride	mg/L	Once per Event
Alkalinity Series (carbonate, bicarbonate, and hydroxide, and total)	mg/L	Once per Event
Nitrate (as Nitrogen)	mg/L	Once per Event
Strontium	mg/L	Once per Event
Sodium	mg/L	Once per Event
Sulfate	mg/L	Once per Event
Total Uranium	mg/L	Once per Event
Total Uranium	PCi/L (calculated)	Once per Event
Total Thorium	mg/L	Once per Event
Total Lanthanides	mg/L	Once per Event
<p>An event is defined as an adverse condition – when flow rates detected in the LCRS are at or above the Action Leakage Rates. Additional constituents of concern analyses may be required.</p> <p>Milligrams per liter (mg/L), Pico curies per liter (PCi/L), Micromhos per centimeter (µmhos/cm)</p>		

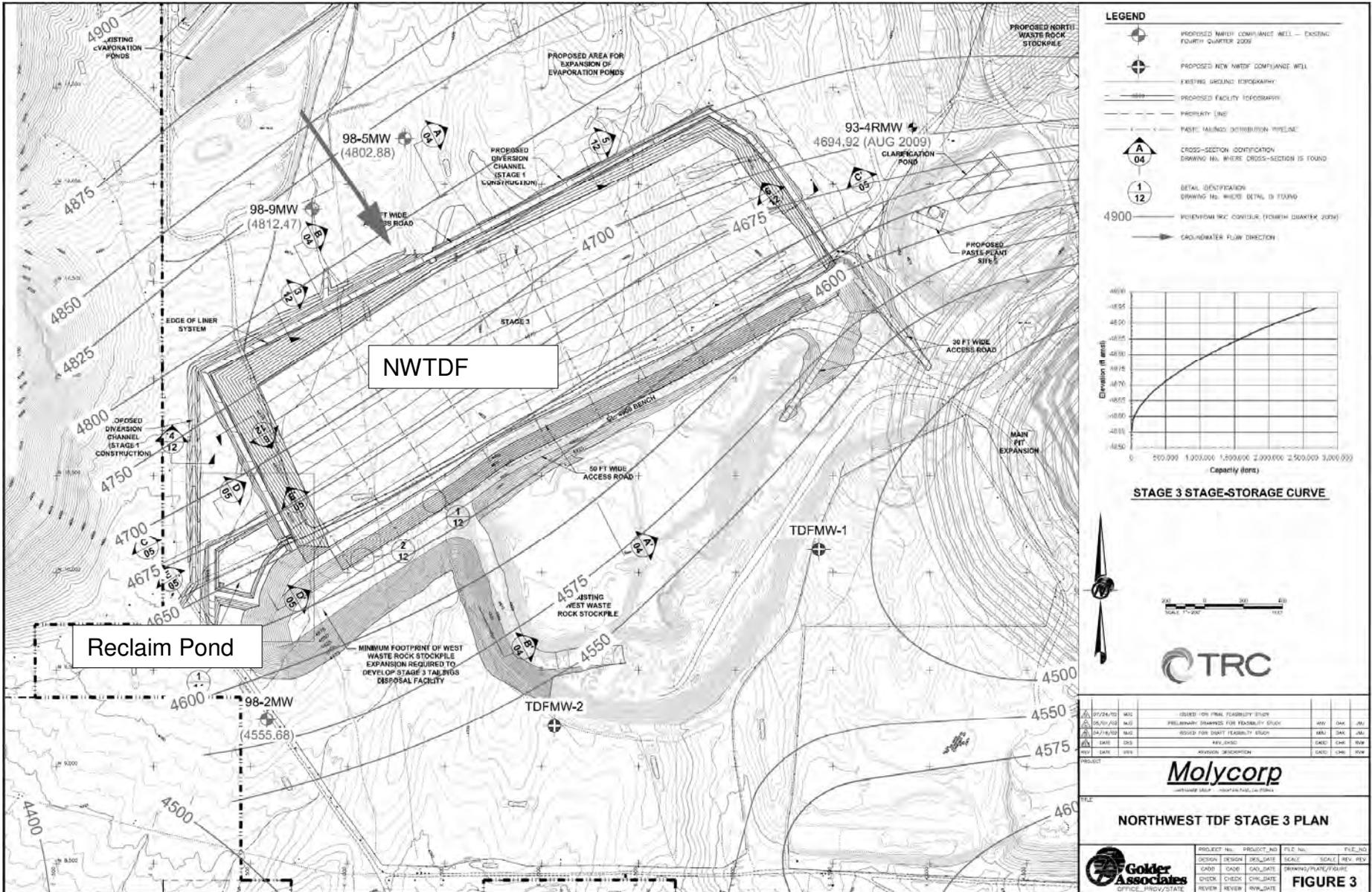
**ATTACHMENT B**

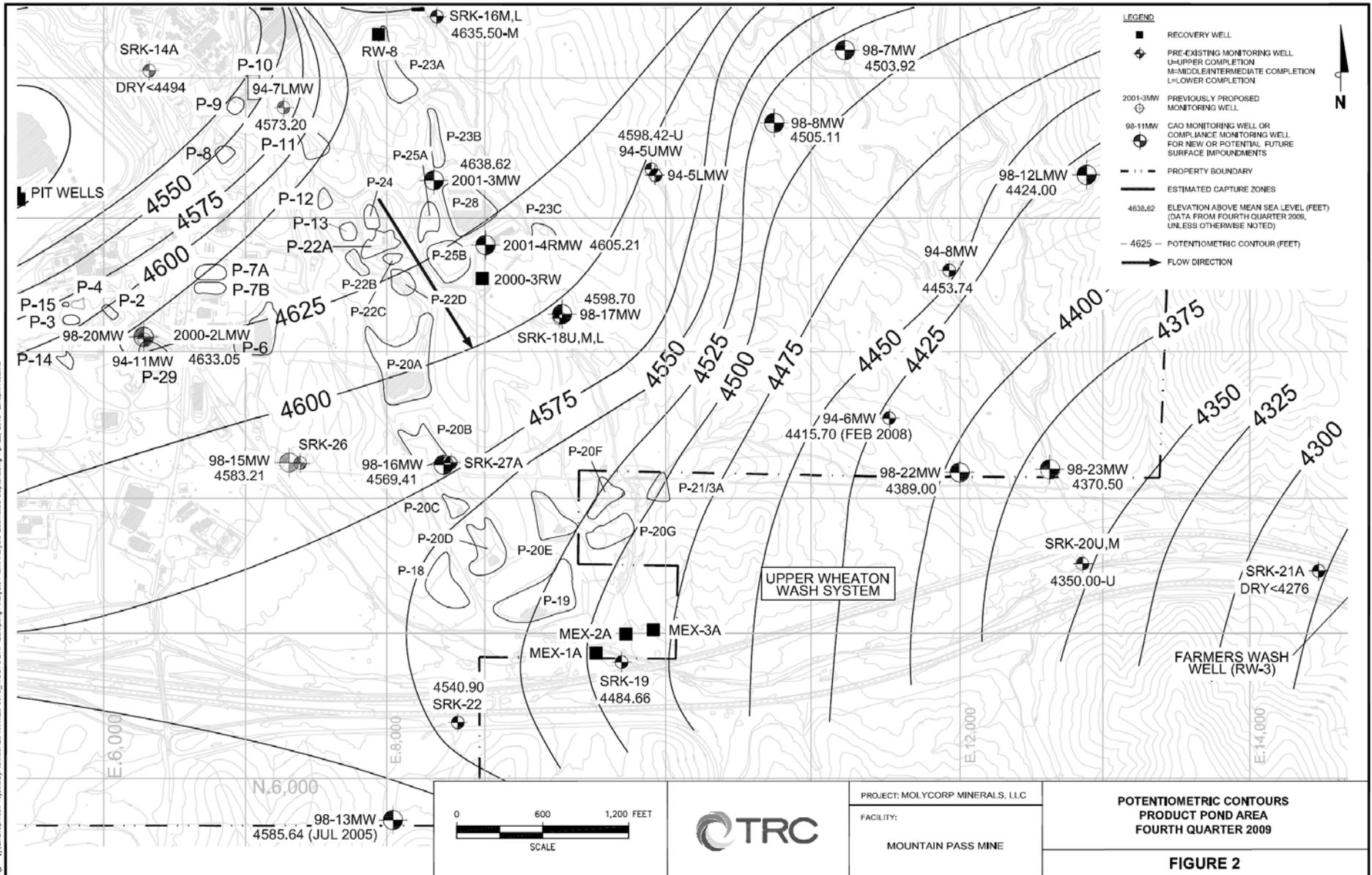
**TABLE 2 – SURFACE IMPOUNDMENTS MONITORING**

<u>Parameters</u>	<u>Units</u>	<u>Frequency</u>
<u>Field Parameter</u>		
Influent Flow Rate	gallons per month	Monthly
Effluent Flow Rate	gallons per month	Monthly
Freeboard	feet and tenths	Weekly
Specific Conductance	µmhos/cm	Weekly
pH	Units	Weekly
<u>Monitoring Parameters and Constituents of Concern</u>		
Wastewater -Solids		
Total Dissolved Solids	mg/L	Quarterly
Total Alkalinity (as calcium carbonate)	mg/L	Quarterly
Arsenic	mg/L – mg/kg	Quarterly
Barium	mg/L – mg/kg	Quarterly
Calcium	mg/L	Quarterly
Chloride	mg/L	Quarterly
Fluoride	mg/L – mg/kg	Quarterly
Lead	mg/L – mg/kg	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly
Manganese	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Strontium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Total Uranium	mg/L – mg/kg <sup>1</sup>	Quarterly
Total Uranium	PCi/L (calculated)	Quarterly
Total Thorium	mg/L – mg/kg <sup>2</sup>	Quarterly
Total Lanthanides	mg/L	Annually <sup>3</sup>
Yttrium	mg/L – mg/kg	Annually <sup>3</sup>
Antimony	mg/L – mg/kg	Every Five Years <sup>3</sup>
Beryllium	mg/L – mg/kg	Every Five Years <sup>3</sup>
Cadmium	mg/L – mg/kg	Every Five Years <sup>3</sup>
Chromium (VI)	mg/L – mg/kg	Every Five Years <sup>3</sup>
Cobalt	mg/L – mg/kg	Every Five Years <sup>3</sup>
Copper	mg/L – mg/kg	Every Five Years <sup>3</sup>
Molybdenum	mg/L – mg/kg	Every Five Years <sup>3</sup>
Nickel	mg/L – mg/kg	Every Five Years <sup>3</sup>
Selenium	mg/L – mg/kg	Every Five Years <sup>3</sup>
Silver	mg/L – mg/kg	Every Five Years <sup>3</sup>
Thallium	mg/L – mg/kg	Every Five Years <sup>3</sup>
Vanadium	mg/L – mg/kg	Every Five Years <sup>3</sup>
Zinc	mg/L – mg/kg	Every Five Years <sup>3</sup>
<sup>1</sup> The Discharger has demonstrated the correlation between isotopic laboratory analysis and mass analysis for uranium. For mass analysis, use laboratory method with detection level of 0.001 mg/L for wastewater and groundwater samples. Higher detection levels are acceptable if the Discharger can demonstrate matrix interference due to high TDS.		
<sup>2</sup> For mass analysis, use laboratory method with detection level of 0.001 mg/L for wastewater and groundwater samples. Higher detection levels are acceptable if the Discharger can demonstrate matrix interference due to high TDS.		
<sup>3</sup> Initial five-year sampling starts with initial wastewater discharge and shall be reported no later than 60 days later.		

ATTACHMENT C

TABLE 3 – Paste Tailings Monitoring		
Parameters	Units	Frequency
<u>Influent flow rate</u>		
Tailings paste discharged	million gallons or tons/day	Monthly
Tailings amendment, (% weight)	percent (%)	Monthly
<u>Field Parameter</u>		
Solids percent by weight	Percent (%)	Quarterly
Slump test	inches	Quarterly
<u>Monitoring Parameters</u>		
Arsenic	mg/kg	Quarterly
Barium	mg/kg	Quarterly
Fluoride	mg/kg	Quarterly
Lead	mg/kg	Quarterly
Total Uranium	mg/kg	Quarterly
Total Thorium	mg/kg	Quarterly
Antimony	mg/kg	Quarterly
Beryllium	mg/kg	Quarterly
Cadmium	mg/kg	Quarterly
Chromium (VI)	mg/kg	Quarterly
Cobalt	mg/kg	Quarterly
Copper	mg/kg	Quarterly
Molybdenum	mg/kg	Quarterly
Nickel	mg/kg	Quarterly
Selenium	mg/kg	Quarterly
Silver	mg/kg	Quarterly
Strontium	mg/kg	Quarterly
Thallium	mg/kg	Quarterly
Vanadium	mg/kg	Quarterly
Zinc	mg/kg	Quarterly
Milligrams per kilogram (mg/kg)		





**ATTACHMENT F**

<b>TABLE 4 – QUARTERLY GROUNDWATER MONITORING</b>		
<u>Parameters</u>	<u>Units</u>	<u>Frequency</u> <sup>1</sup>
<u>Field Parameter</u>		
Groundwater Elevation	Feet and hundredths, (mean sea level datum)	Quarterly
Specific Conductance	µmhos/cm	Quarterly
Temperature	Degrees Fahrenheit(°F) or Centigrade (°C)	Quarterly
Turbidity	(NTU)	Quarterly
Oxidation-Reduction Potential	millivolts	Quarterly
pH	Units	Quarterly
<u>Monitoring Parameters and Constituents of Concern</u>		
Total Dissolved Solids	mg/L	Quarterly
Total Alkalinity (as calcium carbonate)	mg/L	Quarterly
Arsenic	mg/L	Quarterly
Barium	mg/L	Quarterly
Calcium	mg/L	Quarterly
Chloride	mg/L	Quarterly
Fluoride	mg/L	Quarterly
Nitrate (as Nitrogen)	mg/L	Quarterly
Manganese	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Strontium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Total Uranium	mg/L	Quarterly
Total Uranium	PCi/L (calculated) <sup>2</sup>	Quarterly
Total Thorium	mg/L <sup>3</sup>	Quarterly
Cerium	mg/L	Quarterly
Gross Alpha	PCi/L	Quarterly
Gross Beta	PCi/L	Quarterly
Total Lanthanides	mg/L	Annual
Yttrium	mg/L	Annual
Antimony	mg/L	Every Five Years
Beryllium	mg/L	Every Five Years
Cadmium	mg/L	Every Five Years
Chromium (VI)	mg/L	Every Five Years
Cobalt	mg/L	Every Five Years
Copper	mg/L	Every Five Years
Lead	mg/L	Every Five Years
Molybdenum	mg/L	Every Five Years
Nickel	mg/L	Every Five Years
Selenium	mg/L	Every Five Years

Continued next page

**ATTACHMENT F**

**TABLE 4 – QUARTERLY GROUNDWATER MONITORING (continued)**

<u>Parameters</u>	<u>Units</u>	<u>Frequency</u> <sup>1</sup>
Silver	mg/L	Every Five Years
Thallium	mg/L	Every Five Years
Vanadium	mg/L	Every Five Years
Zinc	mg/L	Every Five Years
<sup>1</sup> . All monitoring parameters and constituents of concern must be sampled and analyzed quarterly for the first eight quarters after well installation.		
<sup>2</sup> The Discharger has demonstrated the correlation between isotopic laboratory analysis and mass analysis for uranium. For mass analysis use laboratory method with detection level of 0.001 mg/L for wastewater and groundwater samples. Higher detection levels are acceptable if the Discharger can demonstrate matrix interference due to high TDS.		
<sup>3</sup> For mass analysis, use laboratory method with detection level of 0.001 mg/L for wastewater and groundwater samples. Higher detection levels are acceptable if the Discharger can demonstrate matrix interference due to high TDS.		
<sup>4</sup> . Five-year monitoring shall alternate between the highest and lowest groundwater elevation seasons.		

## ATTACHMENT G

### CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD LAHONTAN REGION

#### **GENERAL PROVISIONS** FOR MONITORING AND REPORTING

##### 1. **SAMPLING AND ANALYSIS**

- a. All analyses shall be performed in accordance with the current edition(s) of the following documents:
  - i. Standard Methods for the Examination of Water and Wastewater
  - ii. Methods for Chemical Analysis of Water and Wastes, EPA
- b. All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Health Services or a laboratory approved by the Regional Board Executive Officer. Specific methods of analysis must be identified on each laboratory report.
- c. Any modifications to the above methods to eliminate known interferences shall be reported with the sample results. The methods used shall also be reported. If methods other than EPA-approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use.
- d. The Discharger shall establish chain-of-custody procedures to insure that specific individuals are responsible for sample integrity from commencement of sample collection through delivery to an approved laboratory. Sample collection, storage, and analysis shall be conducted in accordance with an approved Sampling and Analysis Plan (SAP). The most recent version of the approved SAP shall be kept at the facility.
- e. The Discharger shall calibrate and perform maintenance procedures on all monitoring instruments and equipment to ensure accuracy of measurements, or shall insure that both activities will be conducted. The calibration of any wastewater flow measuring device shall be recorded and maintained in the permanent log book described in 2.b, below.
- f. A grab sample is defined as an individual sample collected in fewer than 15 minutes.
- g. A composite sample is defined as a combination of no fewer than eight individual samples obtained over the specified sampling period at equal intervals. The volume of each individual sample shall be proportional to the discharge flow rate at the time of sampling. The sampling period shall equal the discharge period, or 24 hours, whichever period is shorter.



## 2. OPERATIONAL REQUIREMENTS

### a. Sample Results

Pursuant to California Water Code Section 13267(b), the Discharger shall maintain all sampling and analytical results including: strip charts; date, exact place, and time of sampling; date analyses were performed; sample collector's name; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.

### b. Operational Log

Pursuant to California Water Code Section 13267(b), an operation and maintenance log shall be maintained at the facility. All monitoring and reporting data shall be recorded in a permanent log book.

## 3. REPORTING

- a. For every item where the requirements are not met, the Discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time, and shall submit a timetable for correction.
- b. Pursuant to California Water Code Section 13267(b), all sampling and analytical results shall be made available to the Regional Board upon request. Results shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Board.
- c. The Discharger shall provide a brief summary of any operational problems and maintenance activities to the Board with each monitoring report. Any modifications or additions to, or any major maintenance conducted on, or any major problems occurring to the wastewater conveyance system, treatment facilities, or disposal facilities shall be included in this summary.
- d. Monitoring reports shall be signed by:
  - i. In the case of a corporation, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge originates;
  - ii. In the case of a partnership, by a general partner;
  - iii. In the case of a sole proprietorship, by the proprietor; or

- iv. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.
- e. Monitoring reports are to include the following:
  - i. Name and telephone number of individual who can answer questions about the report.
  - ii. The Monitoring and Reporting Program Number.
  - iii. WDID Number.
- f. Modifications

This Monitoring and Reporting Program may be modified at the discretion of the Regional Board Executive Officer.

#### 4. NONCOMPLIANCE

Under Section 13268 of the Water Code, any person failing or refusing to furnish technical or monitoring reports, or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation under Section 13268 of the Water Code.