

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0058
FOR
COUNTY OF TULARE
FOR
POSTCLOSURE MAINTENANCE AND CORRECTIVE ACTION
BALANCE ROCK MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code Section 13267 and incorporates requirements for: groundwater monitoring and reporting; leachate seep monitoring and reporting, facility monitoring, maintenance and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, Section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order R5-2013-0058, and the Standard Provisions and Reporting Requirements dated January 2012 (SPRRs). Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section E of the WDRs. All monitoring shall be conducted in accordance with the approved November 2002 detection monitoring program plan, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS). All detection monitoring program groundwater monitoring wells shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I, III, and IV.

The Discharger may 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 MRP, are approved by the Executive Officer, and are incorporated into the detection monitoring program plan.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Seep Monitoring
A.4	Facility Monitoring
A.5	Corrective Action Monitoring

1. **Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, Sections 20415 and 20420. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system meets the applicable requirements of Title 27.

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>
M-3	Background
M-5	Background
M-1A	Detection
M-1B	Detection
M-2A	Detection
M-2B	Detection
M-2C	Detection
M-6A	Detection
M-6B	Detection
M-4	Corrective Action
M-7	Corrective Action
M-8	Corrective Action
M-9	Corrective Action

Groundwater samples shall be collected from the background wells, detection monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved detection monitoring program plan. The results groundwater monitoring shall be reported semiannually as required in Section B.1 of this MRP, below.

Once per quarter, including the times of expected highest and lowest elevations of the water levels in the wells, the Discharger shall measure the groundwater

elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored pursuant to Title 27, Section 20415(e)(15). The results shall be reported semiannually as required in Section B.1 of this MRP, below.

Samples collected for COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table IV every five years. Five-year COCs were last monitored in 2011 and shall be monitored again in 2016. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected (see B.2 of Reporting of this MRP below).

2. Unsaturated Zone Monitoring

The facility was permitted and in operation before 1 July 1991; therefore, it qualifies for exemption of unsaturated zone monitoring pursuant to Section 20415(d) of Title 27. The Discharger demonstrated that there is no monitoring device or method designed to operate under the existing subsurface conditions and installation of unsaturated zone monitoring devices would require unreasonable dismantling or relocating of permanent structures. Unsaturated zone monitoring is not required.

3. Leachate Seep Monitoring

Leachate that seeps to the surface from a landfill unit (unit) shall be sampled and analyzed for the field and monitoring parameters listed in Table II upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

4. Facility Monitoring

a. Annual 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 repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problem areas before and after repairs. Any necessary construction, maintenance, or repairs **shall be completed by 31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. **Major Storm Events**

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all unit side slopes for damage **within 7 days** following major storm events (i.e., a storm that causes continuous runoff for at least one hour). The Discharger shall take photos of any problem areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

c. **Five-Year Iso-Settlement Survey for Closed Units**

For closed units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of the engineered alternative composite final cover system. For each portion of the unit, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, Section 21090(e)(1 & 2)]. Results of Standard Reporting shall be in accordance with Section B.6 of this MRP. The most recent iso-settlement map was prepared and submitted in October 2008.

d. **Standard Observations**

The Discharger shall conduct Standard Observations at the facility in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule:

<u>Frequency</u>	<u>Season</u>
Monthly	Wet: 1 October to 30 April
Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

- 1) For the unit:
 - a) Evidence of ponded water at any point on the unit outside of any contact storm water/leachate diversion structures on the active face (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter of the unit:
 - a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and

b) Evidence of erosion and/or of day-lighted refuse.

Results of Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 of this MRP below.

5. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27, Section 20430 and this MRP. Groundwater monitoring wells that are in a corrective action program (CAP) shall be monitored in accordance with the groundwater monitoring requirements in part A.1 of this MRP.

Corrective action monitoring data analysis shall include the following:

- a. Nature and Extent:
 - 1) Comparisons with concentration limits to identify any new or previously undetected constituents at a monitoring point.
- b. Effectiveness of Corrective Action:
 - 1) Preparation of time series plots for representative waste constituents.
 - 2) Trend analysis for each waste constituent.
 - 3) The need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual monitoring report and summarized in the Annual Report, as specified under reporting Section B.1 and B.2 of this MRP below. The semiannual monitoring reports shall also include a discussion of the progress of corrective action toward returning to compliance with the WQPS, as specified in Section 20430(h) of Title 27.

B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	31 August, 28 February
B.2	Annual Monitoring Report	31 December	28 February

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	2013 and Every Five Years Thereafter
B.7	Financial Assurances Report	31 December	1 October each year

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this MRP and as required in WDRs Order R5-2013-0058 and the SPRRs (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27.

The results of all monitoring conducted at the site shall be reported to the Central Valley Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

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 throughout the life of the facility including the postclosure maintenance period. Such records shall be legible and shall show the following for each sample:

- a) Sample identification and 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 MDL and PQL for each analysis. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **31 August** and **28 February**. Each semiannual monitoring report shall contain at least the following:
 - a) For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved detection monitoring program plan.
 - b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation

monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, Section 20415(e)(15)].

- d) Tabulated monitoring data detected during the reporting period for all monitoring points and constituents for groundwater and leachate seeps. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through II unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter or five-year COC when five year COC sampling is conducted, as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedences of a concentration limit.
 - g) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.
 - h) A summary of inspection, leak search, and repair of final covers on any closed units in accordance with an approved final postclosure maintenance plan as required by Standard Closure and Postclosure Maintenance Specifications G.26 through G.29 of the SPRRs.
2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **28 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
- a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a five-year COC event was performed, then these parameters shall also be graphically presented. 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. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

- b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - c) All historical monitoring data for which there are detectable results and data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, Section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
 - d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
 - e) 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.
 - f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g) Every fifth year, update concentration limits for each monitoring parameter at each monitoring well based on the new data set.
 - h) A comprehensive discussion of any CAP required by this MRP under Section A.5.
3. **Seep Reporting:** The Discharger shall report by telephone 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) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d) Verification that samples have been submitted for analyses of the field parameters and monitoring parameters listed in Table II of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective action measures underway or proposed, and corresponding time schedule.

4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.4.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events, the Discharger shall report any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste containment facilities and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs. Minor damage and subsequent repairs shall be reported in the next self-monitoring report. Refer to Section A.4.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for the unit every five years pursuant to Title 27, Section 21090(e). Refer to Section A.4.c of this MRP, above.
7. **Financial Assurances Report:** By **1 October** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for postclosure maintenance and corrective action. Refer to Financial Assurances Specifications D.1 through D.2 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For the unit, the WQPS shall consist of all COCs, the concentration limit for each COC, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The WQPS for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the WQPS other than annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

- a. Identify all distinct bodies of surface and ground water that could be affected in the event of a release from the unit or portion of the 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 groundwater monitoring program. The map shall include the point of compliance in accordance with Title 27, Section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and COCs that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, Section 20415(e)(8)(A-D)] or Section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, Section 20415(e)(8)(E) and Section 20420(j)(1-3).

The WQPS shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the facility, the Discharger may request modification of the WQPS.

The Discharger proposed the methods for calculating concentration limits in the September 2002 *Water Quality Protection Standard Report Update*. Pursuant to Title 27 CCR Section 20415(e)(10)(B), for each naturally occurring inorganic COC, the concentration limit (applicable suite of background data) for that constituent shall be redetermined each semiannual monitoring period according to the following "moving window" formula, and the Discharger shall use the resulting concentration limit to apply the parametric Interwell Upper Prediction Limit analysis method featured in the SanitasTM for Groundwater statistical software package, unless the software indicates that a different method (e.g., the nonparametric version of the same method) is more appropriate. SanitasTM Batch Mode is performed on the entire monitoring well network for all constituents. Constituents that indicate an exceedence under Batch Mode are further analyzed under SanitasTM Interactive Mode to verify or refute whether the prediction limit established for the constituent was appropriate for the background data set. For each reporting period subsequent to the initial reporting period, the Discharger shall create the new concentration limit, for that constituent, by taking the prior reporting period's background data, adding the

newest datum, for that constituent, from background monitoring wells and removing the oldest datum. Monitoring wells M-3 and M-5 are currently being used for the collection of background data.

The WQPS shall be updated, at a minimum, every five years; or as required by natural changes in background water quality.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, hazardous constituents, and physical parameters that provide a reliable indication of a release from a unit. The monitoring parameters for the unit are those listed in Tables I and II for the specified monitored medium, and Table III.

3. Constituents of Concern

The COCs include a larger group of waste constituents and hazardous constituents that are reasonably expected to be in or derived from waste contained in the unit, and are required to be monitored every five years [Title 27, Sections 20395 and 20420(g)]. The COCs for the unit at the facility are those listed in Tables I through II for the specified monitored medium, and Table IV. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a CAP. The last five-year COC report was submitted to the Central Valley Water Board in the October 2011 *Annual Monitoring Report*, and **5-year COCs are due to be monitored again in 2016.**

4. Concentration Limits

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

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

5. Retesting Procedures for Confirming Evidence of a Release

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.45 of the SPRRs, then:

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the

non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.

- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

6. 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.

7. Compliance Period

The compliance period for each unit shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, Section 20410].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, at which monitoring is conducted and at which the WQPS applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and whether the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall 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.

The Discharger shall implement the above monitoring program on the effective date of this Program.

Original signed by:

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

31 May 2013

(Date)

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table III)	ug/L ²	Semiannual	Semiannual
Five-Year Constituents of Concern (see Table IV)			
Total Organic Carbon	mg/L	5 years	5 years
Inorganics (dissolved)	ug/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	5 years
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	5 years

¹ Milligrams per liter

² Micrograms per liter

TABLE II
LEACHATE SEEP MONITORING¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table III)	ug/L	Annually	Annually

¹ Leachate seeps shall be sampled and analyzed for the Field and Monitoring Parameters in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

TABLE III

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

USEPA Method 8260B

Acetone
Acrylonitrile
Benzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)

TABLE III
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE IV
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	200.8
Antimony	200.8
Barium	200.8
Beryllium	200.8
Cadmium	200.8
Chromium	200.8
Cobalt	200.8
Copper	200.8
Silver	200.8
Tin	200.8
Vanadium	200.8
Zinc	200.8
Iron	200.8
Manganese	200.7
Arsenic	200.8
Lead	200.8
Mercury	245.1
Nickel	200.8
Selenium	200.8
Thallium	200.8
Cyanide	SM ¹ 4500-CN
Sulfide	SM 4500-SF

Volatile Organic Compounds, extended list:

USEPA Method 8260B

- Acetone
- Acetonitrile (Methyl cyanide)
- Acrolein
- Acrylonitrile
- Allyl chloride (3-Chloropropene)
- Benzene
- Bromochloromethane (Chlorobromomethane)
- Bromodichloromethane (Dibromochloromethane)
- Bromoform (Tribromomethane)
- Carbon disulfide
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane (Ethyl chloride)
- Chloroform (Trichloromethane)
- Chloroprene
- Dibromochloromethane (Chlorodibromomethane)
- 1,2-Dibromo-3-chloropropane (DBCP)
- 1,2-Dibromoethane (Ethylene dibromide; EDB)

TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)

TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT

TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone

TABLE IV

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylNitrosamine)
N-Nitrosodiethylamine (DiethylNitrosamine)
N-Nitrosodimethylamine (DimethylNitrosamine)
N-Nitrosodiphenylamine (DiphenylNitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylNitrosamine)
N-Nitrosomethylethylamine (MethylethylNitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE IV
FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151

2,4-D (2,4-Dichlorophenoxyacetic acid)

Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)

Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)

2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141

Atrazine

Chlorpyrifos

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)

Diazinon

Dimethoate

Disulfoton

Methyl parathion (Parathion methyl)

Parathion

Phorate

Simazine

¹ Standard Methods

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0058

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF TULARE
FOR
POSTCLOSURE MAINTENANCE AND CORRECTIVE ACTION
BALANCE ROCK MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

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

1. The County of Tulare (hereinafter Discharger) owns and maintains the closed Balance Rock Municipal Solid Waste Landfill (facility), on Tulare County Road M-9 (Sugarloaf Road), about 0.5 miles north of the community of Balance Rock, in Section 29, T24S, R31E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a municipal solid waste (MSW) landfill regulated under authority given in the California Water Code, Section 13000 et seq.; California Code of Regulations, Title 27 ("Title 27"), Section 20005 et seq.; and Title 40, Code of Federal Regulations (40 CFR) Section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The 18.16-acre facility contains one closed unlined 1.67-acre waste management unit (Unit) as shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is a portion of Assessor's Parcel Numbers (APN) 345-300-014 and 345-310-058.
3. On 14 June 2001, the Central Valley Water Board adopted Waste Discharge Requirements Order R5-01-164 in which the Unit was classified as a Class III Unit for the discharge of municipal solid waste. This Order continues to classify the Unit as a Class III Unit in accordance with Title 27.
4. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations Section 258, and are hereafter referred to as either "Subtitle D" in reference to the RCRA federal law that required the regulations or "40 C.F.R. Section 258.XX". These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in waste discharge requirements (WDRs) for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the

containment provisions and the provisions that are either more stringent or that do not exist in Title 27.

5. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through G of these WDRs below, and in the Standard Provisions and Reporting Requirements dated January 2012 (SPRRs), which are attached hereto and made part of this Order by reference. Monitoring and reporting requirements are included in Monitoring and Reporting Program R5-2013-0058 (MRP) and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be "standard" and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through G) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
6. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, Section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

SITE DESCRIPTION

7. The facility is located near the top of a divide between two watersheds on the western flank of the Sierra Nevada Mountain Range approximately 16 miles southeast of the City of Porterville. The facility is underlain by 10 to 30 feet of alluvial deposits, which are underlain by decomposed granite and fractured granite.
8. The facility is not within a fault hazard zone. The closest Holocene fault is approximately 6 miles to the east. Recorded magnitude of a seismic event along this fault ranges between 4.5 – 4.9 on the Richter scale. The maximum credible acceleration for the site is 0.14 g.
9. Land uses within one mile of the facility are mountain residences and agriculture.
10. There are approximately 40 domestic wells within one mile of the site. An unnamed intermittent tributary runs from the facility southward to Poso Creek. No surface springs or other sources of groundwater supply have been observed.
11. The measured mean hydraulic conductivity of the decomposed granite underlying the facility (first encountered groundwater zone), is approximately 2.3×10^{-4} centimeters/second (cm/sec).

12. The facility receives an average of 32 inches of precipitation per year based on the Tulare County Flood Control District map entitled *Flood Control Master Plan*, dated April 1971. The mean pan evaporation is 84 inches per year as measured at the Isabella Dam Station.
13. The 100-year, 24-hour precipitation event for the facility is estimated to be 7.5 inches, based on the U.S. Department of Commerce's map entitled *100-Year, 24-Hour Precipitation*, dated December 1972.
14. The facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Tulare County, California, Community-Panel Number 065066 0050 A.
15. A storm water percolation/evaporation basin is located immediately south of the Unit as shown on Attachment B. The storm water percolation/evaporation basin captures runoff from the facility and retains it on-site.

WASTE AND UNIT CLASSIFICATION

16. The Discharger previously disposed of MSW, which is defined in §20164 of Title 27. The Unit was closed in 2003.
17. The site characteristics where the Unit is located (see Finding No. 11) do not meet the siting criteria for a new Class III landfill contained in §20260(a) and (b)(1) of Title 27. As such, the site is not suitable for operating new Units or lateral expansions of existing Units for the discharge and containment of wastes as described in Finding No. 16, without the construction of additional waste containment features in accordance with §20260(b)(2) of Title 27 and State Water Resources Control Board Resolution 93-62.

SURFACE WATER AND GROUNDWATER CONDITIONS

18. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
19. Surface drainage is southward toward Poso Creek, which is in the Poso Creek Hydrologic Area (555.50) of the Southern Sierra Hydrologic Unit of the Tulare Lake Basin.
20. The designated beneficial uses of Poso Creek, as specified in the Basin Plan, are agricultural supply, water contact and non-contact water recreation, warm and cold fresh water habitat, wildlife habitat, groundwater recharge, and fresh water replenishment.
21. The first encountered groundwater occurs within the decomposed granite at depths currently ranging between 6 and 65 feet below ground surface (bgs) depending on location at the facility. Based on groundwater elevation measurements provided by the Discharger, historical groundwater elevations have ranged between 4,969 and 4,939 feet

mean sea level (MSL) at background groundwater monitoring well M-3 and between 4,852 and 4,858 feet MSL at corrective action groundwater monitoring well M-8. The groundwater is unconfined. The depth to groundwater fluctuates seasonally as much as 25 feet.

22. Monitoring data indicate background groundwater quality for first encountered groundwater has an electrical conductivity (EC) ranging between 270 and 370 micromhos/cm, with total dissolved solids (TDS) ranging between 190 and 260 milligrams per liter (mg/L).
23. The direction of groundwater flow is generally toward the southwest, but flow directions can be locally influenced by fractures in the underlying granite. The average groundwater gradient ranges between approximately 0.042 and 0.065 feet per foot with an estimated groundwater flow velocity ranging from approximately 145 to 200 feet per year.
24. The facility is not within a Detailed Analysis Unit, but the designated beneficial uses of the groundwater, as specified in the Basin Plan are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

25. The existing groundwater monitoring network for the facility consists of background monitoring wells M-3 and M-5; detection monitoring wells M-1A, M-1B, M-2A, M-2B, M-2C, M-6A, and M-6B; and corrective action monitoring wells M-4, M-7, M-8, and M-9 as shown on Attachment B.
26. Unsaturated zone detection monitoring for leachate is not being conducted at the facility. Installing an unsaturated zone monitoring system for leachate (i.e., lysimeters) beneath the Unit at this time would not be practical based on the fact the existing Unit is small (1.67 acres), closed, and has already leaked waste constituents to groundwater. The Discharger is conducting semiannual landfill gas (LFG) monitoring around the perimeter of the facility. The LFG wells are G-1, G-2, G-3R, G-4R, G-5, and G-6, which are shown on Attachment B. Samples from the wells are analyzed for methane and Volatile Organic Compounds (VOCs).
27. The Discharger's detection monitoring program for groundwater at the facility satisfies the requirements contained in Title 27.
28. Volatile organic compounds are often detected in a release from a MSW landfill and are often associated with releases of LFG rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, Sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance

with Title 27, Sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

29. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, Section 20080(a)(1). Water Code Section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
30. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a landfill unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.
31. For a naturally occurring constituent of concern (COC), Title 27 requires concentration limits for each constituent of concern be determined as follows:
 - a. By calculation in accordance with a statistical method pursuant to Title 27, Section 20415(e)(8); or
 - b. By an alternate statistical method meeting the requirements of Title 27, Section 20415(e)(8)(E).
32. The Discharger submitted a Water Quality Protection Standard (WQPS) plan in November 2000. The WQPS report proposed statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. After several revisions to the Discharger's WQPS plan, Central Valley Water Board staff approved the WQPS plan in November 2002. The WQPS and approved data evaluation methods are included in MRP R5-2013-0058.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

33. Volatile organic compounds that are not naturally occurring have been detected in groundwater along the Point of Compliance. The VOCs detected in groundwater are benzene; chlorobenzene; tetrachloroethylene (PCE); trichloroethylene (TCE), 1,1-dichloroethylene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA); 1,1-dichloroethane (1,1-DCA); cis-1,2-dichloroethene (cis-1,2-DCE); and 1,4-dichlorobenzene (1,4-DCB). Vinyl chloride has been detected at trace levels. The latest semiannual monitoring report (First Semiannual Monitoring Report, 2012) stated that only chlorobenzene; 1,1-DCA; and cis-1,2-DCE were detected in Point of Compliance groundwater monitoring wells, indicating a downward trend in VOC concentrations.
34. Inorganic waste constituents detected in Point of Compliance groundwater monitoring wells at concentrations statistically exceeding their respective background concentrations include mercury, arsenic, barium, sodium, selenium, TDS, EC, nitrate, manganese, and magnesium. The latest self-monitoring report (First Semiannual Monitoring Report, 2012) detected several inorganic waste constituents (e.g., arsenic, barium, manganese, iron, and mercury) that statistically exceeded their respective background concentrations. Iron and manganese exceeded their respective Secondary Maximum Contaminant Levels. No inorganic waste constituent exceedences of background concentrations occurred at evaluation/corrective action groundwater monitoring wells.
35. Waste Discharge Requirements Order 5-01-164, directed the Discharger to complete an evaluation monitoring program (EMP) and establish a corrective action program (CAP) in accordance with a time schedule. The Discharger adequately determined the nature and lateral and vertical extent of the inorganic waste constituent and VOC release. The EMP was deemed complete on 20 October 2006. The nature of the release was demonstrated to be VOCs, originating from landfill gas, and inorganic waste constituents (see Finding Nos. 33 and 34). The lateral extent of the comingled VOC and inorganic waste constituent plumes is immediately adjacent to the Unit's western and southern boundaries. The vertical extent is approximately 137 feet below ground surface. The comingled VOC and inorganic waste constituent plumes appear stable and are not migrating hydraulically downgradient from the Point of Compliance.
36. The Discharger submitted an initial updated engineering feasibility study (EFS) for a CAP on 30 August 2006 in accordance with Section 20425(c) of Title 27. The first of several updated feasibility studies was submitted on 28 September 2006. A final EFS for a CAP proposal, which also functioned as a revised report of waste discharge (RWD), was submitted on 27 March 2009. Central Valley Water Board staff on 6 July 2009, concurred with the Discharger's EFS for a CAP proposal. The EFS for a CAP concluded that the most technically and economically feasible corrective action alternative for VOCs is monitored natural attenuation. The EFS for a CAP concluded that the most technically and economically feasible corrective action alternative for inorganic waste constituents is the injection of calcium polysulfide (CaS_x) at three temporary injection points to remediate

inorganic waste constituents (soluble mercury and other soluble metals) by converting them into insoluble and immobile solids, and potentially the injection of an oxidizing reagent and/or phosphate binder to stabilize mercury and other metals in groundwater if it is determined that CaSx is unsuccessful in remediation.

37. The Discharger proposes to monitor each groundwater monitoring well for mercury, other metals, and CaSx by-products (metal compounds and odor) on a semiannual basis for up to four years to allow sufficient time for CaSx to remediate groundwater in the vicinity of Point of Compliance groundwater monitoring wells. Additionally, the Discharger proposes to continue monitoring VOCs and inorganic waste constituents at each groundwater monitoring well on a semiannual basis.
38. The Discharger proposes to conduct trend analyses of inorganic waste constituents in groundwater utilizing at least eight data points from each groundwater monitoring well, acquired prior to the CaSx injection, in order to statistically evaluate decreases or increases in inorganic waste constituent concentrations, including CaSx by-products, in groundwater following CaSx injections.
39. The Discharger proposes to submit a preliminary assessment report one year after the initial injection of CaSx that evaluates CaSx by-product impacts to groundwater in addition to the efficacy of CaSx in remediating mercury and other metals in groundwater.
40. The Discharger proposes to submit a technical report with an evaluation of statistical analyses of groundwater monitoring data and the results of mercury and other metals remediation by CaSx, four years following the initial injection of CaSx to groundwater.
41. The Discharger proposes to submit a detailed work plan as part of an amended RWD to revise the EFS for a CAP for the use of an oxidizing reagent and/or phosphate binder to stabilize mercury and other metals in groundwater if it determines that CaSx is unsuccessful for in situ remediation. Additionally, the Discharger states that a discussion of potential impacts by oxidizing reagent and/or phosphate binder by-products will be included in an amended RWD.

LANDFILL CLOSURE

42. The Discharger completed construction of an engineered alternative composite final cover system in October 2003. The final cover system consists of the following: a two-foot thick soil foundation layer; a geosynthetic clay liner (GCL), a geosynthetic drainage layer, and a two-foot thick vegetated soil layer.

LANDFILL POSTCLOSURE MAINTENANCE

43. The *Final Closure and Postclosure Maintenance Plan* includes inspection, maintenance, and monitoring of the landfill during the postclosure maintenance period, and includes a postclosure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, groundwater monitoring

wells, access roads, landfill gas monitoring system, groundwater corrective action system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to water quality, whichever is greater.

44. Once every five years during the postclosure maintenance period, iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years, pursuant to Title 27, Section 21090(e)(2). The most recent iso-settlement map for the facility was submitted in October 2008.
45. The completed final cover will be monitored for performance and for damage or defects by visual inspection and by moisture sensor monitoring pursuant to California Code of Regulations, Title 27, Section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure Construction Quality Assurance Plan.

FINANCIAL ASSURANCES

46. Title 27, Sections 21840 and 22211 requires a cost estimate for landfill postclosure maintenance. The *Final Closure and Postclosure Maintenance Plan* includes a cost estimate for landfill postclosure maintenance. In an 8 November 2012 letter and inspection report, the Discharger was notified that a financial assurance review for postclosure maintenance was due by 1 October 2012 in accordance with Provision H.11 of Waste Discharge Requirements Order R5-01-164. On 3 December 2012, the Discharger submitted a financial assurance review for postclosure maintenance for 2012 stating that the postclosure maintenance fund balance for all of its landfills, including the Balance Rock Landfill, is \$16,862,808.
47. Title 27, Section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. In an 8 November 2012 letter and inspection report, the Discharger was notified that a financial assurance review for corrective action was due by 1 October 2012 in accordance with Provisions H.10 of Waste Discharge Requirements Order R5-01-164. On 3 December 2012, the Discharger submitted a financial assurance review for corrective action for 2012 stating that the corrective action fund balance for all of its landfills, including the Balance Rock Landfill, is \$5,149,446.

CEQA AND OTHER CONSIDERATIONS

48. The action to revise waste discharge requirements for this existing facility is not subject to the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, Section 15301.

49. This order implements:

- a. *The Water Quality Control Plan for the Tulare Lake Basin, Second Edition*;
- b. The prescriptive standards and performance goals of California Code of Regulations, Title 27, Section 20005 et seq., effective 18 July 1997, and subsequent revisions;
- c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005; and
- d. The applicable provisions of Title 40 C.F.R. Section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.

50. Based on the threat and complexity of the discharge, the facility is classified 3B as defined below:

- a. Category 3 threat to water quality, defined as, "Those discharges of waste that could degrade water quality without violating water quality objectives, or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2."
- b. Category B complexity, defined as, "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units."

51. Water Code Section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Central Valley Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

52. The technical reports required by this Order and the attached MRP R5-2013-0058 are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

53. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
54. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
55. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
56. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code Section 13320 and California Code of Regulations, Title 23, Sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code Sections 13263 and 13267, that Order 5-01-164 is rescinded except for purposes of enforcement, and that the County of Tulare its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of any additional waste at this facility is prohibited.
2. The Discharger shall comply with all applicable Standard Prohibitions listed in Section C of the SPRRs.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs.

D. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for postclosure maintenance for the landfill, adjusted for inflation annually. A report regarding financial assurances for postclosure maintenance specifically for this facility shall be submitted to the Central Valley Water Board by **1 October of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
2. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the facility in at least the amount of the annual inflation-adjusted cost estimate. A report regarding financial assurances for corrective action specifically for this facility shall be submitted to the Central Valley Water Board by **1 October of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
3. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs.

E. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the provisions of Title 27, in accordance with MRP R5-2013-0058 and the Standard Monitoring Specifications, listed in Section I of the SPRRs, for the groundwater detection monitoring program and for groundwater corrective action monitoring.
2. The Discharger shall comply with the WQPS as specified in this Order, MRP R5-2013-0058, and the SPRRs.
3. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, Section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP R5-2013-0058.

4. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the WQPS using procedures specified in MRP R5-2013-0058 and the Standard Monitoring Specifications in Section I of the SPRRs.
5. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs.

F. CORRECTIVE ACTION SPECIFICATIONS

1. **By 30 November 2013**, the Discharger shall implement a CAP pursuant to Section 20430 of Title 27, to remediate the release of waste constituents from the Unit and to ensure compliance with the WQPS.
2. **By 28 February 2014**, the Discharger shall submit a report for Executive Officer approval that identifies CaSx by-products, proposes the monitoring of CaSx by-products in conjunction with MRP R5-2013-0058, proposes analyses for the CaSx by-products, and the frequency of monitoring of the CaSx by-products.
3. **By 14 November 2014**, the Discharger shall submit a preliminary assessment report that evaluates CaSx by-product impacts to groundwater in addition to the efficacy of CaSx in remediating mercury and other metals in groundwater, and an evaluation of natural attenuation in remediating VOCs in groundwater.
4. **By 30 November 2017**, the Discharger shall submit a technical report with statistical analyses of groundwater monitoring data that: 1) summarizes the results of mercury and other metal remediation by CaSx and determines whether CaSx corrective action methods should cease, continue, or an alternative corrective action method needs to be implemented to remediate mercury and other metals in groundwater; and 2) evaluates the results of VOC remediation by natural attenuation and whether monitored natural attenuation of VOCs should cease, continue, or an alternative corrective action method be implemented.
5. **By 30 June 2018**, the Discharger shall submit an amended RWD for Executive Officer approval, to make appropriate changes to the EFS for a CAP that includes a detailed work plan for the use of an oxidizing reagent and/or phosphate binder in remediation of mercury and other metals, and/or other alternative correction action methods to remediate mercury and other metals, and VOCs, if it is determined in the technical report (see Corrective Action Specification F.4.) that CaSx and natural attenuation corrective action methods are unsuccessful.
6. The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release (mercury and other metals, and VOCs), CaSx by-products, and the progress of corrective action. Sample collection and analysis shall coincide with Groundwater Detection Monitoring A.1 of MRP R5-2013-0058.

7. Corrective action measures may be terminated when the Discharger demonstrates to the satisfaction of the Executive Officer that the concentrations of all COCs (mercury and other metals, and VOCs) are reduced to levels below their respective concentration limits throughout the entire zone affected by the release.
8. After suspending the corrective action measures, the Discharger shall demonstrate that the concentration of each COC (mercury and other metals, and VOCs) in each sample from each monitoring point remained at or below its concentration limit for at least three consecutive years, beginning immediately after the suspension of corrective action measures.
9. Upon completion of corrective action, the Discharger shall certify, in writing, that corrective action has been completed in compliance with Title 27 and the WDRs. The certification shall be signed by a California Registered Civil Engineer or Professional Geologist.
10. If at any time, either the Discharger or the Executive Officer determines that the CAP utilizing CaSx is unsuccessful in remediating mercury and other metals in groundwater, is exacerbating groundwater degradation by the generation of by-products resulting from CaSx injections, or that natural attenuation of VOCs is unsuccessful in remediating VOCs (i.e. does not satisfy the provisions of Section 20430 of Title 27), the Discharger shall, **within 90 days of making the determination, or of receiving written notification from the Executive Officer of such determination**, submit an amended RWD for Executive Officer approval, to make appropriate changes to the EFS for a CAP that includes a detailed work plan for the use of an oxidizing reagent and/or phosphate binder in remediating mercury and other metals, and/or other alternative correction action methods to remediate mercury and other metals, and/or VOCs.

At a minimum, a determination that the CAP is unsuccessful in remediating waste constituents (mercury and other metals, and/or VOCs) may result if one of the following conditions is met:

- a) Waste constituent concentrations in Point of Compliance groundwater monitoring wells exhibit an increasing trend not originally predicted after implementation of corrective action; or
- b) Point of Compliance groundwater monitoring wells exhibit significant waste constituent concentration increases indicative of a new or renewed release; or
- c) Significant waste constituent concentrations are identified in corrective action groundwater monitoring wells M-4, M-7, M-8, or M-9, which are located outside of the original plume boundary; or

- d) Waste constituent concentrations are not decreasing at a sufficient rate to meet the remediation objectives; or
- e) CaSx by-products exacerbate groundwater degradation.

The amended RWD shall include the following:

- a. A discussion as to why existing corrective action measures have been ineffective or insufficient.
 - b. A revised evaluation monitoring plan if necessary to further assess the nature and extent of the release.
 - c. A discussion of corrective action needs and alternatives.
 - d. A discussion of the potential impacts to groundwater that may occur as a result of by-products generated from an oxidizing reagent and/or phosphate binder, or another in-situ remediation method.
 - e. Proposed alternative corrective action measures, as necessary, for:
 - 1) Source control,
 - 2) Groundwater cleanup, and/or
 - 3) Landfill gas control.
 - f. A plan to monitor the progress of corrective action measures consistent with MRP R5-2013-0058.
 - g. Cost estimates for implementing additional corrective action, including monitoring.
11. **Within one year** of the determination that CaSx is unsuccessful in remediating mercury and other metals in groundwater and/or that natural attenuation is unsuccessful in remediating VOCs in groundwater the Discharger needs to implement oxidizing reagent and/or phosphate binder remediation methods, or another alternative corrective action method to remediate mercury and other metals, and/or implement an alternative corrective action method to natural attenuation to remediate VOCs.

G. PROVISIONS

- 1. The Discharger shall maintain a copy of this Order at the offices of the Tulare County Resource Management Agency, including the MRP R5-2013-0058 and the SPRRs, and make it available at all times to facility maintenance personnel, who shall be familiar with its contents, and to regulatory agency personnel.

2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP R5-2013-0058.
4. The Discharger shall comply with the applicable portions of the SPRRs.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
6. All reports required by this Order shall be submitted pursuant to Water Code Section 13267.
7. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
A. Corrective Action	
1. Implement corrective action (see Corrective Action Specification F.1)	By 30 November 2013
2. Submit a report for Executive Officer approval that identifies CaSx by-products, proposes CaSx by-products monitoring within MRP R5-2013-0058, proposes analyses for the CaSx by-products, and the frequency of monitoring CaSx by-products. (see Corrective Action Specification F.2)	By 28 February 2014
3. Submit a preliminary assessment report that identifies and evaluates CaSx by-products and evaluates the efficacy of CaSx in remediating mercury and other metals in groundwater. (see Corrective Action Specification F.3)	By 14 November 2014
4. Submit a technical report that summarizes the results of mercury and other metal remediation by CaSx and evaluates the results of VOC remediation by natural attenuation. (see Corrective Action Specification F.4)	By 30 November 2017

5. Submit an amended RWD for Executive Officer approval, to make appropriate changes to the EFS for a CAP and/or propose alternative correction action methods to remediate mercury and other metals, and/or VOCs, if it is determined in the technical report (see report Corrective Action Specification F.4.), that CaSx and/or natural attenuation corrective action methods are unsuccessful.
(see Corrective Action Specification F.5)

By 30 June 2018

6. Submit an amended RWD for Executive Officer approval, to make appropriate changes to the EFS for a CAP and/or propose alternative correction action methods to remediate mercury and other metals, and/or VOCs, if it is determined by either the Discharger or the Executive Officer, that CaSx and/or natural attenuation corrective action methods are unsuccessful.
(see Corrective Action Specification F.10)

Within 90 days of making a determination or of receiving written notification from the Executive Officer of such a determination

7. Implement phosphate oxidizing reagent and/or binder remediation or an alternative correction method action to remediate mercury and other metals in groundwater, and/or implement an alternative corrective action method to remediate VOCs.
(see Corrective Action Specification F.11)

Within one year of Executive Officer approval of the amended RWD to make appropriate changes to the EFS for a CAP

B. Financial Assurance Review

1. Annual Review of Financial Assurance for postclosure maintenance
(see Financial Assurance Specification D.1).
2. Annual Review of Financial Assurance for initiating and completing corrective action
(see Financial Assurance Specification D.2).

1 October of each year

1 October of each year

8. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 31 May 2013.

Original signed by:

PAMELA C. CREEDON, Executive Officer

INFORMATION SHEET

ORDER R5-2013-0058
COUNTY OF TULARE
POSTCLOSURE MAINTENANCE AND CORRECTIVE ACTION
BALANCE ROCK MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

The County of Tulare (hereafter Discharger) owns and maintains a municipal solid waste landfill (facility) about 0.5 miles north of the community of Balance Rock in Tulare County.

The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements (WDRs) Order No. R5-01-164 (Order R5-01-164) on 14 June 2001, which classified the waste management unit (Unit) as a Class III landfill as defined in Title 27, California Code of Regulations, section 20005 et seq. (hereafter Title 27), that accepts or accepted municipal solid waste. The proposed Order revises the existing WDRs to provide for postclosure maintenance and to implement a corrective action program.

The 18.16-acre facility contains one existing unlined Unit that covers 1.67 acres. The Discharger does not propose expansion.

The facility is located near the top of a divide between two watersheds on the western flank of the Sierra Nevada Mountain Range approximately 16 miles southeast of the City of Porterville. The facility is underlain by 10 to 30 feet of alluvial deposits, which are underlain by decomposed granite and fractured granite.

The first encountered groundwater occurs within the decomposed granite at depths currently ranging between six and 65 feet below ground surface (bgs) depending on location at the facility. Groundwater elevations range from 4,859 feet MSL to 4,937 feet MSL depending on location at the facility. The groundwater is unconfined. The depth to groundwater fluctuates seasonally as much as 25 feet. All background and detection groundwater monitoring wells are screened in the unconfined groundwater zone.

Unsaturated zone detection monitoring for leachate is not being conducted at the facility. Installing an unsaturated zone monitoring system for leachate (i.e., lysimeters) beneath the Unit at this time would not be practical based on the fact the existing Unit is small (1.67 acres), closed, and has already leaked waste constituents to groundwater.

Volatile organic compounds (VOCs) that are not naturally occurring have been detected in the unconfined groundwater zone along the southern and western Point of Compliance. The VOCs detected in groundwater are benzene, chlorobenzene, tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethylene (1,1-DCE), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), and 1,4-

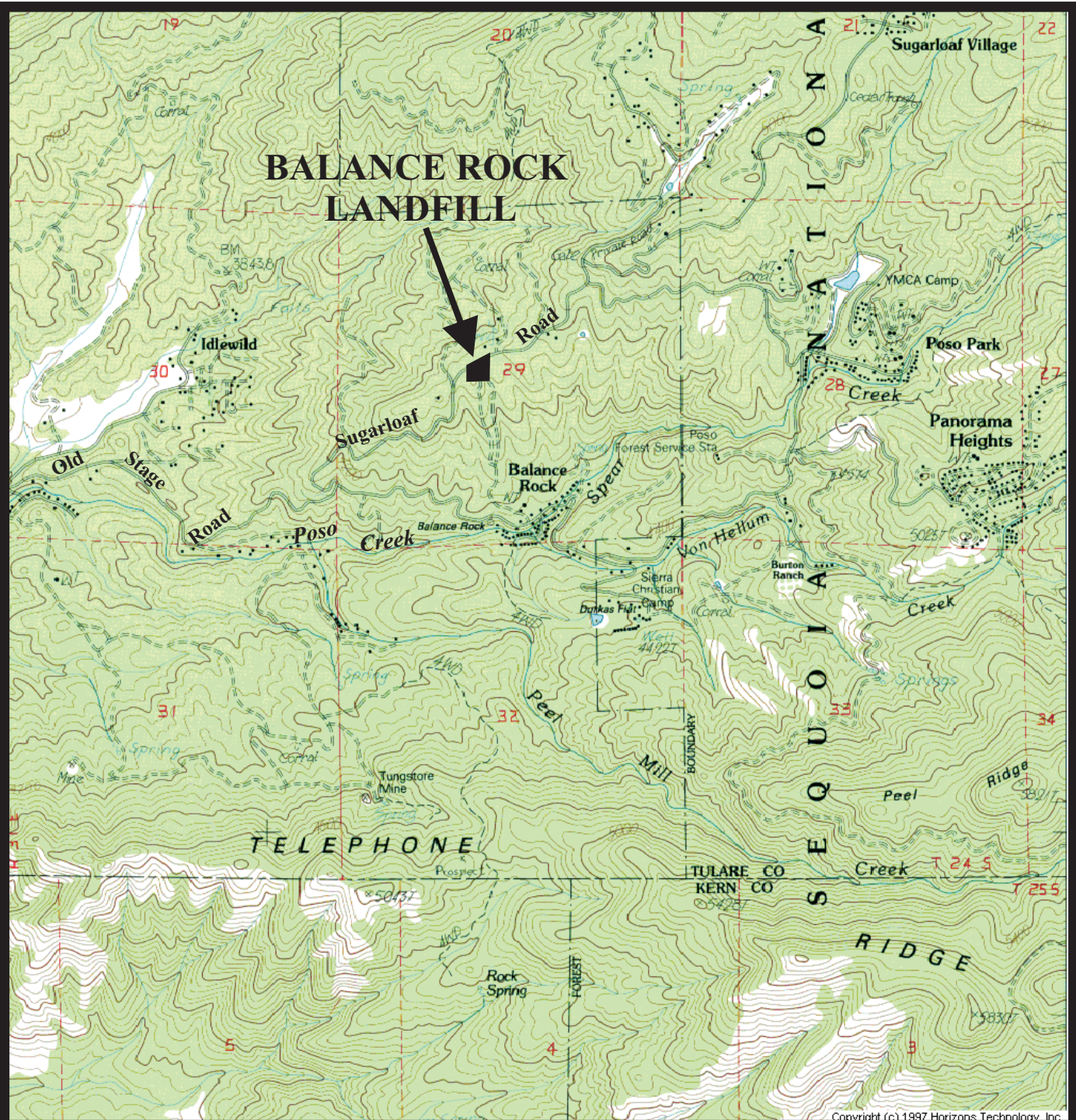
dichlorobenzene (1,4-DCB). Vinyl chloride has been detected at trace levels. The latest semiannual monitoring report (First Semiannual Monitoring Report, 2012) stated that only chlorobenzene, 1,1-DCA, and cis-1,2-DCE were detected in Point of Compliance groundwater monitoring wells. Inorganic waste constituents detected in Point of Compliance groundwater monitoring wells at concentrations statistically exceeding their respective background concentrations include mercury, arsenic, barium, sodium, selenium, TDS, EC, nitrate, manganese, and magnesium. The latest self-monitoring report (First Semiannual Monitoring Report, 2012) detected several inorganic waste constituents (e.g., arsenic, barium, manganese, iron, and mercury) that statistically exceeded their respective background concentrations. Iron and manganese exceeded their respective Secondary Maximum Contaminant Levels.

An evaluation monitoring program was completed in 20 October 2006. The comingled VOC and inorganic waste constituent plumes were determined to occur immediately adjacent to the Unit's western and southern boundaries. The vertical extent of the VOC plume was determined to be a depth of approximately 137 feet bgs near the southwestern corner of the Unit.

A final engineering feasibility study for a corrective action program (EFS for a CAP) proposal was submitted on 27 March 2009. Central Valley Water Board staff on 6 July 2009, concurred with the Discharger's EFS for a CAP proposal. The EFS for a CAP concluded that the most technically and economically feasible corrective action alternative for VOCs is monitored natural attenuation. The EFS for a CAP concluded that the most technically and economically feasible corrective action alternative for inorganic waste constituents is the injection of calcium polysulfide (CaSx) at three temporary injection points to remediate inorganic waste constituents (soluble mercury and other soluble metals) by converting them into insoluble and immobile solids, and potentially the injection of an oxidizing reagent and/or phosphate binder to stabilize mercury and other metals in groundwater if it is determined that CaSx is unsuccessful in remediation.

The Discharger completed construction of an engineered alternative composite final cover system in October 2003. The final cover system consists of the following: a two-foot thick soil foundation layer; a geosynthetic clay liner, a geosynthetic drainage layer, and a two-foot thick vegetated soil layer. Postclosure maintenance includes inspection, maintenance, and monitoring of the landfill during the postclosure maintenance period, and includes a postclosure maintenance cost estimate for the entire facility.

This order requires full containment of wastes and does not permit degradation of surface water or groundwater. Further, antidegradation analysis is therefore not needed. The discharge is consistent with the antidegradation provisions of State Water Resources Control Board Resolution 68-16.



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LEGEND



LOCATION OF FACILITY



MILES



SECTION 22, T23S, R25E, MDB & M

(VSM)

ATTACHMENT A

ORDER R5-2013-0058
 WASTE DISCHARGE REQUIREMENTS
 FOR
 COUNTY OF TULARE
 FOR
 POSTCLOSURE MAINTENANCE AND CORRECTIVE ACTION
 BALANCE ROCK MUNICIPAL SOLID WASTE LANDFILL
 TULARE COUNTY

LOCATION MAP