

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-201X-XXXX  
FOR  
SAN JOAQUIN COUNTY DEPARTMENT OF PUBLIC WORKS  
CORRAL HOLLOW SANITARY LANDFILL  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
POST-CLOSURE MAINTENANCE,  
AND CORRECTIVE ACTION  
SAN JOAQUIN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone 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 No. R5-201X-XXXX, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. 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, surface water, and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the approved 1988 *Sample Collection and Analysis 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. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate/seep, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through VI.

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 Monitoring and Reporting Program, and are identified in the approved Sample Collection and Analysis 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 Monitoring, Seep Monitoring, and LCRS Testing
A.4	Surface Water Monitoring
A.5	Facility Monitoring
A.6	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 Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell or module is constructed.

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Zone</u>	<u>Units Being Monitored</u>
SB-1	Detection/Corrective Action	Shallow	# 1
MW-4	Detection/Corrective Action	Shallow	# 1
MW-5	Detection/Corrective Action	Shallow	# 1
MW-8	Detection/Corrective Action	Shallow	# 1
MW-9A	Corrective Action	Shallow	# 1
MW-10A	Corrective Action	Shallow	# 1
MW-11A	Corrective Action	Shallow	# 1
MW-7	Detection	Deep	# 1
MW-6	Detection	Deep	# 1

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action 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 Sample Collection and Analysis Plan.

**Once per quarter**, 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. The results shall be reported quarterly, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15).

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in 2010 and shall be monitored again in **2015**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

## 2. **Unsaturated Zone Monitoring**

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27.

The current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Probe Depth</u>
GW-1	Perimeter Detection, Soil-Pore Gas	Deep
GW-2	Perimeter Detection, Soil-Pore Gas	Deep
GW-3	Perimeter Detection, Soil-Pore Gas	Middle
GW-4	Perimeter Detection, Soil-Pore Gas	Middle
GW-5	Perimeter Detection, Soil-Pore Gas	Shallow
GW-6	Perimeter Detection, Soil-Pore Gas	Deep
GW-7	Perimeter Detection, Soil-Pore Gas	Shallow, Middle

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies.

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

### 3. Seep Monitoring

**Seep Monitoring:** Leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III 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. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Corral Hollow Sanitary Landfill, runoff from landfill areas flows to retention ponds that upon overflow can discharge to Corral Hollow Creek as permitted under a separate WDRs 97-03-DWQ Order, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* (NPDES General Permit CAS000001). The current surface water detection monitoring system meets the applicable requirements of Title 27.

The current surface water monitoring points for the landfill are:

<u>Mon Pt.</u>	<u>Status</u>
S-1	Background or Upstream
S-2	Discharge or Downstream

For surface water detection monitoring, a sample shall be collected at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the 5-year COCs specified in Table IV every five years, beginning again in **2015**.

### 5. 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 problems 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 landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problems 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**

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 each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, 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)]. Reporting shall be in accordance with Section B.6 of this MRP. The next iso-settlement survey shall be conducted in **2013**.

d. **Standard Observations**

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

<u>Landfill Unit Type</u>	<u>Frequency</u>	<u>Season</u>
Inactive/Closed	Monthly	Wet: 1 October to 30 April
Inactive/Closed	Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

- 1) For the landfill unit:
  - a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions 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 landfill 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.
- 3) For receiving waters:
  - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
  - b) Discoloration and turbidity - description of color, source, and size of affected area.

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

**6. 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 and unsaturated zone monitoring points that are in a corrective action monitoring program shall be monitored in accordance with the groundwater and unsaturated zone monitoring requirements in parts A.1 and A.2 of this MRP, except as modified in this part of the MRP for any additional constituents or modified monitored frequencies.

<b>Well</b>	<b>Zone</b>	<b>Additional Constituents</b>	<b>Sampling Frequency</b>
MW-5	Shallow	1-3-5-Trimethylbenzene	Quarterly
MW-5	Shallow	Methyl tert-butyl ether (MtBE)	Quarterly
MW-5	Shallow	tert-Butylbenzene	Quarterly
MW-5	Shallow	trans-1,4-Dichloro-2-butene	Quarterly

The following monitoring parameters shall be monitored quarterly in all corrective action groundwater monitoring wells for the duration of the corrective action period:

Total Dissolved Solids (TDS)	mg/L
Chloride	mg/L
Carbonate	mg/L
Bicarbonate	mg/L
Nitrate - Nitrogen	mg/L
Sulfate	mg/L
Calcium	mg/L

Magnesium	mg/L
Potassium	mg/L
Sodium	mg/L

## 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	Quarterly Monitoring Report	31 March, 30 June, 30 September, 31 December	<b>1 May, 1 August, 1 November, 1 February</b>
B.2	Annual Monitoring Report	31 December	<b>1 February</b>
B.3	Seep Reporting	Continuous	<b>Immediately &amp; 7 Days</b>
B.4	Annual Facility Inspection Report	31 October	<b>1 December</b>
B.5	Major Storm Event Reporting	Continuous	<b>7 days from damage discovery</b>
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	<b>At closure completion and every five years</b>
B.7	Financial Assurances Report	31 December	<b>1 June</b>
B.8	Corrective Action Reports	31 March, 30 September	<b>1 May, 1 Nov</b>

### Reporting Requirements

The Discharger shall submit monitoring reports **quarterly** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-201X-XXX and the Standard Provisions and Reporting Requirements (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. Quarterly 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 post-closure 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. **Quarterly Monitoring Report:** Monitoring reports shall be submitted quarterly and are due on **1 February, 1 May, 1 August, and 1 November**. Each quarterly 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 Sample Collection and Analysis 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) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water. Concentrations below the reporting limit shall not be reported as "ND" unless the concentration is below the method detection limit and the method detection 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 IV 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 5-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 exceedances of a concentration limit.
  - g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.
  - h) A summary of all Standard Observations for the reporting period required in Section A.5.d of this MRP.
  - i) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance

plan as required by Standard Closure and Post-Closure 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 **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the 4<sup>th</sup> quarter report, but if so, shall clearly state that it is both a quarterly 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 5-year COC event was performed, than 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, including 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 map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the year in which each discrete landfill module will be filled.
  - g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.

- h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
  - i) Updated WQPS concentration limits for each monitoring parameter at each monitoring well based on the new data set.
  - j) A comprehensive discussion of any Corrective Action Program required by this MRP or a companion Order.
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 III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
  - e) Corrective 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.5.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.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 each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.5.c of this MRP, above. The next report is due by 1 January 2013.
7. **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that

updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.3 of the WDRs.

8. **Corrective Action Report:** Semiannually per the schedule in Section B. The Discharger shall provide a report describing the results of corrective action monitoring, including interpretation of the results certified by a California-licensed professional civil engineer or geologist that concludes whether the corrective actions implemented by the Discharger is adequately addressing associated water quality impacts. The licensed professional shall provide an updated schedule based on corrective action monitoring when completion of correction will occur such that water quality protection standards are met.

## C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

### 1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, 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 Water Quality Protection Standard 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 Water Quality Protection Standard 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 a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with 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 constituents of concern 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 Water Quality Protection Standard 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 site, the Discharger may request modification of the Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits in the 29 December 1993 *Water Quality Protection Standard Report*. The limits are calculated using intrawell tolerance coefficient at 95% confidence and 95% coverage based on historical background data from each well. Since the intrawell tolerance limit method has been approved each well provides its own background data. The Water Quality Protection Standard shall be updated annually for each monitoring well using new and historical monitoring data. The Water Quality Protection Standards shall not be calculated using data identified as outliers using the EPA 1989 Outlier Test or calculated using data that indicates an upward trend due to a release of COCs to receiving water.

## **2. Monitoring Parameters**

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through V for the specified monitored medium.

## **3. Constituents of Concern (COCs)**

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in

accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2010 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2015**.

#### 4. Concentration Limits

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

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

The methods for calculating concentration limits were included in the 29 December 1993 *Water Quality Protection Standard Report*. The approved method uses intrawell tolerance coefficient at 95% confidence and 95% coverage based on historical background data from each well. Since the intrawell tolerance limit method has been approved each well provides its own background data.

The Water Quality Protection Standards shall not be calculated using data identified as outliers using the EPA 1989 Outlier Test or calculated using data that indicates an upward trend due to a release of COCs to receiving water. The most recent concentration limits calculated using the outlier and upward trend exclusion criteria stated above for select parameters are as follows:

Sampling Well	SB-1	MW-4	MW-5	MW-8	MW-6	MW-7
Analysis Type	Intrawell	Intrawell	Intrawell	Intrawell	Intrawell	Intrawell
pH (Units)	5.98-7.62	6.68-7.83	6.49-7.9	6.82-7.9	<b>5.70-9.78</b>	<b>6.68-8.04</b>
EC <sup>1</sup> (umhos/cm)	1180	2920	<b>1700</b>	745	1144	1636
Turbidity (NTU)	202	170	102	57	57	45
TDS <sup>2</sup> (mg/L)	719	<b>2000</b>	909	442	780	<b>1100</b>
Chloride (mg/L) <sup>3</sup>	26	<b>380</b>	139	86	117	165
Nitrate as N (mg/L)	0.33	16	19	14	3	6
Sulfate (mg/L)	58	776	18	26	323	369
Carbonate Alkalinity as CaCO <sub>3</sub>	<b>0.81</b>	5.4	<b>480</b>	<b>2</b>	3.4	3.6
Bicarbonate Alkalinity as CaCO <sub>3</sub>	<b>600</b>	<b>400</b>	<b>660</b>	281	277	330
VOCs	Non Detect	Non Detect	Non Detect	Non Detect	Non Detect	Non Detect

Notes: The limits in bold are concentration limits that were set by the Discharger and not adjusted due to increasing trends e.g. evidence of a release. Concentration limits not in bold are concentration limits that RWQCB staff calculated after outliers were removed. Outliers should not be used to calculate concentration limits when concentration limits are used for detection monitoring.

- <sup>1</sup> Electrical Conductivity
- <sup>2</sup> Total Dissolved Solids
- <sup>3</sup> Milligrams per liter

## **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 waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit. The following are monitoring locations at the point of compliance:

### Point of Compliance Monitoring Wells

- SB-1 (Shallow Zone)
- MW-4 (Shallow Zone)
- MW-5 (Shallow Zone)
- MW-8 (Shallow Zone)
- MW-6 (Deep Zone)
- MW-7 (Deep Zone)

## **7. Compliance Period**

The compliance period for each waste management 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 waste management 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, which monitoring is conducted and at which the water quality protection standard 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 if 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.

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

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

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**TABLE I**  
**GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Quarterly
Temperature	°C	Quarterly	Quarterly
Electrical Conductivity	umhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Turbidity	Turbidity units	Quarterly	Quarterly
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L <sup>1</sup>	Quarterly	Quarterly
Chloride	mg/L	Quarterly	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly	Quarterly
Sulfate	mg/L	Quarterly	Quarterly
Carbonate	mg/L	Semiannually	Semiannual
Bicarbonate	mg/L	Semiannually	Semiannual
Calcium	mg/L	Semiannually	Semiannual
Magnesium	mg/L	Semiannually	Semiannual
Potassium	mg/L	Semiannually	Semiannual
Sodium	mg/L	Semiannually	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L <sup>2</sup>	Quarterly	Quarterly
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Quarter 2015
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

<sup>1</sup> Milligrams per liter

<sup>2</sup> Micrograms per liter

**TABLE II**  
**UNSATURATED ZONE DETECTION MONITORING PROGRAM**

<b>SOIL-PORE GAS<sup>1</sup></b>			
<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Monitoring Parameters</b>			
Volatile Organic Compounds (USEPA Method TO-15)	ug/cm <sup>3</sup>	Quarterly	Quarterly
Methane	% by volume	Quarterly	Quarterly
Carbon Dioxide	% by volume	Quarterly	Quarterly
Oxygen (O <sub>2</sub> )	% by volume	Quarterly	Quarterly

**PAN LYSIMETERS (or other vadose zone monitoring device) DOES NOT APPLY**

<sup>1</sup> Soil-pore gas samples collected from landfill gas probes are only subject to the VOC (USEPA Method TO-14) and methane sampling (not the other parameters listed for pan lysimeters).

**TABLE III**  
**SEEP MONITORING <sup>1</sup>**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Total Flow	Gallons	See Note 1	See Note 1
Flow Rate	Gallons/Day	" "	" "
Electrical Conductivity	umhos/cm	" "	" "
pH	pH units	" "	" "
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	See Note 1	See Note 1
Chloride	mg/L	" "	" "
Carbonate	mg/L	" "	" "
Bicarbonate	mg/L	" "	" "
Nitrate - Nitrogen	mg/L	" "	" "
Sulfate	mg/L	" "	" "
Calcium	mg/L	" "	" "
Magnesium	mg/L	" "	" "
Potassium	mg/L	" "	" "
Sodium	mg/L	" "	" "
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	" "	" "

<sup>1</sup> 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 IV**  
**SURFACE WATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> <sup>1</sup>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Temperature	°C	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Flow to Waters of U.S.	Yes or No	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Chloride	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 V)	ug/L	Semiannual	Semiannual
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Quarter 2015
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

<sup>1</sup> Semiannual surface water monitoring is required twice per year when there is water present at the designated surface water monitoring point any time during the reporting period (1 January to 30 June or 1 July to 31 December). Reporting shall include whether there was flow from the facility to waters of the U.S. when the samples were collected.

## TABLE V

### 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 (Bromomethane)  
Methyl chloride (Chloromethane)

**TABLE V**

**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 VI**  
**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

<b><u>Inorganics (dissolved):</u></b>	<b><u>USEPA Method</u></b>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium, Hexavalent	7199
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010C
Sulfide	9030B

**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)  
o-Dichlorobenzene (1,2-Dichlorobenzene)

## TABLE VI

### 5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

#### Continued

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

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

1,1,1 -Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride (Chloroethene)  
Xylene (total)

**Semi-Volatile Organic Compounds:**

**USEPA Method 8270D - 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)

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
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

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

Methyl methanesulfonate  
2-Methylnaphthalene  
1,4-Naphthoquinone  
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  
2,4,6-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

**Chlorophenoxy Herbicides:**

**USEPA Method 8151A**

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 8141B**

Atrazine  
Chlorpyrifos  
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Diazinon  
Dimethoate  
Disulfoton  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate  
Simazine