

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2014-XXXX
FOR
COLUSA COUNTY DEPARTMENT OF PUBLIC WORKS
STONYFORD LANDFILL
CLASS III LANDFILL
OPERATIONS AND CORRECTIVE ACTION MONITORING
COLUSA 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 contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2014-XXXX, and the *Standard Provisions and Reporting Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27* (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 and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone in accordance with the Standard Monitoring and Response to Release specifications in Sections I and J of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with an approved *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

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.

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	Surface Water Monitoring
A.5	Solid Waste Monitoring
A.6	Facility Monitoring
A.7	Additional Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain groundwater detection and corrective action monitoring systems that comply with the applicable provisions of Title 27, sections 20415 through 20430. These groundwater monitoring systems shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

a. Monitoring Points

The groundwater monitoring network for the landfill shall as follows:

Table A.1.a Groundwater Monitoring Points				
<u>Well</u>	<u>Program</u>	<u>Zone</u>	<u>Location</u>	<u>Distance & Direction</u> ¹
n/a ²	Background	Upper	Upgradient	n/a ²
n/a ^{2,3}		Lower ³		
MW-1A ⁴				
MW-3 ⁵	Detection/ Corrective Action	Upper	Downgradient	20 feet to NE
MW-4			Sidegradient	175 feet to NW
MW-5			Downgradient	300 feet to N-NE
MW-6				300 feet to NE

1. Estimated distance and direction relative to landfill unit boundary.
2. New background well(s) to be installed near property boundary (or offsite, if necessary) per WDR Provision J.6.b.
3. Lower zone well required only if initial well boring indicates that there are two saturated zones (upper and lower) in the uppermost aquifer and that they need to be separately monitored. The decision whether or not to install the well must be approved by Water Board staff.
4. Historical background monitoring well subject to replacement. Once replaced by new background wells, MW-1A will not need to be monitored under this Order. See WDR Finding 37.
5. Point of Compliance well.

b. Monitoring Schedule

Monitoring at each unit shall include field parameter testing and groundwater sampling. Groundwater samples shall be collected and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Table C.3 attached to this Order.

Table A.1.b Groundwater Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Groundwater Elevation	Feet & 100ths, M.S.L.	Quarterly	Semiannually
Temperature	OF	Semiannually ¹	Semiannually
Specific Conductance	umhos/cm	Semiannually ¹	Semiannually
pH	pH units	Semiannually ¹	Semiannually
Turbidity	NTU	Semiannually ¹	Semiannually
<u>Monitoring Parameters</u>			
Bicarbonate Alkalinity	mg/L	Semiannually ¹	Semiannually
Chloride	mg/L	Semiannually ¹	Semiannually
Nitrate as N	mg/L	Semiannually ¹	Semiannually
Sulfate	mg/L	Semiannually ¹	Semiannually
Total Dissolved Solids (TDS)	mg/L	Semiannually ¹	Semiannually
Volatile Organic Compounds (VOCs)	ug/L	Semiannually	Semiannually
<u>Constituents of Concern</u> (See Table C.3 below)		Every 5 years ^{1,2}	Every 5 years

1. At least one year of quarterly monitoring shall be conducted on all new background well(s) after installation to establish background concentrations for these constituents.
2. The required minimum four quarters of initial background monitoring per Footnote 1 above may be limited to those Table C.3 COCs listed under "General Minerals" and "Inorganics (dissolved)".

The Discharger shall measure the groundwater elevation in each well quarterly, 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 semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15). Groundwater samples shall be collected at least semiannually from the background wells, detection monitoring wells, and corrective action monitoring wells, as applicable, and any additional wells added as part of the approved groundwater monitoring system. Quarterly monitoring of new background wells shall also be required for at least one year to establish/re-establish concentration limits for inorganic constituents, as footnoted in the above table.

The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan. Background, detection, and corrective action monitoring data analysis shall be

conducted consistent with the statistical and non-statistical data analysis methods contained in the revised Water Quality Protection Standard Report submitted under WDR Provision J.6.f, as approved by Central Valley Water Board staff. The results of monitoring (including acquired data) for quarterly field parameters, semiannual monitoring parameters, and 5-year COCs, shall be reported in the monitoring report for the semiannual period in which the samples were collected.

2. Unsaturated Zone Detection Monitoring

As described in WDR Finding 52, the landfill was constructed without a liner or LCRS under previous Subchapter 15 regulations. No soil pore water monitoring devices (e.g., lysimeters) were installed beneath the landfill prior to development nor were they required because the landfill is unlined. The unsaturated zone detection monitoring program is therefore limited to soil pore gas monitoring.

a. Monitoring Points

The soil gas monitoring network shall consist of the following perimeter probes described in WDR Finding 30).

Table A.2.a Unsaturated Zone Monitoring Points			
<u>Monitoring Point</u>	<u>Zone</u>	<u>Depth</u>	<u>Distance & Direction</u> ¹
SGP-1S	Shallow	5 - 10	300 feet to west-NW
SGP-1I	Intermediate	16 - 21	
SGP-1D	Deep	29 - 39	
SGP-2	Shallow	5 - 10	400 feet to north -NE
SGP-3	Shallow	5 - 10	350 feet to east
SGP-4S	Shallow	5 - 10	450 feet to South-SW
SGP-4I	Intermediate	20 - 40	
SGP-4D	Deep	50 - 70	

1. Estimated distance and direction relative to landfill unit boundary.

The unsaturated zone detection monitoring network shall also include any future soil gas monitoring probes installed at the site to monitor the landfill.

b. Monitoring Schedule

Soil-pore gas samples shall be collected from the monitoring network listed above and analyzed in accordance with the following schedule.

Table A.2.b Unsaturated Zone Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u> ¹			
Methane	%	Semiannually	Semiannually
Carbon Dioxide	%	Semiannually	Semiannually
Organic Vapors	ppm	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
VOCs ^{2,3}	µg/cm ³	Semiannually	Semiannually

1. Field gas monitoring shall be conducted using appropriate field meter(s)
2. VOC sampling shall be required in all wells in which meter results show total organic vapors above 50 ppbv during the current monitoring event. Sampling may be limited to the probe with the highest meter reading.
3. VOC analysis shall be conducted using USEPA Method TO-15.

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 the monitoring reports submitted under this Order and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

3. Leachate Seep Monitoring

The Discharger shall monitor for leachate seeps from the landfill as part of Facility Monitoring under Section A.6 herein. Any observed leachate seepage from the landfill unit shall be sampled upon detection and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Table C.3 attached to this Order. Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP.

Table A.3 Leachate Seep Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Presence of leachate/liquid	observation	Each occurrence	Within 7 days
Flow Rate	gallons/day	Each occurrence	Within 7 days
Electrical Conductivity	umhos/cm	Each occurrence	Within 7 days
pH	pH units	Each occurrence	Within 7 days
<u>Monitoring Parameters</u>			
Bicarbonate Alkalinity	mg/L	Each occurrence	Within 7 days
Chloride	mg/L	Each occurrence	Within 7 days
Nitrate as N	mg/L	Each occurrence	Within 7 days
Sulfate	mg/L	Each occurrence	Within 7 days
TDS	mg/L	Each occurrence	Within 7 days
VOCs	ug/L	Each occurrence	Within 7 days
Dissolved Inorganics	ug/L	Each occurrence	Within 7 days
<u>Constituents of Concern¹</u> (See Table C.3 below)		Each occurrence	Within 7 days

1. COC sampling requirement may be waived by Water Board staff upon satisfactory demonstration by Discharger that leachate seepage from that location has been previously characterized for COCs and that corrective measures have been (or are being) implemented to prevent future recurrence.

4. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any facility where runoff from waste management unit 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.

a. Ephemeral Stream

As noted in WDR Finding 16, the landfill was sited along the upstream end of an ephemeral stream that has since been incorporated into the landfill's precipitation and drainage system. The swale drains to the onsite sedimentation basin, which discharges to the remaining portion of the ephemeral stream during peak flow periods. See WDR Finding 27. Upstream surface water monitoring at the site is therefore infeasible and downstream flows consist primarily of discharges from the sedimentation basins. Monitoring of the ephemeral stream is therefore not required under this MRP. Surface water monitoring at the site may therefore be limited to storm water monitoring.

b. Storm Water

The Discharger shall monitor storm water runoff to the landfill sedimentation basin prior to discharge to ephemeral stream east of the facility.

i. Monitoring Points

Table A.2.a.i Storm Water Monitoring Points ¹		
<u>Monitoring Point</u>	<u>Program</u>	<u>Location</u>
S-1	Background	Onsite swale - Upstream
S-2	Detection	Onsite swale - Downstream
S-3	Detection	Sedimentation Basin

1. All storm water sampling shall be conducted during the same monitoring event.

ii. Monitoring Schedule

Storm water samples shall be collected at each of the above monitoring points when there is flow in the swales and analyzed in accordance with the following schedule using the applicable test methods for each constituent listed in Table C.3 attached to this Order.

Table A.2.a.ii Storm Water Monitoring Schedule			
<u>Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>			
Temperature	°F	Semiannually	Semiannually
Electrical Conductivity	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
TDS	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Nitrate as N	mg/L	Semiannually	Semiannually
VOCS	ug/L	Annually	Annually
<u>Constituents of Concern</u> (See Table C.3 below)		Every 5 years	Every 5 years

Storm water monitoring shall also be conducted in accordance with the NPDES General Storm Water Permit for Industrial Activities required under Storm Water Specification I.3 of the WDRs.

The above monitoring system meets Title 27 requirements for surface water detection monitoring.

5. Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the landfill on a quarterly basis and report to the Board as follows:

Table A.5 Solid Waste Monitoring Schedule			
<u>Parameter</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Quantity of waste discharged	cu yds & tons ^{1,2}	Quarterly	Semiannually
Type(s) of waste discharged	---	Quarterly	Semiannually
Quantity of cover discharged	cu yds & tons ^{1,2}	Quarterly	Semiannually
Type(s) of cover discharged	---	Quarterly	Semiannually
Elevation range of discharges	MSL	Quarterly	Semiannually
Remaining landfill capacity	%	Annually	Annually

1. Tonnage shall be estimated based on volume conversion.
2. Volume conversion factor used for estimating landfill tonnage shall also be reported.

6. 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, interim 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. 10-Year Topographic Survey for Active Units

By **31 October 2019**, and at least every 10 years thereafter (i.e., after the first survey conducted under this Order), the Discharger shall conduct a topographic survey of the landfill and adjacent areas in accordance with Title 27, section 21570(f) (10) and Facility Specification C.2 of the WDRs.

Reporting shall be in accordance with Section B.6 of this MRP.

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 monthly during the wet season (1 October to 30 April) and quarterly during the dry season (1 May to 30 September). The Standard Observations shall include:

- i. For the landfill units:
 1. 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
 2. Evidence of erosion and/or of day-lighted refuse.
- ii. Along the perimeter of the landfill units:
 1. Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 2. Evidence of erosion and/or of day-lighted refuse.
- iii. For receiving waters:
 1. Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 2. Discoloration and turbidity - description of color, source, and size of affected area.

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

Facility Monitoring shall also include continuous leachate monitoring under Section A.3,

7. Additional Corrective Action Monitoring – Landfill Gas (LFG)

LFG monitoring shall be conducted to assess the nature and source of impacts at the site; to provide an ongoing assessment as to the effectiveness of existing landfill gas controls in mitigating that source; and to evaluate the possible need for additional corrective action measures to protect underlying water bearing media.

- a. **Monitoring Points** – All six passive landfill gas vents within the landfill footprint (i.e., Vs-1 through -6)
- b. **Monitoring Schedule**

LFG monitoring shall be conducted in accordance with the following schedule.

Table A.7 LFG Monitoring Schedule			
<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<u>Field Parameters</u>¹			
Air flow rate	cu ft/min	Semiannually	Semiannually
Vent pressure ²	psi	Semiannually	Semiannually
Temperature	oF	Semiannually	Semiannually
Carbon dioxide	%	Semiannually	Semiannually
Hydrogen sulfide	ppmv	Semiannually	Semiannually
Methane	%	Semiannually	Semiannually
Organic Vapors	ppbv	Semiannually	Semiannually
<u>Monitoring Parameter</u>			
VOCs (USEPA Method TO-15)	µg/cm ³	Annually ³	Annually

1. Field monitoring shall be conducted using appropriate measuring device for each parameter,
2. Vent pressure shall be measured with the wind turbine gate valve open and closed.
3. VOC sampling shall be limited to vents showing methane $\geq 40\%$ and/or total organic vapors > 50 ppbv. VOC sampling shall be conducted during the same monitoring event at which the elevated gas was detected. VOC samples do not need to be collected more than once per year on each such vent.

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	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & Within 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	Topographic Survey for Active Landfills	Every 10 Years	31 October 2019 & every 10 years thereafter prior to landfill closure

Reporting Schedule			
<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.7	Financial Assurances Report	31 December	1 June

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2014-XXXX and the SPRR, particularly the monitoring and response to release provisions (i.e., WDR Section G and SPRR Sections I and J). 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 under this Order 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:

- 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;
- Date, time, and manner of sampling;
- Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- Calculation of results; and

- 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 **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:

- a. For each groundwater monitoring point addressed by the report, a description of:
 - i. The time of water level measurement;
 - ii. 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;
 - iii. 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;
 - iv. The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - v. 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 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 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 run-off/run-on control facilities.
- h. The results of Facility Monitoring, including, but not limited to, a summary of all Standard Observations for the reporting period required in Section A.6. d of this MRP.
- i. The results of Solid Waste Monitoring, including a summary table and narrative discussion of the results.
- j. A discussion (i.e., report) as to the effectiveness of corrective action per Specification H.3 and Provision J.7 of the WDRs.

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 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 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. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
- i. A comprehensive discussion of the Corrective Action Program as required by this MRP (e.g., Section A.6).

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.6. 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.6. b of this MRP, above.

6. **10-Year Topographic Survey for Active Landfill**

The Discharger shall conduct a topographic site survey, including the landfill facility and adjacent areas, **at least every 10 years** pursuant to WDR Facility Specification C.2. The first 10-year survey report is due by **31 January 2020** and may be included in the 2019 Annual Monitoring Report. At a minimum, the survey report shall include a new topographic map of the site showing monitoring well locations and other reference points, and a description of the surveying method. See also Section A.6.c above.

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 per Section C.4 herein 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 Water Quality Protection Standard used under previous WDRs is not relevant under this Order because of the need for a new background well as required under WDR Provision J.6.b. The Water Quality Protection Standard under this Order shall therefore be as set forth in the updated Water Quality Protection Standard Report submitted under WDR Provision J.6.f, as approved by Central Valley Water Board staff. Once approved, the Water Quality Protection Standard shall be updated annually as warranted, using new and historical background monitoring data and approved data analysis methods.

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 A.1.b (groundwater), A.2.b (soil pore gas), A.3 (leachate), A.2.a.ii (surface/storm water), and A.7 (landfill gas).

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 at least every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those referenced in Tables A.1.b (groundwater), 2.a.ii (surface/storm water), and Table C.2 (attached). The Discharger shall monitor all COCs every 5 years (or more frequently if required in a Corrective Action Program). The last COC monitoring events under previous WDRs was conducted in March 2008 (MWs 5 and 6) and March 2011 (MWs 1A, 3 and 4) and reported in the semiannual monitoring reports for those periods. The first 5-year COC monitoring event under this Order shall be conducted by 1 June 2016 and the results reported in the First Half 2016 monitoring report due by **1 August 2016**.

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 data analysis methods used for calculating concentration limits under this Order shall be those set forth in the revised Water Quality Protection Standard Report submitted under WDR Provision J.6.f, as approved by Central Valley Water Board staff. Concentration limits for naturally occurring COCs shall be updated annually and included in the Annual Report submitted under this MRP. See Section B.2.h.

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 Monitoring Provision X.B.10 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 Monitoring Provision X.B.12 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. There is currently one Point of Compliance well at the site, MW-3.

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 at 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

JDM/WMH

TABLE C.3
CONSTITUENTS OF CONCERN
& APPROVED USEPA ANALYTICAL METHODS

General Minerals

	USEPA Method
Bicarbonate	2320B
Calcium	200.7/600
Carbonate	2320B
Chloride	300
Magnesium	200.7/600
Nitrate – Nitrogen	300
Potassium	200.7/600
Sodium	200.7/600
Sulfate	300
Total Dissolved Solids	2540C

Volatile Organic Compounds:

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

Inorganics (dissolved):

USEPA Method

Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
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

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)
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
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
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

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