

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-201X-XXXX
FOR
CITY OF SACRAMENTO UTILITIES DEPARTMENT
SYLVIA DELLAR SURVIVOR'S TRUST
DELLAR LANDFILL
UNCLASSIFIED LANDFILL
CLOSURE, POSTCLOSURE MAINTENANCE,
AND CORRECTIVE ACTION MONITORING
SACRAMENTO 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. R5-201X-XXXX, and the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Industrial Facilities* (SPRRs), dated November 2013. 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 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	Facility Monitoring
A.6	Additional Corrective Action Monitoring

In lieu of conducting separate sampling under this Order, the Discharger may, for a given monitoring parameter, monitoring point, and monitoring event, use the results of sampling conducted by the City of Sacramento under the 28th Street Landfill WDRs,

to the extent that monitoring required under this MRP would be duplicative of monitoring already required under WDRs for the 28th Street Landfill, and monitoring reports are submitted under the timeline of this Order.¹ In such cases, the transmittal letter to the Monitoring Report shall include appropriate notation as to the source of the sample data used in the report. Any long term arrangements with the City for providing such sample data each monitoring period shall be described in the approved Sample Collection and Analysis Plan submitted under WDR Provision J.5.a and referenced in the transmittal letter for each monitoring report. The transmittal letter certification statement shall state that data provided by the City was collected in compliance with this Order. See Section D herein.

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 Points¹

The groundwater monitoring network for the Dellar Landfill shall consist of the following existing 28th Street Landfill monitoring wells:

Table A.1.a			
Landfill Unit 1 Monitoring Wells			
<u>Program</u>	<u>Well</u>	<u>Zone</u>	<u>Location</u>
Background	B-4 ¹	Upper	2,000 feet to east-NE
	C-15 ¹		Unit perimeter - NW
Corrective Action	C-13 ²	Upper	Unit perimeter - east
	D-18 ³	Lower	500 feet to south
	C-14 ³	Upper	500 feet to south
	D-19		1,200 feet to south
	D-20		1,000 feet to west-SW

1. One or both of these wells shall be used for development of concentration limits absent Water Board staff approval of alternative locations consistent with Title 27 regulations proposed in the Water Quality Protection Standard Report submitted under WDR Provision J.5.f.
2. Well subject to gradient reversals during dry season.
3. These wells contiguously monitor Dellar Landfill and Cannon Family Trust/Scollan Credit Trust

1. If the City of Sacramento does not provide monitoring data to the Discharger for the wells in Table A.1.a in accordance with the reporting timelines herein, and does not allow the Discharger access to these wells for monitoring under this Order, then the Discharger shall submit a work plan for installation of a separate groundwater monitoring system for the Dellar Landfill consistent with Title 27 and the requirements of this Order.

parcels.

The groundwater monitoring network for the Dellar Landfill shall also include any future wells installed by the Discharger under these WDRs, or by the City of Sacramento under WDRs for the 28th Street Landfill, including, but not necessarily limited to, the new Point of Compliance well installed under WDR Provision J.5.b.

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 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	Semiannually
Specific Conductance	umhos/cm	Semiannually	Semiannually
pH	pH units	Semiannually	Semiannually
Turbidity	NTU	Semiannually	Semiannually
Oxidation-Reduction Potential	mV	Semiannually	Semiannually
<u>Monitoring Parameters</u>			
Bicarbonate Alkalinity	mg/L	Semiannually	Semiannually
Chloride	mg/L	Semiannually	Semiannually
Nitrate as N	mg/L	Semiannually	Semiannually
Sulfate	mg/L	Semiannually	Semiannually
Total Dissolved Solids	mg/L	Semiannually	Semiannually
Dissolved Iron	ug/L	Semiannually	Semiannually
Volatile Organic Compounds (VOCs)	ug/L	Semiannually	Semiannually
Constituents of Concern (See Table C below)	---	Every 5 years	Every 5 years

The Discharger shall measure the groundwater elevation in each well semiannually, 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 in all wells, including any future wells added as part of the approved groundwater monitoring system.

The Discharger shall collect, preserve, and transport groundwater samples in accordance with the Sample Collection and Analysis Plan submitted under WDR Provision J.5.a, 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.

Background, detection, and corrective action monitoring data analysis shall be conducted consistent with the statistical and non-statistical data analysis methods described in Section C.1, as updated in the Water Quality Protection Standard Report submitted under WDR Provision J.5.f, as approved by the Executive Officer.

2. Unsaturated Zone Detection Monitoring

As described in WDR Finding 54, the landfill was constructed without a liner or LCRS prior to adoption of current regulatory standards under Title 27 and former Chapter 15 regulations. No soil pore water monitoring devices (e.g., lysimeters) were therefore required to be installed at the landfill unit prior to development to detect a release and none were installed. The unsaturated zone detection monitoring program is therefore limited to soil pore gas monitoring.

a. Monitoring Points

As noted in WDR Finding 31, there are currently no soil gas monitoring probes at the Dellar Landfill site. The soil gas monitoring network shall therefore consist of any soil gas probes installed under the revised FC/PCMP submitted under this Order to define the extent of landfill gas migration. See WDR Provision J.6.b.

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 Soil Gas 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 probes 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 submitted under WDR Provision J.5.a. 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.

c. Termination of Monitoring

Soil gas monitoring required under this section may be discontinued if the Discharger is able to successfully demonstrate under Section A.6.a.iii that the landfill is no longer generating significant amounts of landfill gas that could impact water bearing media beneath the site, and the Executive Officer approves the termination in writing.

3. Leachate Seep Monitoring

The Discharger shall monitor all areas of the landfill (e.g., top deck, side slopes, toe areas, and levee corridor) for leachate seeps, including as part of Facility Monitoring under Section A.5 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 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>		Each occurrence	Within 7 days
(See Table C below)			

1. COC sampling requirement may be waived by Water Board staff in writing 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 to detect (measurably significant evidence of) a release from the landfill; any resulting impacts or threat to surface and/or groundwater; and to monitor the effectiveness of landfill precipitation and drainage controls. Surface water monitoring is specifically required where runoff from waste management unit 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. American River

As noted in WDR Finding 27, natural drainage to the American River is blocked by the American River levee. With the exception of the north side of the levee, which is beyond the landfill footprint, there is therefore no site drainage to the American River. Surface water monitoring at the site may therefore be limited to storm water monitoring.

b. Storm Water

The Discharger shall monitor all ponded and/or flowing storm water at the site, including any ponding that occurs in areas of the site that have not yet closed (e.g., levee corridor, Elderberry bush areas), any other portions of the

facility not draining to the onsite detention basins, and storm water collected in the onsite detention basins.

i. Monitoring Points

Table A.4.b.i Storm Water Monitoring Points ¹		
<u>Monitoring Point</u>	<u>Program</u>	<u>Location</u>
SW-1	Background	Top of levee or landfill crest area
SW-2 ²	Detection	Levee area ²
SW-3 ²	Detection	Elderberry Bush area ²
SW-4	Detection	Eastern Detention Bain
SW-5	Detection	Western Detention Basin

1. All storm water sampling shall be conducted during the same monitoring event.
2. Sampling at this monitoring point may be discontinued after closure of area monitored..

See Attachment B: Site Map for approximate sampling locations.

ii. Monitoring Schedule

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

Table A.4.b.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	Annually	Annually
Chloride	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Nitrate as N	mg/L	Annually	Annually
VOCS ¹	ug/L	Annually	Annually

<u>Constituents of Concern</u> ^{1,2} (See Table C below)		Every 5 years	Every 5 years
--	--	---------------	---------------

1. Sampling for these parameters/constituents may be limited to the two onsite detention basins.
2. 5-year COC sampling required on only one detention basin each 5-year event, alternating between basins each event.

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

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

By **15 November 2017**, and at least every 5 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 21090(e) and Closure and Postclosure Specification E.16 of the WDRs. Reporting shall be in accordance with MRP Section B.6.

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 seep monitoring under Section A.3.

6. Additional Corrective Action Monitoring – Landfill Gas

Landfill gas monitoring shall be conducted as follows,

- a. In Situ Probes
 - i. Monitoring Points – All in situ probes installed within the landfill footprint as part of the landfill gas investigation required under Corrective Action Specification D.5.

ii. Monitoring Schedule

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

1. Contingent on Water Board staff approval, landfill gas probe monitoring may be reduced to the frequencies specified in Table A.6 (i.e., Gas Vent Monitoring) after completion of at least 12 months of field gas monitoring (i.e., the in situ gas investigation required under WDR Corrective Action Specification D.5).
2. Field gas monitoring shall be conducted using appropriate field meter(s)/measuring devices.
3. VOC sampling shall be limited to vents showing methane ≥ 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.
4. VOC analysis shall be conducted using USEPA Method TO-15.

iii. Termination of Monitoring

Monitoring of one or more of the above in situ gas probes may be discontinued if one of the following criteria is satisfied:

- (a) The results of the above landfill gas investigation indicate that landfill is not generating significant amounts of landfill gas (i.e., that could degrade water bearing media beneath the site) such that landfill gas controls and gas monitoring systems are not needed; or
- (b) Landfill gas controls have been installed at the site and are being monitored under A.6.b below such that monitoring of the subject in situ probe(s) is no longer necessary.

The above demonstration shall be submitted as an amendment to the revised FC/PCMP submitted under WDR Provision J.6.b. Landfill gas probe monitoring may be discontinued only upon written approval by the Executive Officer. Any probes for which a discontinuation of monitoring is approved shall be properly abandoned in accordance with the FC/PCMP and interested agency approvals.

b. Gas Vents

- i. Monitoring Points - All landfill gas vents installed as a corrective action measure per Closure and Postclosure Specification E.1.C.i.

ii. Monitoring Schedule

Table A.6 Landfill Gas Vent 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 gas monitoring shall be conducted using appropriate field meter(s)/measuring devices.
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 ≥ 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	Immediately & 14 days from damage repair

Reporting Schedule			
<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every 5 Years	15 December 2017 & every 5 years thereafter

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. R5-201X-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 for wells/constituents not already in corrective action monitoring.
- 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.5.d of this MRP.
- i. A discussion as to the effectiveness of corrective action per Provision J.8 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 written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
- g. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
- h. A comprehensive discussion of the Corrective Action Program.

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 A.3 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

By **15 December 2017** and **every five years** thereafter, the Discharger shall submit the results of the post-closure topographic survey completed under MRP Section A.5.c, including topographic survey and (beginning with the second postclosure topographic survey) iso-settlement maps prepared pursuant to Title 27, section 21090(e) and Closure and Postclosure Specification E.16 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard for the landfill unit shall consist of all Constituents of Concern (COCs), Concentration Limits, the Point of Compliance, and all Monitoring Points consistent with this Order and Title 27, Section 20390.

1. Water Quality Protection Standard Report

By **31 January 2016**, the Discharger shall submit a Water Quality Protection Standard Report describing the Water Quality Protection Standard for the landfill unit consistent with the Findings and Requirements of this Order. See WDR Provision J.5.f . At a minimum, the report shall include the following information:

- 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. 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. Proposed data analysis methods for calculating concentration limits for monitoring parameters and constituents of concern detected in 10% or greater of the background data (naturally-occurring constituents) per Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. 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).

Once approved, the concentration limits of the Water Quality Protection Standard shall be annually updated to reflect current background monitoring data using the approved data analysis methods. Any subsequent 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 Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27.

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.4.b.ii (surface/storm water), and A.6 (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), A.4.b.ii (surface/storm water), and Table C (attached). The Discharger shall monitor all COCs every 5 years (or more frequently if required in a Corrective Action Program). The first 5-year COC monitoring event under this Order shall be conducted by **15 November 2015** and the results reported in the Second Half and Annual 2015 monitoring report due by **31 January 2016**.

4. **Concentration Limits**

As noted in WDR Finding 45, the Discharger does not yet have an approved list of concentration limits for monitoring. The proposed concentration limits for monitoring for all media (e.g., surface water and groundwater) shall therefore be included in the Water Quality Protection Standard Report required under WDR Provision J.5.f.

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).

Detection Monitoring - The concentration limits for non-naturally-occurring constituents of concern (e.g., VOCs) shall be non-detect. The concentration limits for naturally-occurring COCs (e.g., inorganics) shall be determined based on an interwell monitoring procedure using upgradient monitoring data, unless the Discharger is able to demonstrate to the satisfaction of the Executive Officer that an intrawell approach is more representative of background conditions at the site due to the presence of significant spatial variability in the groundwater geochemistry not attributable to a release from the unit. The data analysis method for calculating concentration limits for naturally-occurring COCs under this Order shall be the interwell Tolerance Limit Method, or as otherwise proposed under the Water Quality Protection Standard Report required under WDR Provision J.5.f and approved by Board staff.

Corrective Action Monitoring -- The concentration limits for corrective action monitoring shall be the same as those for detection monitoring absent approval of a proposal for concentration limits greater than background (CLGBs) under Title 27 Section 20400(c) and revision of the WDRs. An intrawell statistical procedure (e.g., the Sens Slope Method) shall be used for trend analysis to monitor corrective action progress.

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. 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, well C-13, and it is down gradient of the landfill only during dry season gradient reversals. An additional Point of Compliance well is therefore required to be installed under WDR Provision J.6.b to meet Title 27 requirements for Point of Compliance monitoring.

6. 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].

7. 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. The transmittal letter shall, at a minimum, include the following:

1. Appropriate notation as to the source of the sample data used in the report, identifying which results, if any, were provided by the City of Sacramento from 28th Street Landfill monitoring and which results, if any, were obtained from separate monitoring under this MRP. Any long term arrangements with the City for providing such sample data each monitoring period shall be appropriately referenced (e.g., location in Sample Collection and Analysis Plan).
2. A certification that the monitoring data provided by the City from 28th Street Landfill monitoring was collected in compliance with the approved Sample Collection and Analysis Plan submitted under this Order.
3. Identification of 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.
4. 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 Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

JDM/

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