California Regional Water Quality Control Board
North Coast Region

MONITORING AND REPORTING PROGRAM
ORDER NO. R1-2013-0003

FOR

OPERATION, CORRECTIVE ACTION, NEW CONSTRUCTION, AND CLOSURE
AT THE
COUNTY OF SONOMA

CENTRAL DISPOSAL SITE
LANDFILL 1, LANDFILL 2 PHASES I, II, III, AND IV

AND

SOUTH FACE PARTIAL FINAL CLOSURE

COUNTY OF SONOMA DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

CLASS III LANDFILLS
CLASS II SURFACE IMPOUNDMENTS

SONOMA COUNTY

The Discharger shall maintain water quality monitoring systems that are appropriate for detection monitoring and corrective action, and that comply with Subchapter 3, Chapter 3, Subdivision 1, Division 2, Title 27, California Code of Regulations (CCR), and any other applicable provisions therein.

Compliance with this Monitoring and Reporting Program (MRP), and with the companion General Monitoring and Reporting Requirements, is ordered by Waste Discharge Requirements (WDRs) Order No. R1-2013-0003. Failure to comply with this MRP, or with the General Monitoring and Reporting Requirements, constitutes non-compliance with the WDRs and with Division 7 of the California Water Code, which can result in the imposition of civil monetary liability.

I. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program, and as required in the General Monitoring and Reporting Requirements. The Discharger shall submit a paper copy and an electronic format copy of each monitoring report, with transmittal letter, text, tables, figures, laboratory analytical data, and appendices in PDF format (one PDF for the entire report).

The Discharger is required to upload the full monitoring report into Geotracker, as stipulated by California State law.

All testing, other than field parameters, shall be performed at a laboratory certified by the California Department of Health Services. Instruments used for field parameters shall be kept in good condition and calibrated according to manufacturer's requirements. Reports which do not comply with the required format will be rejected, and the Discharger shall be deemed to be in noncompliance with the WDRs. Monitoring reports must include, but should not be limited to the following:

a) Letter of Transmittal:
A letter transmitting the essential points must accompany each report. The letter must include a discussion of violations caused by the Landfill since submittal of the last such report. If the Discharger has not observed any violations since the last submittal, the Discharger must state this in the transmittal letter. Both the monitoring report and the transmittal letter must be signed as follows: for private facilities, a principal executive officer at the level of vice president or responsible corporate officer; for public agencies, the director of the agency. Upon Water Board Executive Officer approval, the cited signature can be by a California Registered Civil Engineer, or Certified Engineering Geologist, or Professional Geologist who has been given signing authority by the cited signatories. The transmittal letter must contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

b) Compliance Summary:
The summary shall contain at least a narrative discussion of the monitoring results, including a discussion of compliance with concentration limits, any water quality violations, or other monitoring results of potential significance to water quality and describe any corrective actions taken.

c) Tabular Presentation of Data:
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 as to illustrate clearly the compliance with waste discharge requirements or the lack thereof.

d) Graphical Presentation of Data (Annual Report):
For each Monitoring Point in each medium, submit, in graphical format, the complete history of laboratory analytical data. Graphs must effectively illustrate trends and/or variations in the laboratory analytical data.

Each graph must plot a single constituent concentration over time at one (for intra-well comparison) or more (for inter-well comparisons) Monitoring Points in a single medium for those wells with exceedences during the annual period. When multiple samples are taken, graphs must plot each datum, rather than plotting mean values. The Discharger must determine horizontal gradients, groundwater flow rate, and flow direction for each respective groundwater body. The Discharger must present this data on a figure that depicts groundwater contours and flow directions as well as gradient, and include one figure for each water level measuring period in the monitoring report.

e) Corrective Action Summary:
Discuss significant aspects of any corrective action measures conducted during the Monitoring Period and the status of any ongoing corrective action efforts, including constituent trend analysis.

f) Laboratory Results:
Summarize and report laboratory results and statements demonstrating compliance with the Monitoring Program. Include results of analyses performed at the Site that are outside of the requirements of this Monitoring and Reporting Program.

g) Sampling Summary:
   i. For each Monitoring Point addressed by the report, a description of: 1) the method and time of water level measurement, 2) the method of purging and purge rate and well recovery time, and 3) field parameter readings.
   ii. For each Monitoring Point addressed by the report, a description of the type of sampling device used, its placement for sampling, and a description of the sampling procedure (number of samples, field blanks, travel blanks, and duplicate samples taken; the date and time of sampling; the name and qualification of the person actually taking the samples; and description of any anomalies).

h) Leachate Detection and Leachate Management:
A summary of results from leachate detection monitoring and sampling shall be reported in the monitoring report.

Discuss and summarize all leachate management components (including seeps) that are underway within the reporting period.

As a primary function of corrective action, provide a progress report detailing extraction rates, number of active extraction wells, a narrative description of areas with remaining leachate buildup, and an analysis of further steps necessary to achieve and maintain an overall program of continued leachate reduction.

i) Standard Observations:
Each monitoring report shall include a summary and certification of completion of all Standard Observations for each waste management unit (WMU), for the perimeter of each WMU, and for all receiving waters. The standard observations shall be performed on a weekly basis and shall include the following information: updated status of any current grading and liner construction phases; status and condition of WMU cover; whether storm water drainage ditches and sedimentation ponds contain liquids; condition of drainage facilities; condition of sedimentation ponds; whether there are any leachate seeps present, including estimates of seep size and flow; presence of odors; evidence of ponding; freeboard in leachate holding facilities; evidence of erosion; evidence of non-storm water discharges at any storm water discharge locations; evidence of floating and suspended material, discoloration, or turbidity in surface waters; presence of odors in surface waters; condition of access roads; other problems which could affect compliance with the waste discharge requirements; weather conditions during the observations; summary of precipitation totals for the year to date, by month and during the five days preceding any observations made during the Monitoring Period and discussed in the monitoring report.

j) Map(s):
The base map for the Monitoring Report shall consist of a current aerial photograph and include relative topographical features, along with Monitoring Points and features of the Site.

A. REQUIRED REPORTS

1. Detection and Corrective Action Monitoring Report

Monitoring Reports (MRs) shall be prepared and submitted to the Regional Water Board quarterly by the 15th day of the month following the sampling period. The reports shall include the results of all monitoring programs listed herein. The established monitoring and reporting periods are as follows:

QUARTER	QUARTER No.	REPORTING DATE
February, March, April	2	May 15
May, June, July	3	August 15
August, September, October	4	November 15
November, December, January	1	February 15 (Annual Report date)

2. Annual Monitoring and Corrective Action Summary Report

An annual monitoring report, "Annual Report", which summarizes the monitoring results for the prior four quarters, shall be submitted to the Regional Water Board by February 15, annually. In lieu of submitting a separate report, the Annual Report may be combined with the February 15th (fourth) quarterly report. The Annual Report shall contain both tabular and graphical summaries of the detection and, if applicable, corrective action monitoring data, and a discussion of progress toward re-establishment of compliance with regulatory goals as described in the WDRs, and with the Water Quality Protection Standard (WQPS).

The Annual Report shall contain proof of adequate assurances of financial responsibility for closure, post-closure maintenance, and corrective action for all known or reasonably foreseeable releases from a WMU at the facility in accordance with Sections 20380(b), 20950(f), 22210, 22211, 22212, 22220, 22221, and 22222 of Title 27, CCR and include annual accounting for inflation. By February 15, 2018, 2023, and every five years thereafter, for the term of this MRP, the Discharger shall provide in the Annual Report an updated closure and post-closure maintenance costs and corrective action cost estimate to the Regional Water Board. As noted in the WDRs, the Discharger shall also revise the closure and post-closure maintenance cost estimate immediately following completion of the partial final closure project on Landfill 1 South Face area, incorporating, as appropriate, actual costs incurred for specific items, elements, and features. The Discharger shall demonstrate to CalRecycle and report to the Regional Water Board that it has established and maintained an acceptable financial assurance mechanism described in Section 22228, Title 27 CCR in at least the amount of the cost estimate approved by the Executive Officer.

In accordance with Section 20340(d), Title 27, CCR, all leachate collection and removal systems shall be tested annually to demonstrate proper operation. Results shall be compared with earlier tests made under comparable conditions. The results shall be submitted with the Annual Report.

The Annual Report shall include a map for the partial final closure areas showing any areas of differential settlement, highlighting areas of repeat or severe differential settlement. This map shall be made by or under the direction of a

professional civil engineer or registered geologist.

3. Surface Water and Storm Water Sampling Report

All surface water and storm water sampling results shall be reported and summarized in accordance with this Monitoring and Reporting Program.

4. Water Quality Protection Standard Report

As noted above, any changes to the water quality protection standard are to be included in the Annual Report.

5. Five Year Iso-Settlement Map for Constructed Final Closure Acreage

For all constructed final closure cap acreage the Discharger shall produce an iso-settlement map by January 2018, January 2023, and every five years thereafter, until the Executive Officer has determined that differential settlement is unlikely to be of such magnitude as to impair either the Unit's containment features (e.g., final cover) or the free drainage of surface flow. The map shall be submitted to the Regional Water Board with the Annual Report for that year.

The iso-settlement map shall accurately depict the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. Therefore, 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 produced at closure, and shall indicate all areas where visually noticeable differential settlement may have been obscured by grading operations. The map shall be drawn to the same scale and contour interval as the topographic map produced at closure, but showing the current topography of the final cover, and featuring overprinted isopleths indicating the total settlement to date. This map shall be made by, or under the direction of, a professional civil engineer or registered geologist and shall be stamped and signed.

6. Annual Erosion Control Report

By October 15, annually, the Discharger shall submit a report to the Executive Officer describing any measures taken to comply with erosion control requirements. This shall include a description of winterization efforts, any erosion control measures implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities.

7. Constituents of Concern (COCs)

The Discharger shall submit reports of the results of groundwater, any springs, surface water, underdrains and leachate monitoring for the Constituents of Concern every 5 years, or more frequently if required. The COC monitoring results shall be submitted with, or reported in, the monitoring report for the period the sampling took place.

8. Notification of Release and Re-test

For any WMU, if the results of a detection monitoring program show that there is a measurably significant increase in an indicator parameter not attributed to

temporal variation or waste constituents over the WQPS at or beyond the monitoring points or points of compliance (i.e., measurably significant evidence of an exceedance or release), the Discharger shall:

a. within 2 hours of discovery, notify the Regional Water Board by telephone or fax of the exceedance,
b. within seven days of the initial findings, follow up with written notification (or acknowledgment of the Regional Water Board's finding),
c. within 30 days of the initial finding, re-sample for the constituent(s) or parameter(s) at the point where the standard was exceeded, and
d. within 60 days of the initial finding, submit the results of the re-sampling and statistical analysis, indicating whether or not an exceedance or release was confirmed by the re-test.

9. Detection of a Release

Immediately following detection of a release, or after completion of the retest, the Discharger shall:

a. immediately sample all Monitoring Points in the affected medium at the WMUs and determine the concentration of all COCs. [Section 20420(k)(1), Title 27, CCR]
b. within 90 days of determining measurably significant evidence of release, submit an amended Report of Waste Discharge (ROWD) to establish an evaluation monitoring program, in accordance with Section 20420(k)(5), Title 27, CCR.
c. within 180 days of verifying measurably significant evidence of a release from a WMU, submit an engineering feasibility study for a corrective action program. The corrective action program shall, at a minimum, meet the requirements of Section 20430, Title 27, CCR. [Section 20420(k)(6), Title 27, CCR]

10. Responding to a Release Discovery

Upon verifying a measurably significant evidence of a release from a WMU according to Section 20420(j) of Title 27 and Section I.A.7 and I.A.8 of this MRP, the Discharger shall follow the procedures and timeline described in Section 20420(k) of Title 27.

11. Construction Closure Reports and Construction Quality Assurance Reporting

A closure report for each construction season of partial final closure activities and a full closure report once final closure is achieved shall be prepared and certified by the Construction Quality Assurance (CQA) Officer and submitted, under penalty of perjury, to the Regional Water Board and other appropriate agencies in accordance with Sections 20324(c), 20324(d), and 21880, Title 27, CCR. The CQA officer must be a registered civil engineer or a certified engineering geologist licensed in the State of California. The reports, at a minimum, shall include the certificate of closure; daily summary reports; material acceptance reports; photo logs of closure activities; final CQA documentation; laboratory testing results; field testing results; and an as-built topographic map of the capped area (for each construction season then for the completed project), prepared at a scale of one-inch to 100 feet, with a contour interval of two feet.

During times of active liner construction subject to this Order or any periods of repair to the waste containment, drainage, or monitoring facilities, legible copies of the daily CQA field notes and summary reports shall be submitted to the Regional Water Board via facsimile at (707) 523-0135 or via email to an appropriate staff contact by noon the following weekday. The facsimile or email shall be addressed to the Regional Water Board, Land Disposal Unit, and include the name of the staff person assigned to the Site.

II. MONITORING PROGRAMS

A. SOLID WASTE MONITORING

The Discharger shall monitor monthly all wastes discharged to each WMU Phase and report quarterly as follows:

Table II.A.1
Nonhazardous Solid Waste Monitoring

Parameter	Units	Monitoring Frequency	Reporting Frequency
Quantity discharged	cubic yards or tons	Monthly	Quarterly
Cell sequencing area	Plan	Monthly	Quarterly
Constructed capacity of each landfill/phase remaining (provide the following information for each WMU listed below):	Percent	Monthly	Annually
Total Acres Constructed			
Volume in Place			
Volume Remaining			
Anticipated Construction Year			
Base Liner			
Date of 1st Waste Placement			
Cap			
LF1			
LF1 Compost Deck*			
LF2 Phase I and II			
LF2 Phase III*			
LF2 Phase IV*			
LF2 Phase V*			
REA (future)*			

*For all Phases to be constructed provide anticipated construction season.

B. ROUTINE MAINTENANCE

The Site shall be inspected weekly. At a minimum, the integrity of the WMUs, cover materials, drainage structures, leachate collection system, landfill gas system, and any potential erosion areas shall be inspected.

The inspections shall include applicable elements to meet post closure inspection requirements for those portions of the landfill that are closed at the time of the inspection. Inspection logs, problem areas, special occurrences, and corrective actions taken shall be included in the quarterly monitoring reports**.** The Discharger may request a reduction in inspection frequency after the site has stabilized.

C. CONSTITUENTS OF CONCERN

Except as otherwise indicated in this Order, the Discharger shall monitor each medium of the Site for applicable Constituents of Concern (per State Water Resources Control Board Resolution 93-62). The monitoring points, analytical methods, and frequencies of analysis are as follows:

1. Monitoring Points

a.	Leachate	Discrete samples will be taken from leachate extraction wells and collection systems as specified: LF1-LCRS, LF1-LWSI, LEW-2, V17, LF2-LCRS, and LF2-Phase III & IV LCRS.
b.	Leak Detection Systems	Once constructed, LF2- Phase III & IV, REA
c.	Groundwater	All specified groundwater monitoring wells
d.	Underdrains	LP1, LP2, LF2 East Canyon Phase I & II, and once constructed, LF 2- Phase III & IV
e.	Springs	Any onsite springs, including those encountered during grading.
f.	Surface Water	SW-1, SW-6, SW-7
g.	Unsaturated Zone	The specified gas probes.

2. Monitoring Schedule

TABLE II.C.2
CONSTITUENTS OF CONCERN MONITORING

Constituents of Concern	Units	Frequency
Carbonate*	mg/L	Every 5 years
Bicarbonate Alkalinity*	mg/L	Every 5 years
Volatile Organic Compounds (EPA Method 8260)*	ug/L	Every 5 years
Semi-Volatile Organic Compounds (EPA Method 8270)*	ug/L	Every 5 years
Organochlorine Pesticide, PCBs (EPA Method 8080)	ug/L	Every 5 years
Chlorophenoxy Herbicides (EPA Method 8150)	ug/L	Every 5 years
Organophosphorus Compounds (EPA Method 8141)	ug/L	Every 5 years
Inorganics (dissolved)*	mg/L	Every 5 years
MTBE*	ug/L	Every 5 years
UNSATURATED ZONE		
Volatile Organic Compounds (EPA Method TO15)	ppb/v	Every 5 years
Methane	ppb/v	Every 5 years

*Performed annually for specified leachate and corrective action monitoring points.

D. LEACHATE MONITORING

1. Monitoring Points

The leachate monitoring points within each Waste Management Unit (WMU) shall be as follows:

TABLE II.D.1
LEACHATE MONITORING POINTS

WMU	Location	Parameter
Landfill 1	Intercept Trench Riser, or replacement	Leachate Level Ft/tenths
Landfill 1	LEW-2	Leachate Level Ft/tenths
Landfill 1	V17	Leachate Level Ft/tenths
LP1	LCRS Upper & Lower-Sump and Leachate Outfall	Presence of liquid
LP2	LCRS-Sump and Leachate Outfall	Presence of liquid
Landfill 2 Phase I/II	Well/Sump LCRS	Leachate Level Ft/tenths
Landfill 2 Phase I/II	Underdrain	gpm
Landfill 2 Phase III & IV	LCRS, LDS and Underdrain	Presence of liquid gpm
REA (future)	LDS and Underdrain	Presence of liquid gpm

2. Monitoring Schedule

Leachate monitoring will be performed at the specified points and shall be conducted as specified in Table II.D.2.

TABLE II.D.2
LEACHATE MONITORING PROGRAM

Parameter	Units	Frequency	Reporting
Field Volume			
Freeboard, LP1, LP2	Feet/tenths	Daily	Monthly
Landfill 2 Phase I/II Underdrain	gpm	Monthly	Monthly
Volume Collected	gallons	Daily	Monthly
Landfill 2 Phase III/IV Underdrain	gpm	Monthly	Monthly
Volume collected	gallons	Daily	Monthly
REA Underdrain (future)	gpm	Monthly	Monthly

Parameter	Units	Frequency	Reporting
Volume collected	gallons	Daily	Monthly
Leachate Seeps, if present	gpm	Daily	Monthly
Field Parameters			
Hardness (as $CaC0_3$)	mg/L	Quarterly	Quarterly
Specific Conductance	mhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Temperature	°F	Quarterly	Quarterly
Ammonia	mg/L-grab	Quarterly	Quarterly
Unionized Ammonia	mg/L-grab	Quarterly	Quarterly
Turbidity	NTU	Quarterly	Quarterly
Monitoring Parameters			
Chlorides	mg/L	Quarterly	Quarterly
Fluoride	mg/L	Quarterly	Quarterly
COD	mg/L	Quarterly	Quarterly
TDS	mg/L	Quarterly	Quarterly
Sodium	mg/L	Quarterly	Quarterly
Sulfates	mg/L	Quarterly	Quarterly
Mineral series	mg/L	Quarterly	Quarterly
Nitrogen series	mg/L	Quarterly	Quarterly
CAM 17 metals	mg/L	Quarterly	Quarterly
Sulfates	mg/L	Quarterly	Quarterly
Halogenated Volatile Organic Compounds (VOCs)	ug/L	Quarterly	Quarterly
Aromatic VOCs	ug/L	Quarterly	Quarterly
Constituents of Concern			
Table II.C.2. Annual constituents	ug/L	Annually	Annually

Upon detection of leachate in a previously dry leak detection layer the leachate shall be sampled for the complete list of COCs in Table II.C.2. and the results included in the monitoring report. If COC constituents are detected that are not already *Monitoring Parameters*, then the leachate must be re-sampled for those constituents. If confirmed by re-test, then these constituents must be added to the *Monitoring Parameters* list and included in the quarterly laboratory analyses.

If liquids are observed in the LDS of the Landfill 2 or REA (future) liner system the Discharger must notify the Regional Board staff within 24 hours, in accordance with Contingency Plans. All visible portions of synthetic liners shall be inspected on a monthly basis.

Each LCRS shall be hydraulically tested annually to demonstrate that it is still operating in conformance with the design. The results shall be reported to the Board in the Annual Report and shall include comparison with earlier tests made under comparable conditions.

Samples will be taken from the specified leachate monitoring locations and leachate outfall locations in LP1 and LP2 at each quarterly event. If leachate seeps

surface and are being discharged to surface drainage ways, or surface waters, the Discharger shall immediately sample the leachate and report this to Regional Water Board staff. Results from the any discrete samples, leachate pond sampling, and any leachate seeps shall be reported in the quarterly monitoring reports.

E. DETECTION AND CORRECTIVE ACTION MONITORING

For each monitoring medium, samples from all Monitoring Points assigned to detection monitoring or corrective action monitoring shall be collected and tested as specified herein for the Monitoring Parameters listed in this Program.

For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

Statistical analyses shall be performed as soon as the monitoring data are available. Intra-well statistical data analyses shall be performed for both aquifers due to the lack of appropriate background monitoring capabilities. Concentration limits for man-made chemicals shall be set at practical quantitation limits (PQLs) for individual analytes. Concentration limits for naturally occurring compounds are determined statistically for groundwater and surface water monitoring programs using normal tolerance limits developed from intra-sampling location data. Statistical confidence/tolerance intervals shall be updated annually and provided within the Annual Report.

F. GROUNDWATER ELEVATION MONITORING

The groundwater surface elevation (in feet and hundredths, above mean sea level (MSL)) in all wells and piezometers shall be measured on a quarterly basis for each monitored groundwater body and used to determine the velocity and direction of groundwater flow. Monitoring shall include the times of expected highest and lowest elevations of the water level for the respective groundwater body. Groundwater elevations for all upgradient and downgradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. This information shall be included in the monitoring reports.

Monitoring wells have been installed in both shallow and deep zones around the landfills. These wells will be monitored as sentry wells to ensure that the predicted groundwater potentiometric surface does not significantly change over the lifetime of this project, as the site undergoes blasting, earthmoving, grading and landfilling activities.

Perimeter/sentry wells include	A-3, A-4, A-5, DW-1R, DW-3A/3B, DW-4B, DW-5, DW-7,MW1, F2N, F12, F14, F16, F19, F20 through F28, F37, F38, LP1, LP2, PZ1, PZ3/3A, TWM-12, TMW-13 and WV1 through WV9 (the WV series will be decommissioned prior to REA development)

III. MONITORING

A. GENERAL

The Discharger shall perform Detection Monitoring and Corrective Action Monitoring (per Sections 20420 and 20430, Title 27, CCR) on all media potentially affected by a release, including surface water and groundwater, and the unsaturated zone. For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and samples shall be collected in a manner that ensures sample independence to the greatest extent feasible. All monitoring shall be conducted in accordance the standard water monitoring procedures developed and approved for the site, which includes quality assurance/quality control standards.

The Discharger shall use a Regional Water Board-approved statistical (or non-statistical) procedure to determine whether there has been a measurably significant increase in a constituent over the water quality protection standard, as set forth in Section 20415(e)(5) of Title 27 CCR.

The Discharger may, with approval of the EO, use alternative analytical test methods, including new US EPA approved methods, provided the methods have method detection limits equal to or lower than those for the analytical methods specified in this Monitoring and Reporting Program.

B. UNSATURATED ZONE

The Landfill Gas Monitoring Reports conducted quarterly for CalRecycle and the LEA shall be copied to this agency on a quarterly basis. Temporary Landfill Gas Probes TMP-1, TMP-1A, TMP-2, and TMP-3/R and the East Canyon Perimeter Probes and Cleanout Riser shall be retained in the quarterly monitoring program until such time as they are no longer available and written concurrence for their removal from the monitoring program is obtained from Regional Water Board staff.

C. GROUNDWATER

The groundwater surface elevation (in feet and hundredths, M.S.L.) in all wells and piezometers shall be measured on a quarterly basis and used to determine the velocity and direction of groundwater flow, in compliance with Title 27, CCR.
The amount of siltation in all wells and piezometers shall be measured on an annual basis and shall be used to make recommendations for maintenance. Additional monitoring wells shall be added to the program as needed.

1. Monitoring Points

TABLE III.C.1
MONITORING POINTS

Perimeter Monitoring Wells[1]:	DW1R, DW-3B, DW-4B, DW-7, F12, F14, F15, F16, F19, F20, F21, MW1, PZ-3
Landfill 1	A-2, A-3, HA-1, HA-2, F-2, F-3, F-5, F-8, F-10, F-11, F-12, F-13, ST1W-1, ST1W-2, and ST1W-3.
Landfill 2 Phase I/II	A1, A7, A8, F-11, F-19, F31 and F32
Landfill 2, Phase III/IV	F17, F18, TMW-6, New wells proposed: F36, F40; subject to field review with Regional Water Board staff for final siting.
REA (future)	F2N, F20, New well F-39 and underdrains to be proposed subject to field review with Regional Water Board staff for final siting.
Compost Deck (future)	F5, Proposed new well F-29R at future date subject to field review with Regional Board staff for final siting.
Groundwater Interception and Diversion Systems	
Landfill 2	Underdrain
Surface Impoundment LP1	Underdrain
Surface Impoundment LP2	Underdrain

Any additional designated monitoring wells or stations constructed at the site shall be added to the applicable monitoring/compliance network. Samples shall be collected from specified wells or stations at the frequency and for the parameters specified in Table III.C.1 and Table III.C.2. The sample obtained during the first sampling event for new monitoring wells will be tested for all the parameters specified in Table II.C.2., Consistuents of Concern Monitoring.

2. Monitoring Schedule

The analytes and frequency of detection groundwater monitoring at the points specified above are as follows:

TABLE III.C.2
GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	**Units**	**Frequency**
Field Parameters		
pH	pH units	Quarterly
Specific Conductance	mhos/cm	Quarterly

[1] Perimeter Monitoring Wells shall be sampled annually on alternating seasonal high and low groundwater elevations quarterly in accordance with Table III.C.1, below

Temperature	°F	Quarterly
Groundwater Elevations	Ft./tenths TOC	Quarterly
Dissolved Oxygen	mg/L	Quarterly
Turbidity	Turbidity units	Quarterly
Siltation in Well Casing	Ft./tenths	Annually, All Wells
Monitoring Parameters		
Sodium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Calcium	mg/L	Quarterly
Speciated Alkalinity	mg/L	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Nitrogen Series	mg/L	Quarterly
Halogenated VOCs	ug/L	Quarterly
Aromatic VOCs	ug/L	Quarterly
CAM Metals	mg/L	Annually
Constituents of Concern		
Table II.C.2. constituents	ug/L	Every 5 years

D. SURFACE WATER MONITORING

1. Monitoring Points

Both unnamed tributaries flowing into Stemple Creek shall be sampled at the property boundary at locations SW1, SW6, and SW7. Additional surface water monitoring points may be sited, installed, and/or monitored under General NPDES Storm Water permitting programs as appropriate for specific industrial and construction activities on the site.

2. Monitoring Schedule

Surface water monitoring shall be conducted as specified in Table III.D. below. Sampling shall begin with the first surface runoff in the fall of each year and shall continue monthly until surface runoff ceases in the dry season.

TABLE III.D.2.
SURFACE WATER MONITORING PROGRAM

Parameter	**Units**	**Frequency**
Field Parameters		
Flow	MGD	Continuous
Dissolved Oxygen	mg/L	Weekly
Hardness (as $CaCO_3$)	mg/L	Weekly
Specific Conductance	mhos/cm	Weekly
pH	pH units	Weekly
Temperature	°F	Weekly
Ammonia	mg/L-grab	Weekly
Unionized Ammonia	mg/L-grab	Weekly
Turbidity	Turbidity Units	Weekly

Total Precipitation	In/days	Monthly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Monthly
Total Settable Solids	mg/L	Monthly
Total Suspended Solids	mg/L	Monthly
Ammonia	mg/L	Monthly
Bicarbonate Alkalinity	mg/L	Monthly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Nitrogen Series	mg/L	Quarterly
Carbonate Alkalinity	mg/L	Quarterly
Chemical Oxygen Demand (COD)	mg/L	Annually
Total Organic Carbon (TOC)	mg/L	Annually
Biological Oxygen Demand (BOD)	mg/L	Annually
Bioassay Test (96 hr.)	% survival	Annually
CAM 17 Metals	mg/L	Annually
Constituents of Concern		
Table II.C.2. constituents	mg/L	Every 5 years

The Discharger shall determine at each sampling whether there is either a statistically or non-statistically significant increase over water quality protection standards for each parameter and constituent analyzed. If a release is detected at the downstream sampling point, the Discharger shall proceed with an Evaluation Monitoring Program to determine the source(s) and extent of the release.

IV. CORRECTIVE ACTION

The following information shall be gathered annually as to the progress of groundwater remediation, leachate extraction, and landfill gas control and shall be reported in the format of Table IV.A.2 below:

A. CORRECTIVE ACTION MONITORING

1. Monitoring Points

The corrective action monitoring points for Landfill 1 and Landfill 2, shown in **Attachment F**, are as follows:

TABLE IV.A.1
CORRECTIVE ACTION MONITORING POINTS

WMU	Source Area	Monitoring Points
Landfill 1	East Canyon Area	Trench Riser*, F3*,F8*, F30*
Landfill 1	Toe Area	F-10, F-35, MW-3A, MW-3R,
Landfill 2	Toe Area	Underdrain (Phase I/II),
Landfill 2	Perimeter Gas Probes	ECP1U/1L*, ECSP1U,* ECP2U, ECP3U/3L*, ECSP3U/3L*, ECP4U/ECP4L*, ECP5U/5L*,ECP6U/6L* and Cleanout Riser*

List includes former detection monitoring wells impacted by the spread of contaminants.

*Denotes well/probes(s) proposed for removal in advance of base liner construction phases. They will be phased out following review and concurrence with a well decommissioning workplan at each phase of construction.

2. Monitoring Schedule

The monitoring schedule for the corrective action points specified above is as follows:

TABLE IV.A.2
CORRECTIVE ACTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
pH	pH units	Quarterly
Specific Conductance	mhos/cm	Quarterly
Temperature	°F	Quarterly
Ground Water Elevation	Ft./TOC	Quarterly
Dissolved Oxygen	mg/L	Quarterly
Turbidity	Turbidity units	Quarterly
Siltation in Well Casing	Ft./tenths	Annually
Monitoring Parameters		
Speciated Alkalinity	mg/L	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chlorides	mg/L	Quarterly
Sulfates	mg/L	Quarterly
Nitrogen Series	mg/L	Quarterly
Halogenated VOCs	ug/L	Quarterly
Aromatic VOCs	ug/L	Quarterly
Constituents of Concern		
Table II.C.2. Annual constituents	ug/L	Annually

Leachate Volume Assessment Corrective Action Monitoring Program

Landfill 1

The Discharger shall monitor leachate level and effective drawdown of leachate monthly using the leachate piezometer network. The leachate piezometer network may be modified during landfill expansion and partial closure activities but will be re-established once these activities have been completed. Monthly leachate elevation contour maps shall be reported quarterly along with individual rates of pumping from each leachate extraction location.

Landfill 2

The Discharger shall monitor and report the volume and rates of flow into the East Canyon liner sump, and the percentage of design capacity that these represent. The volume of leachate within the sump shall not exceed two thirds of the design capacity.

V. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) consists of the following elements:

a. Constituents of Concern;
b. Concentration Limits;
c. Monitoring Points;
d. Points of Compliance; and
e. Compliance Period.

Each of these is described as follows:

A. CONSTITUENTS OF CONCERN

The Constituents of Concern (COCs), as required under Section 20395 of Title 27 CCR, shall include all constituent groups identified in Table II.C.2. The Discharger shall test samples for all COCs every five years or more frequently, as required under the monitoring program.

B. CONCENTRATION LIMITS

The Concentration Limit for any given Constituent of Concern or Monitoring Parameter in a given monitored medium (i.e., the uppermost aquifer) at the Site shall be as follows, and shall be used as the basis of comparison with data from the Monitoring Points in that monitored medium:

a. The constituent's background value, from the Background Monitoring Points for that monitored medium. Either:

    1. The mean (or median, as appropriate) and standard deviation (or other measure of central tendency, as appropriate) of the constituent's background data; or

    2. The constituent's Method Detection Limit (MDL), in cases where less than 10 percent of the background samples exceed the constituent's MDL; or

    3. A concentration limit greater than background, as approved by the Regional Water Board for use during or after corrective action.

C. MONITORING POINTS

1. Unsaturated Zone - The Discharger shall submit copies of quarterly gas monitoring reports for all landfill gas probes monitored in accordance with

the Solid Waste Facilities Permit issued by the Department of Resources, Recycling and Recovery (Cal-Recycle).

2. **Groundwater -** As described in Section III.C.1 for Landfill's 1, 2, REA (future), and the LF1-Compost Deck (future) respectively.

3. **Surface Water-** As described in Section III.D.2.

Upon confirmation of an exceedance from an existing release, the Discharger shall transfer the impacted monitoring point(s) from the Detection Monitoring Program (DMP) to the Corrective Action Monitoring Program (CAMP). Upon confirmation that levels in a previously impacted monitoring point has been reduced below concentration limits, the Discharger may, with Board staff approval, transfer that monitoring point from the CAMP to the DMP.

D. POINT OF COMPLIANCE

The point of compliance for each waste management unit (WMU) is the vertical surface located at the downgradient limit of the WMU that extends through the uppermost aquifer underlying the WMU.

E. COMPLIANCE PERIOD

The Compliance period is the number of years equal to the active life of the landfill plus the closure period. Each time the Standard is exceeded (i.e., a release is discovered), the Site begins a Compliance Period on the date the Regional Water Board directs the Discharger to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the landfill has been in continuous compliance for at least three consecutive years.

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

Original Signed By

Ordered by:_____
Matthias St. John
Executive Officer

March 14, 2013