California Regional Water Quality Control Board
North Coast Region

MONITORING AND REPORTING PROGRAM NO. R1-2004-0040

FOR

CONTINUED OPERATION AND CORRECTIVE ACTION AT THE
COUNTY OF SONOMA
CENTRAL LANDFILL
AND
EAST CANYON EXPANSION UNIT
SOLID WASTE DISPOSAL SITE

CLASS III LANDFILLS

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, CCR, and any other applicable provisions therein.

Compliance with this Monitoring and Reporting Program (MRP), and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements (WDRs) Order No.R1-2004-40. 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. 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.

A narrative discussion of the monitoring results, including notations of any water quality violations shall precede tabular summaries of the water quality 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 so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Historical and current monitoring data shall be graphed at least once annually and submitted within the Annual Report. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data.

The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Regional Water Board in the monitoring report(s) for that period.

A. REQUIRED REPORTS

1. Detection Monitoring Report

Detection Monitoring Reports (DMRs) shall be prepared and submitted to the Regional Water Board quarterly by the 15th day of the month following the end of each calendar quarter. The reports shall include the results of all monitoring programs listed herein. The established monitoring and reporting period is as follows:

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

2. Annual Report

An Annual Report, which summarizes the monitoring results for the prior four quarters, shall be submitted to the Regional Water Board **by February 15, annually**. The report shall contain both tabular and graphical summaries of the detection and corrective action monitoring data and a discussion of the progress toward re-establishment of compliance with WDRs and the Water Quality Protection Standard (WQPS). In lieu of submitting a separate report, the Annual Report information may instead be included with the first quarter Detection Monitoring Report. The Annual Report shall also include the results of the soil gas monitoring program.

3. Wetlands Mitigation and Monitoring

The results of monitoring conducted pursuant to the Wetlands Mitigation and Monitoring Plan (WMMP), as approved by Regional Water Board staff, shall be submitted **by December 31, annually**. In addition to reporting the monitoring results, the report shall include narrative descriptions, summaries of mitigation and preservation activities, and any maps, as needed, showing areas of remedial activities. Final wetlands delineation maps shall be provided in accordance with the WMMP and the outlined 5-year completion schedule.

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. Constituents-of-Concern (COC)

The results of COC monitoring shall be submitted with, or reported in, the Annual Report for that year.

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

a. immediately 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.

7. Existing Release - Amended Programs

Within 30 days of confirmation of an exceedance from an existing release, the Discharger shall submit, for Regional Water Board staff approval, an amendment to the Corrective Action Program, describing measures planned or taken to mitigate the exceedance. The Discharger shall also note any necessary changes to the DMP and Corrective Action Monitoring Program monitoring locations as a result of the exceedance.

8. 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 A.6 of this MRP, the Discharger shall follow the procedures and timeline described in Section 20420(k) of Title 27.

II. MONITORING PROGRAMS

A. SOLID WASTE MONITORING

The Discharger shall monitor monthly all wastes discharged to each WMU in Landfills 1 and 2 and report quarterly as follows:

Table II.A: Nonhazardous Solid Waste Monitoring

Parameter	Units	Monitoring Frequency	Reporting Frequency
Quantity discharged	cubic yards or tons	Monthly	Quarterly
Type of material discharged	---	Monthly	Quarterly
Cell sequencing plan	---	Monthly	Quarterly
Capacity of each landfill/phase remaining	Percent	Monthly	Annually

B. ROUTINE MAINTENANCE

The disposal site shall be inspected weekly. At a minimum, the integrity of the cover material, drainage structures, potential erosion areas, and leachate piping and storage facilities shall be inspected. Inspection logs, problem areas, special occurrences, and corrective actions taken shall be included in quarterly monitoring reports**.**

C. CONSTITUENTS OF CONCERN

Except as otherwise indicated in this Order, the Discharger shall monitor each media of each new and existing landfill unit for applicable Constituents of Concern (per federal Subtitle D, Appendix II and State Water Resources Control Board Resolution 93-62). The monitoring locations, analytical methods, and frequency of analyses are as follows:

1. Monitoring Locations

a. Leachate - Landfill 1 LCRS Sump, Landfill 2 LCRS sump, Landfill 2 underdrain discharge, Leachate Pond 1(LP1) and Leachate Pond 2 (LP2), as identified in Table II.C.1

b. Groundwater – All groundwater monitoring wells

c. Unsaturated zone – Landfill gas - a representative gas probe for Landfill 1, Landfill 2, and temporary probes- TMP-1, TMP-1A, TMP-2 and TMP-3/R, and all East Canyon Perimeter Probes as per Table II.B, below, and as shown on Attachments “E” and “F”.

2. Monitoring Schedule

TABLE II.B
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 TO14)	ppb/v	**Every 5 years**
Methane	ppb/v	**Every 5 years**

D. LEACHATE MONITORING

1. Monitoring Locations

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

TABLE II.C.1
LEACHATE MONITORING LOCATIONS

WMU	Location
Landfill 1	Well/Sump
Landfill 1	LEW-1
Landfill 1	LEW-2
Landfill 1	Well 60
Landfill 1	Well 9
Landfill 1	Well 66
Leachate Pond 1	LP1
Leachate Pond 1	LCRS-Sump
Leachate Pond 2	LP2
Leachate Pond 2	LCRS-Sump
Landfill 2	Underdrain

2. Monitoring Schedule

Leachate monitoring shall be conducted as specified in Table II.C.2.

TABLE II.C.2
LEACHATE MONITORING PROGRAM

Parameter	Units	Frequency	Reporting
Field Parameters			
Freeboard in Leachate Ponds	Feet/tenths	Daily	Monthly
LCRS - Sumps	Presence of liquid	Monthly	Monthly
Landfill 2 underdrain	gpm	Monthly	Monthly
Volume outhauled	Gallons	Daily	Monthly
Specific Conductance	mhos/cm	Quarterly	Quarterly
PH	pH units	Quarterly	Quarterly
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/l	Quarterly	Quarterly
Chlorides	mg/l	Quarterly	Quarterly
Fluoride	mg/l	Quarterly	Quarterly
COD	mg/l	Quarterly	Quarterly
Sodium	mg/l	Quarterly	Quarterly
Mineral series	mg/l	Quarterly	Quarterly
Nitrogen series	mg/l	Quarterly	Quarterly
CAM metals	mg/l	Quarterly	Quarterly
Sulfates	mg/l	Quarterly	Quarterly

Parameter	Units	Frequency	Reporting
Volatile Organic Compounds	ug/l	Quarterly	Quarterly
Constituents of Concern			
Table II.B constituents	ug/l	Annually	Annually

Upon detection of leachate in a previously dry LCRS sump, the leachate shall be sampled in accordance with the above schedule 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 Parameter list and analyzed on a quarterly basis.

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 WDRs. The results shall be reported to the Regional Water Board in the Annual Report and shall include comparison with earlier tests made under comparable conditions.

E. GROUNDWATER ELEVATION MONITORING

Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the groundwater gradient/direction analyses required. For each monitored groundwater body, the Discharger shall measure the water level in each well and shall determine groundwater gradient and direction at least quarterly, including 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 quarterly monitoring reports.

F. WETLANDS MITIGATION AND MONITORING

The Discharger shall monitor wetlands in accordance with the Wetlands Mitigation and Monitoring Plan (WMMP), as approved by Regional Water Board staff and included in the Joint Technical Document and Final Environmental Impact Report. Monitoring shall be conducted for a sufficient number of years to ensure that all wetlands created on-site survive for the long term, and shall be discontinued only upon revision of this MRP. The results of monitoring shall be submitted by **December 31, Annually**.

III. DETECTION MONITORING

A. GENERAL

The Discharger shall perform Detection Monitoring on all media potentially affected by a release, including surface water, groundwater, and the unsaturated zone. For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points and Background 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.

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.

B. UNSATURATED ZONE

The Landfill Gas Monitoring Reports conducted quarterly for the CIWMB and 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 East Canyon Perimeter Probes and Cleanout Riser shall be added to the quarterly monitoring program until such time as they are no longer needed and written concurrence is obtained from Regional Water Board staff.

C. GROUNDWATER

The groundwater surface elevation (in feet and hundredths, M.S.L.) in all wells shall be measured on a quarterly basis and used to determine the velocity and direction of groundwater flow. This information shall be displayed on a water table contour map and/or groundwater flow net for the site and included in the quarterly monitoring reports. Additional monitoring wells shall be added to the program as needed.

1. Monitoring Locations

The groundwater detection monitoring points for Landfill 1 and Landfill 2, shown in Attachment E, are as follows:

Background Monitoring Wells:

Landfill 1	MW-1, F-12, DW-1R, DW-3A, and DW-3B
Landfill 2	F-14, F-15, F-16, and DW-4B

Downgradient Monitoring Wells:

Landfill 1	A-2, A-3, HA-1, HA-2, F-2N, F-3, F-8, F-11, F-13, ST1W-1, ST1W-2, ST1W-3, DW-7, F-29, and F-30
Landfill 2	A1 A7, A8, F-11, F-17, F-18, F-19, F31 and F32

Groundwater Interception and Diversion Systems:

Landfill 2	Underdrain
Surface Impoundment LP1	Underdrain
Surface Impoundment LP2	Underdrain

Points of Compliance Wells:

Landfill 1	A-2, A-3, HA-II, HA-I, F-2, F-3, F-8, F-11, F-13, ST1W-1, ST1W-2, and ST1W-3
Landfill 2	A1, A7, A8, F11, F-17, F-18 and F-19

Any additional monitoring wells or stations constructed at the site shall be added to the monitoring network. Samples shall be collected from all installed wells or stations at the frequency and for the parameters specified in Table IIA and IIB, respectively.

2. Monitoring Schedule

The analytes and frequency of groundwater monitoring is as follows:

TABLE III.C.1
GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
pH	pH units	Quarterly
Specific Conductance	Mhos/cm	Quarterly
Temperature	°C	Quarterly
Groundwater Elevations	Ft./tenths TOC	Quarterly
Dissolved Oxygen	mg/L	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters		
Sodium	mg/l	Quarterly
Magnesium	mg/l	Quarterly
Calcium	mg/l	Quarterly
Iron	mg/l	Quarterly
Speciated Alkalinity	mg/l	Quarterly
Floride	mg/l	Quarterly
Manganese	mg/l	Quarterly
Total Dissolved Solids (TDS)	mg/l	Quarterly
Chlorides	mg/l	Quarterly
Sulfates	mg/l	Quarterly
Nitrogen Series	mg/l	Quarterly
Halogenated VOC's	ug/l	Quarterly
Aromatic VOC's	ug/l	Quarterly
CAM Metals	mg/l	Annually
Constituents of Concern		
Table II.B constituents	ug/l	Every 5 years

D. SURFACE WATER MONITORING

1. Monitoring Locations

Both unnamed tributaries flowing into Stemple Creek shall be sampled at the property boundary at locations SW1, SW6, and SW7 in addition to background station "Ditch". Locations SW-1, SW-6 and SW7, as shown in Attachment E, constitute the points of compliance for surface waters for both landfill units.

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.
SURFACE WATER MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Flow	MGD	Continuous
Dissolved Oxygen	mg/l	Monthly
Hardness (as $CaC0_3$)	mg/l	Monthly
Specific Conductance	Mhos/cm	Monthly
pH	pH units	Weekly
Temperature	°C	Weekly
Ammonia	mg/l-grab	Weekly
Unionized Ammonia	mg/l-grab	Weekly
Turbidity	Turbidity Units	Monthly
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	mg/l	Monthly
Chlorides	mg/l	Quarterly
Sulfates	mg/l	Quarterly
Nitrogen Series	mg/l	Quarterly
Carbonate	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.)	percent survival	Annually
CAM Metals	mg/l	Annually
Constituents of Concern		
Table II.B 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 Locations

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

TABLE IV.B.1
CORRECTIVE ACTION MONITORING LOCATIONS

WMU	Source Area	Monitoring Locations
Landfill 1	Upper Canyon	F5
Landfill 1	East Canyon Area	F3, F8, F30
Landfill 1	Cut-Off Trench	Discharge Pipe to Leachate Pond 2
Landfill 1	Toe Area	F10, MW3A, MW3R,
Landfill 2	Toe Area	Underdrain, A7, A8, F31, F32
Landfill 2	Perimeter Gas Probes	ECP1U/EPC1L, ECP2U, ECP3U/3L, ECSP3U/3L, ECSP3U/3L, ECP4U/ECP4L, ECP5U/ECP5L,ECP6U/ECP6L and Cleanout Riser

List includes former detection monitoring wells impacted by the spread of contaminants. Additional well(s) may be needed.

2. Monitoring Schedule

The monitoring schedule for the corrective action wells is as follows:

TABLE IV.B.2
CORRECTIVE ACTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
pH	pH units	Quarterly
Specific Conductance	mhos/cm	Quarterly
Temperature	°C	Quarterly
Turbidity	Turbidity units	Quarterly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/l	Quarterly
Chlorides	mg/l	Quarterly
Sulfates	mg/l	Quarterly
Nitrate – Nitrogen	mg/l	Quarterly
Tritium	mg/l	Quarterly
Volatile Organic Compounds	ug/l	Quarterly
Constituents of Concern		
Table II.B constituents	ug/l	Annually

2. Leachate Monitoring Locations

Landfill 1

The Discharger shall monitor effective drawdown of leachate from the leachate peizomteres established within the Compliance Time Schedule Order Requirements of the Waste Discharge Requirements Order. Drawdown isoheyetal contour maps shall be reported monthly along with individual rates of pumping from each extraction location.

Landfill 2

The Discharger shall monitor and report the volume and rates of flow into the East Canyon liner sump. 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) required under Section 20395 of Title 27 shall include all constituent groups identified in Table II.B and specifically listed in Appendix II Subtitle D. The Discharger shall monitor all COCs every five years or more frequently as required under the corrective action monitoring program.

B. Concentration Limits

1. General

The Concentration Limit for any given Constituent of Concern or Monitoring Parameter in a given monitored medium (i.e., the uppermost aquifer) at a landfill 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 background value established in the WDRs by the Regional Water Board for that constituent and medium;

b. 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 MDL, in cases where less than 10 percent of the background samples exceed the constituent's MDL; or

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

2. Groundwater - background values established by monitoring.

3. Surface Water - Concentration limits for SW-1 and SW-6 and SW-7 shall be calculated for the background monitoring point, "Ditch".

These values, and the statistical or non-statistical methods upon which they are based, are subject to ongoing review and approval by Regional Water Board staff. In addition, they shall be updated as necessary to provide ongoing definition of background water quality.

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 CIWMB.

2. Groundwater - As listed in Tables III.C. for Landfill's 1 and 2, respectively.

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

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 Regional Water Board staff approval, transfer that monitoring point from the CAMP to the DMP.

D. Points of Compliance

The point(s) of compliance at each groundwater monitoring point is the vertical surface located at the downgradient limit of the WMU that extends through the uppermost aquifer underlying the WMU. These points correspond to the corrective action wells on the southern and southwestern periphery of the landfill along Hammel Road. The points of compliance for surface water monitoring shall be SW-1, SW-6, and SW-7.

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 landfill 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 on the effective date of this Order.

Ordered by: _____

Catherine E. Kuhlman,
Executive Officer

June 23, 2004

(centralm&r0404revised)