

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0144

WASTE DISCHARGE REQUIREMENTS  
FOR  
COUNTY OF TEHAMA AND CITY OF RED BLUFF  
FOR  
CONSTRUCTION AND OPERATION OF  
TEHAMA COUNTY AND CITY OF RED BLUFF  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
TEHAMA COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. The County of Tehama and City of Red Bluff (hereafter Discharger) jointly own and operate a municipal solid waste landfill (hereafter facility) about 2 miles northwest of the City of Red Bluff, in Section 15, T27N, R4N, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order. The facility is currently operated under contract by Waste Connections, Inc.
2. The original facility consisted of an 83.6 acre site that included an existing unlined waste management unit (WMU) covering approximately 31.6 acres (Phase 1) and a second WMU covering 21.1 acres (Phase 2) now proposed for development in four fill modules (Modules 1, 2, 3 and 4), as shown in Attachment B, which are incorporated herein and made part of this Order. The Discharger recently acquired 76 additional acres west and south of the existing Phase 1 WMU. The current 159.6 acre facility is comprised of Assessor's Parcel Numbers (APN) 24-010-04, 24-010-59, 24-010-60, and a portion of APN 14-010-64.
3. On 26 February 1988, the Regional Board issued Order No. 88-036, in which the facility was classified as a Class III waste disposal site for the discharge of municipal solid wastes in accordance with the regulations in effect when the Order was issued. This Order reclassifies the WMU as a Class III landfill that accepts municipal solid waste in accordance with Title 27, California Code of Regulations, Section 20005, et seq. (Title 27).
4. On 17 September 1993, the Regional Board adopted Order No. 93-200, amending Order No. 88-036 and implementing State Water Resources Control Board Resolution No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste.

### **SITE DESCRIPTION**

5. The measured hydraulic conductivity of the native soils underlying the WMUs ranges between  $1 \times 10^{-5}$  and  $1 \times 10^{-7}$  cm/sec.
6. The closest Holocene fault is approximately 23 miles to the southwest. Maximum probable and maximum magnitude seismic events along this fault are estimated to range between 7.25 and 8.0 on the Richter scale. The maximum probable and maximum credible acceleration for the site from this fault is estimated to range from 0.257g to 0.423 g.
7. Land uses within 1,000 feet of the facility are predominantly open space used for cattle and sheep grazing. The zoning classifications within 1,000 feet of the facility are "Rural Residential" and "Exclusive Agricultural".
8. The facility receives an average of 23.12 inches of precipitation per year as measured at the Red Bluff FSS Station. Approximately 95 percent of the annual precipitation is received between October and May. The mean pan evaporation is 65.6 inches per year as measured at the Red Bluff 3E Station.
9. The 100-year, 24-hour precipitation event is estimated to be 3.65 inches, based on Department of Water Resources' bulletin entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.
10. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 065064270C.
11. In addition to the five on-site monitoring wells, there are fifteen groundwater supply wells within one mile of the site. The closest well is located approximately 700 feet east of the facility. One well is an agricultural supply well, and fourteen are domestic supply wells. There are two springs present within one mile of the site.

### **WASTE AND SITE CLASSIFICATION**

12. The Discharger discharges municipal solid wastes, which are defined in Title 27, CCR, Section 20164. Nonhazardous solid wastes include municipal solid wastes, as referred to in the Code of Federal Regulations, Title 40, Part 258.2.
13. The site characteristics where the WMUs are located (see Finding No. 5) do not specifically meet the siting criteria for a new Class III landfill contained in Section 20260(a) and (b)(1) of Title 27. As such, the site is not suitable for operating new WMUs or lateral expansions of existing WMUs for the discharge and containment of Class III wastes as described in

Finding No. 12, without the construction of additional waste containment features in accordance with Section 20260(b)(2) of Title 27 and State Water Resources Control Board Resolution No. 93-62.

### **SURFACE AND GROUND WATER CONDITIONS**

14. The *Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
15. Surface drainage is toward an unnamed tributary of Brickyard Creek, which is a tributary to the Sacramento River in the Red Bluff Hydrologic Area (No. 504.20) of the Sacramento River Basin.
16. The beneficial uses of the unnamed tributary of Brickyard Creek, and Brickyard Creek, are not individually identified in the Basin Plan; however, the Basin Plan states, "The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does identify present and potential beneficial uses of the Sacramento River. The beneficial uses of the Sacramento River are municipal and domestic supply, agricultural irrigation and stock watering, industrial service supply, industrial power generation, contact and non-contact recreation, canoeing and rafting, warm and cold freshwater habitat, warm and cold water fish migration, warm and cold water fish spawning, wildlife habitat, and navigation.
17. Boring logs indicate that a shallow unconfined groundwater unit, and a deeper confined groundwater unit exists beneath the site. The first encountered groundwater is about 60 to 100 feet below the bottom of the waste (approximately 340 to 370 feet MSL). The depth to groundwater fluctuates seasonally as much as 30 feet.
18. Monitoring data indicates background groundwater quality has an electrical conductivity (EC) ranging between 208 and 390 micromhos/cm, with total dissolved solids (TDS) ranging between 100 and 273 mg/l.
19. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.
20. The direction of groundwater flow is toward the south. The direction of groundwater flow varies seasonally and periodically flows toward the southeast. The average groundwater gradient is approximately 0.0025 feet per foot. The average groundwater velocity is 3.03 feet per year and 100.01 feet per year.

### GROUNDWATER MONITORING

21. The groundwater monitoring network consists of one upgradient monitoring well (OB-1) and two downgradient monitoring wells (OB-4A and OB-5). OB-5 and OB-4A replaced monitoring wells OB-2, and OB-3 respectively. In 2000, Regional Board staff determined that OB-3 was not an appropriate monitoring point and requested that a new monitoring well be installed. Regional Board staff also requested that an additional well be installed to replace OB-2, due to the uncertainty of OB-2 being representative of the upper most aquifer. Two additional monitoring wells are proposed to be installed (OB-6 and OB-7) with the construction of the Phase 2 WMU. An additional upgradient monitoring well may also be necessary, if OB-1 is ever determined not to be upgradient following the construction of Phase 2.

Monitoring well specifications

|                          | Reference Point<br>(feet MSL) | Depth<br>(feet bgs) | Screened Interval<br>(feet bgs) | Gravel Pack<br>(feet bgs) |
|--------------------------|-------------------------------|---------------------|---------------------------------|---------------------------|
| OB-1                     | 486                           | 208                 | 155-175                         | 105-208                   |
| OB-2 (Replaced by OB-5)  | 432.15                        | 207                 | 172-202                         | 75-207                    |
| OB-3 (Replaced by OB-4A) | 487.71                        | 300                 | Not available                   | Not available             |
| OB-4A                    | 453.54                        | 142                 | 122-142                         | 85-142                    |
| OB-5                     | 433.01                        | 120                 | 92-105                          | 92-105                    |

22. Three suction lysimeters, L-1, L-2, and L-3 were installed in 1986. In 1993, L-2 ceased to function and was abandoned in 1997. The unsaturated zone monitoring system currently consists of two suction lysimeters, L-1 (upgradient) and L-3 (downgradient). Pan lysimeters will be installed beneath the lowest level of the Phase 2 Module 1 liner to allow for the early detection and collection of a leachate release.

Lysimeter specifications

|                  | (feet bgs)  |                    |                           |
|------------------|-------------|--------------------|---------------------------|
|                  | Total Depth | Depth of Lysimeter | Gravel / Silica Sand Pack |
| L-1              | 33          | 26                 | 15-33                     |
| L-2 <sup>a</sup> | 20          | 16                 | 7-20                      |
| L-3              | 30          | 26                 | 17-30                     |

<sup>a</sup> abandoned in 1997

23. The Discharger's detection monitoring program for groundwater at the WMU satisfies the requirements contained in Title 27.
24. Volatile organic compounds (VOCs) are often detected in a release from a landfill, and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a WMU.
25. Title 27, CCR, Sections 20415(e)(8) and (9) provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a WMU in accordance with Title 27, CCR, Section 20415(b)(1)(B) 2-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
26. The Regional Board may specify a non-statistical data analysis method pursuant to Section 20080(a)(1) of Title 27. Section 13360(a)(1) of the California Water Code allows the Regional Board to specify requirements to protect underground or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
27. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a WMU, this Order specifies a non-statistical method for the evaluation of monitoring data.
28. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a WMU. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL), indicates that a release of waste from a WMU has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the WMU, or there is a source of the detected constituents other than the landfill, or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, the detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

### **GROUNDWATER DEGRADATION**

29. Based upon groundwater monitoring for the Phase 1 WMU, there is no statistically significant indication that groundwater has been impacted. Unsaturated zone monitoring data however shows increasing trends of chloride, electrical conductivity, and total dissolved solids in both the upgradient and downgradient lysimeters within the Phase 1 WMU. Low levels of VOCs ranging between 0.8 and 22.6 µg/L have been detected in both suction lysimeters. Constituents identified include: 1,1-dichloroethane; 1,2-dichloroethane; cis-1,2-dichloroethene; methylene chloride; tetrachloroethene; trichloroethene; and vinyl chloride in downgradient lysimeter L-3 and 1,1,1-trichloroethane in upgradient lysimeter L-1.

### **LINER PERFORMANCE DEMONSTRATION**

30. On 15 September 2000, the Regional Board adopted Resolution No. 5-00-213 Request For The State Water Resources Control Board To Review The Adequacy Of The Prescriptive Design Requirements For Landfill Waste Containment Systems To Meet The Performance Standards Of Title 27. The State Board responded, in part, that “a single composite liner system continues to be an adequate minimum standard” however, the Regional Board “should require a more stringent design in a case where it determines that the minimum design will not provide adequate protection to a given body of groundwater.”

In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that “the Regional Board will require a demonstration that any proposed landfill liner system to be constructed after 1 January 2002 will comply with Title 27 performance standards. A thorough evaluation of site-specific factors and cost/benefit analysis of single, double and triple composite liners will likely be necessary.”

31. A liner performance demonstration was prepared for the Phase 2 liner configuration and the potential impacts to groundwater resulting from liner defects were modeled. The maximum concentration and time to reach maximum concentration were predicted in groundwater for seven constituents found in leachate (benzene, 1,2-Dichloroethane, methylene chloride, MtBE, vinyl chloride, chloride, and barium) for a given liner leakage rate.
32. Initial results of the liner performance evaluation did not adequately demonstrate to Regional Board staff that the proposed liner design for the Phase 2 Module 1 WMU would meet the performance standards contained in Title 27. Regional Board staff requested the Discharger submit an amended liner design and subsequent liner performance demonstration. Amendments to the liner design include improving one-foot thick low permeability subgrade (base area only) from  $K \leq 1 \times 10^{-5}$  cm/sec to  $K \leq 1 \times 10^{-6}$  cm/sec, a landfill gas extraction system, pan lysimeters beneath the lowest portion of the liner, and

the addition of an electronic leak location survey in the CQA Plan. Regional Board staff approved a revised liner performance demonstration incorporating the described amendments.

### **CONSTRUCTION AND ENGINEERED ALTERNATIVE**

33. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
34. Resolution No. 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993.
35. Resolution No. 93-62 also allows the Regional Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.
36. Title 27, CCR, Section 20080(b) allows the Regional Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, CCR, Section 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, CCR, Section 20080(b)(2).
37. Section 13360(a)(1) of the California Water Code allows the Regional Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
38. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27 for a Class III landfill, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.

39. The Discharger submitted a Report of Waste Discharge requesting approval of an engineered alternative to the prescriptive liner requirements.
40. The engineered alternative proposed by the Discharger for the bottom liner of the Phase 2 Module 1 WMU consists of, in ascending order: a one foot thick compacted subgrade layer ( $K \leq 1 \times 10^{-6}$  cm/sec), a geosynthetic clay layer (GCL), a 60-mil HDPE geomembrane, a six-inch drainage layer (LCRS), a geotextile, and a one foot operations layer.
41. Side slope liners are proposed to be constructed of, in ascending order: a prepared subgrade, a GCL, a 60-mil HDPE geomembrane, and two feet thick operations layer. The finished side slope excavation will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the geosynthetic clay layer and/or geomembrane, and certified in accordance with this Order and the approved CQA Plan.
42. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.
43. The LCRS consists a gravel drainage blanket throughout the base of the Phase 2 Module 1 WMU with perforated HDPE piping that is designed to convey leachate to a double lined collection sump. The gravel drainage layer will be covered with a minimum 1-foot thick protective soil layer. HDPE piping will be placed around the perimeter of the WMU and in evenly spaced interval within the interior of the WMU. Both the perimeter and interior leachate collection drain piping will consist of 3-inch diameter perforated HDPE pipe encompassed by drain rock wrapped in geotextile. All leachate pipes are sized to convey at least twice the peak design flow for leachate production. Leachate will be conveyed to a sump 20 feet in length and width, and lined from top to bottom with a geomembrane, GCL, and 1-inch minus recompacted subgrade meeting a hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec. The sump will be equipped with a riser pipe for annual inspection, leachate removal, and cleaning if necessary. Leachate extracted from the sump will be temporarily stored in on-site tanks. Leachate will then be transported to the City of Red Bluff sewage treatment plant or used for dust control within the Phase 2 WMU liner footprint.
44. A landfill gas extraction system will be incorporated into the Phase 2 WMU. Horizontal gas collectors will be connected to a header pipe, spaced approximately 200 feet apart, located along the WMU perimeter. The header pipe will convey landfill gas to the existing flare. Forty feet of waste material will be placed over the horizontal collectors to prevent

the intrusion of oxygen. The landfill gas collection system will be operated only after two lifts of waste have been placed and the presence of methane is detected at or above 35% for two monitoring quarters in a row. The LCRS will also be connected to the landfill gas flare. Landfill gas extraction from the LCRS will commence when leachate is detected in any of the pan lysimeters.

45. A pan lysimeter will be installed beneath the LCRS sumps and system troughs for the purpose of unsaturated zone monitoring. The pan lysimeter will consist of (from bottom to top): 1) an underlying 60-mil HDPE liner on a prepared subgrade; 2) perforated or slotted 3-inch diameter HDPE piping wrapped with a filter fabric and encased in drainage rock; and 3) an overlying geonet.
46. Construction will proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.

#### **CEQA AND OTHER CONSIDERATIONS**

47. Tehama County and City of Red Bluff certified the final negative declaration for the facility on 26 September 2001 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). The Regional Board considered the negative declaration and incorporated mitigation measures from the negative declaration into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.
48. The activities described in Findings 1 through 46 have the potential to add pollutants to surface and groundwater in the form of sediment and landfill waste constituents as a result of earth disturbance and disposal of nonhazardous solid wastes and landfill leachate. These activities could adversely affect beneficial uses of surface water and groundwater unless adequately mitigated. Compliance with these waste discharge requirements will prevent impacts to surface water and groundwater.
49. This Order implements:
  - a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
  - b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;
  - c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and

- d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993.
50. Section 13267(b) of California Water Code provides that: “In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of this region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Board requires.” The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. The monitoring and reporting program required by this Order and the attached “Monitoring and Reporting Program No. R5-2003-0144” are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.

### **PROCEDURAL REQUIREMENTS**

51. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
52. The Regional Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
53. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
54. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at [http://www.swrcb.ca.gov/water\\_laws/index.html](http://www.swrcb.ca.gov/water_laws/index.html) and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 88-036 is rescinded, and Attachment 1 of Order No. 93-200 is amended, and that the Tehama County and City of Red Bluff Class III Municipal Solid Waste Landfill, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

**A. PROHIBITIONS**

1. The discharge of ‘hazardous waste’ or ‘designated waste’ is prohibited. For the purposes of this Order, the term ‘hazardous waste’ is as defined in Title 23, California Code of Regulations, Section 2510 et seq., and ‘designated waste’ is as defined in Title 27.
2. The discharge of wastes outside of a WMU or portions of a WMU specifically designed for their containment is prohibited.
3. The discharge of waste to a closed WMU is prohibited.
4. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
6. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the WMU if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.

**B. DISCHARGE SPECIFICATIONS**

1. Nonhazardous wastes shall be discharged to either:
  - a. The unclosed portion of an existing WMU; or

- b. To a WMU equipped with a composite liner containment system that meets the requirements for both liners and leachate collection and removal systems specified under D. Construction Specifications.

2. The discharge shall remain within the designated disposal area at all times.

### **C. FACILITY SPECIFICATIONS**

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
2. The Discharger shall immediately notify the Regional Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
3. Water used for facility maintenance, shall be limited to the minimum amount necessary for dust control, and construction.
4. Leachate and landfill gas condensate used for dust control shall be limited to the minimum amount necessary and shall only be applied in the Phase 2 WMU during the months of June through September.
5. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
6. Methane and other landfill gases shall be adequately vented, removed from the WMU, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
7. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
8. The Discharger shall comply with State Water Resources Control Board Order No. 97-03-DWQ (General Permit No. CAS000001), *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities*, or retain all storm water on-site.

#### **D. CONSTRUCTION SPECIFICATIONS**

1. The Discharger shall submit for Executive Officer review and approval **prior to** construction, design plans and specifications for new WMUs and expansions of existing WMUs, that include the following:
  - a. A Construction Quality Assurance Plan meeting the requirements of Title 27, CCR, Section 20324; and
  - b. A geotechnical evaluation of the area soils, evaluating their use as the base layer; and
  - c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and postclosure maintenance periods of the WMU, which shall be installed beneath the composite liner system in accordance with Title 27, CCR, Section 20415(d).
2. Both the bottom liner and side slope liner of all new WMUs and lateral expansion areas of existing WMUs shall be constructed in accordance with one of the following composite liner designs:
  - a. The prescriptive standard design which consists of a lower compacted soil layer that is a minimum of two feet thick with a hydraulic conductivity of  $1 \times 10^{-7}$  cm/sec or less and has a minimum relative compaction of 90%. Immediately above the compacted soil layer, and in direct and uniform contact with the soil layer, shall be a synthetic flexible membrane component that shall be at least 40-mil thick (or at least 60-mil thick if composed of high density polyethylene [HDPE]), which is immediately overlain with a leachate collection and removal system. A soil operations layer shall be placed above the leachate collection and removal system; or
  - b. The proposed engineered alternative consisting of, in ascending order: a one foot thick compacted subgrade layer ( $K \leq 1 \times 10^{-6}$  cm/sec), a GCL, a geotextile, a 60-mil HDPE geomembrane, a six-inch LCRS, and a one foot operations layer for the base liner. Side slope liners shall consist of, in ascending order: a prepared subgrade, a GCL, a 60-mil HDPE geomembrane, and a two feet thick operations layer.
3. The Discharger will perform an electrical leak location survey for the geomembrane. The leak testing enables location of defects, which might impact groundwater in the unsaturated zone, and construction contractor repair of the defects prior to the acceptance of the liner construction project.

4. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Regional Board.
5. If the Discharger proposes to construct a liner system in which a GCL is placed on top of a subgrade, the subgrade for the bottom and the side slopes of the WMU shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
6. Construction shall proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.
7. Following the completion of construction of a WMU or portion of a WMU, and prior to discharge onto the newly constructed liner system, the final documentation required in Section 20324(d)(1)(C) of Title 27 shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.
8. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
9. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of 0.066 cfs (42,654 gal/day) by the WMU or portion of the WMU, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Regional Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
10. Closure shall not proceed in the absence of closure waste discharge requirements.

## **E. DETECTION MONITORING SPECIFICATIONS**

1. The Discharger shall submit for Executive Officer review and approval a groundwater detection monitoring program demonstrating compliance with Title 27 for any WMU expansion.
2. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, the unsaturated zone, and landfill gas, in accordance with Monitoring and Reporting Program No. R5-2003-0144. A detection monitoring program for a new WMU shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [Title 27, CCR, Section 20415(e)(6)].
3. The Discharger shall provide Regional Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices, and a minimum 48 hour notification prior to the collection of samples associated with a detection monitoring program, evaluation monitoring program, or corrective action program.
4. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2003-0144, and the Standard Provisions and Reporting Requirements, dated April 2000.
5. The Water Quality Protection Standard for organic compounds, which are not naturally occurring and not detected in background groundwater samples, shall be taken as the detection limit of the analytical method used (i.e., US-EPA methods 8260 and 8270). The presence of non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the WMU.
6. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2003-0144.
7. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2003-0144 and Title 27, CCR, Section 20415(e).
8. The Discharger shall submit for Executive Officer review and approval a Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:

- a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
  - b. Sample preservation information and shipment procedures;
  - c. Sample analytical methods and procedures;
  - d. Sample quality assurance/quality control (QA/QC) procedures; and
  - e. Chain of Custody control.
9. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) *Methods for the Analysis of Organics in Water and Wastewater* (USEPA 600 Series), (2) *Test Methods for Evaluating Solid Waste* (SW-846, latest edition), and (3) *Methods for Chemical Analysis of Water and Wastes* (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.
10. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.
11. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., “trace” or “ND”) in data from background monitoring points for that medium, the analytical method having the lowest method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
12. **“Trace” results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and

PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.

14. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
15. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
16. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
17. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, CCR, Section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Title 27, CCR, Section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and

accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a “trace” detection) shall be identified and used in appropriate statistical or nonstatistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory’s concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of “ties”.

18. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point). The Discharger may propose an alternate statistical method [to the methods listed under Title 27, CCR, Section 20415(e)(8)(A-E)] in accordance with Title 27, CCR, Section 20415(e)(8)(E), for review and approval by the Executive Officer.
19. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, CCR, Section 20415(e)(8)(A-D)] in accordance with Title 27, CCR, Section 20415(e)(8)(E), for review and approval by the Executive Officer. Upon receiving written approval from the Executive Officer, alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Regional Board staff.
20. The Discharger shall use the following nonstatistical method for all analytes that are detected in less than 10% of the background samples:
  - a. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceed either its respective MDL or PQL. The Discharger shall conclude that the exceedence provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if *either*:
    - 1) The data contains two or more analytes that are detected in less than 10% of background samples that equal or exceed their respective MDL; or
    - 2) The data contains one or more analyte that equals or exceeds its PQL.

b. **Discrete Retest** [Title 27, CCR, Section 20415(e)(8)(E)]:

- 1) In the event that the Discharger concludes (pursuant to paragraph 20.a., above) that there is a preliminary indication of a release, then the Discharger shall immediately notify Regional Board staff by phone or e-mail and, within 30 days of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated
  - 2) For any given retest sample, the Discharger shall include, in the retest analysis, **only the laboratory analytical results for those analytes detected in the original sample.** As soon as the retest data are available, the Discharger shall conclude that there is measurably significant evidence of a release if two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL and shall:
    - a) **Immediately** notify the Regional Board about any constituent or constituents verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
    - b) Comply with paragraph 21, below if any constituent or constituents were verified to be present.
  - 3) Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.
21. If the Discharger determines that there is measurably significant evidence of a release from the WMU at any monitoring point, the Discharger shall **immediately** implement the requirements of **XI. Response to A Release, C. Release Has Been Verified,** contained in the Standard Provisions and Reporting Requirements.

**F. REPORTING REQUIREMENTS**

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Regional Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks.** The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

2. 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 postclosure period.

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
  - b. Date, time, and manner of sampling;
  - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
  - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
  - e. Calculation of results; and
  - f. Results of analyses, and the MDL and PQL for each analysis.
3. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.
  4. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
    - a. For each monitoring point and background monitoring point addressed by the report, a description of:
      - 1) The time of water level measurement;

- 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
  - 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
  - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - 5) A statement that the sampling procedure was conducted in accordance with the approved Sampling and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
  - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the WMU, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
  - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
  - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
  - f. A summary and certification of completion of all **Standard Observations** for the WMU(s), for the perimeter of the WMU, and for the receiving waters. The Standard Observations shall include:
    - 1) For the WMU:
      - a) Evidence of ponded water at any point on the facility (show affected area on map);
      - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and

- c) Evidence of erosion and/or of day-lighted refuse.
  - 2) Along the perimeter of the WMU(s):
    - a) Evidence of liquid leaving or entering the WMU, estimated size of affected area, and flow rate (show affected area on map);
    - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
    - c) Evidence of erosion and/or of day-lighted refuse.
  - 3) For receiving waters:
    - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
    - b) Discoloration and turbidity - description of color, source, and size of affected area;
    - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
    - d) Evidence of water uses - presence of water-associated wildlife;
    - e) Flow rate; and
    - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.
  - g. The quantity and types of wastes discharged and the locations in the WMU(s) where waste has been placed since submittal of the last such report.
- 5. 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 Regional 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 Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Board; and
  - e. Corrective measures underway or proposed, and corresponding time schedule.
6. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Board covering the reporting period of the previous monitoring year. This report shall contain:
- a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. 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. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
  - b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month reporting periods, shall be submitted in tabular form as well as in a digital file format acceptable to the Executive Officer. The Regional Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, CCR, Section 20420(h)], in that this facilitates periodic review by the Regional Board.
  - c. 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.
  - d. A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
  - e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
  - f. An evaluation of the effectiveness of the leachate monitoring/control facilities.

## **G. PROVISIONS**

1. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.
3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2003-0144, which is incorporated into and made part of this Order.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27, CCR, Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.
5. All reports and transmittal letters shall be signed by persons identified below:
  - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
  - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
  - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
  - d. A duly authorized representative of a person designated in a, b or c above if;
    - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
    - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a WMU, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
    - 3) The written authorization is submitted to the Regional Board.

- e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

6. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
7. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and postclosure maintenance period of the WMU(s) and during subsequent use of the property for other purposes.
8. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of the Order.
9. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.5. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Board.
10. The Discharger shall establish cost estimates for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill, and submit these estimates to the Executive Officer for review and approval.

11. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in an amount approved by the Executive Officer, and shall submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board.
12. The Discharger is required to maintain financial assurance mechanisms for closure and post-closure maintenance costs as specified in Chapter 6 of Title 27. The Discharger is required to submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board, which determines if the mechanism meets the requirements of Chapter 6, Title 27, and if the amount of coverage is adequate.
13. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

| <u>Task</u>   | <u>Compliance Date</u>              |
|---|-------------------------------------|
| <b>A. Construction Report</b>   | <b>Prior to discharge</b>           |
| Submit a construction report upon completion demonstrating construction was in accordance with approved construction plans for Executive Officer review and approval.(see Construction Specification D.7) |                                     |
| <b>B. Monitoring Well Installation Work Plan</b>  | <b>1 October 2003</b>               |
| Submit a work plan for the installation of Phase 2 monitoring wells.  |                                     |
| <b>C. Water Quality Protection Standards Report</b><br>(See C.1 Monitoring and Reporting Order No. R5-2003-0144)  | <b>Prior to discharge (Phase 2)</b> |
| <b>D. Sampling and Analysis Plan</b><br>(See Reporting Requirements F.6)  | <b>Prior to discharge (Phase 2)</b> |

I, THOMAS R. PINKOS, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 September 2003.

original signed by

---

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0144  
FOR  
COUNTY OF TEHAMA AND CITY OF RED BLUFF  
FOR  
CONSTRUCTION AND OPERATION OF  
TEHAMA COUNTY AND CITY OF RED BLUFF  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
TEHAMA COUNTY

Compliance with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, is ordered by Waste Discharge Requirements Order No. R5-2003-0144.

**A. REQUIRED MONITORING REPORTS**

| <u>Report</u>  | <u>Due</u>           |
|--|----------------------|
| 1. Groundwater Monitoring (Section D.1)                                      | <b>See Table I</b>   |
| 2. Annual Monitoring Summary Report<br>(Order No. R5-2003-0144, F.6.)        | <b>Annually</b>      |
| 3. Unsaturated Zone Monitoring (Section D.2)                                 | <b>See Table II</b>  |
| 4. Leachate Monitoring (Section D.3)   | <b>See Table III</b> |
| 5. Surface Water Monitoring (Section D.4)                                    | <b>As necessary</b>  |
| 6. Landfill Gas Monitoring (Section D.5)                                     | <b>As necessary</b>  |
| 7. Facility Monitoring (Section D.6)   | <b>As necessary</b>  |
| 8. Response to a Release<br>(Standard Provisions and Reporting Requirements) | <b>As necessary</b>  |

**B. REPORTING**

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2003-0144 and the Standard Provisions and Reporting Requirements. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. 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 acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in F. Reporting Requirements, of Order No. R5-2003-0144.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

| <u>Sampling Frequency</u> | <u>Reporting Frequency</u> | <u>Reporting Periods End</u> | <u>Report Date Due</u>        |
|---------------------------|----------------------------|------------------------------|-------------------------------|
| Monthly                   | Quarterly                  | Last Day of Month            | <b>by Semiannual Schedule</b> |
| Quarterly                 | Quarterly                  | 31 March                     | <b>30 April</b>               |
|                           |                            | 30 June                      | <b>31 July</b>                |
|                           |                            | 30 September                 | <b>31 October</b>             |
|                           |                            | 31 December                  | <b>31 January</b>             |
| Semiannually              | Semiannually               | 30 June                      | <b>31 July</b>                |
|                           |                            | 31 December                  | <b>31 January</b>             |
| Annually                  | Annually                   | 31 December                  | <b>31 January</b>             |

The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the previous monitoring year. The annual report shall contain the information specified in F. Reporting Requirements, of Order No. R5-2003-0144, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

The results of **all monitoring** conducted at the site shall reported to the Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

## C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

### 1. Water Quality Protection Standard Report

For each waste management unit (WMU), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a WMU or portion of a WMU. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

## **2. Constituents of Concern**

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the WMU. The constituents of concern for all WMUs at the facility are those listed in Tables I through V for the specified monitored medium, and Table V. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a Corrective Action Program.

### **a. Monitoring Parameters**

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a WMU. The monitoring parameters for all WMUs are those listed in Tables I through V for the specified monitored medium.

## **3. Concentration Limits**

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

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or
- b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

## **4. Point of Compliance**

The point of compliance for the water standard at each WMU is a vertical surface located at the hydraulically downgradient limit of the WMU that extends through the uppermost aquifer underlying the WMU.

## **5. Compliance Period**

The compliance period for each WMU shall be the number of years equal to the active life of the WMU 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 WMU. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

## **D. MONITORING**

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specification E.2 and E.4 of Waste Discharge Requirements, Order No. R5-2003-0144. *{Detection monitoring for a new facility or a new WMU shall be installed, operational, and one year of monitoring data collected **prior to the discharge of wastes.**}* All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables I through V.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those that cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table V.

The Discharger may, with the approval of the Executive Officer, 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.

### **1. Groundwater**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results semiannually, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted 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.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table V every five years.

## **2. Unsaturated Zone Monitoring**

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a detection monitoring plan approved by the Executive Officer. 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.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. Samples for the constituents of concern specified in Table II shall be collected and analyzed in accordance with the methods listed in Table V every five years.

The pan lysimeters shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

### **3. Leachate Monitoring**

All WMU leachate collection and removal system sumps shall be inspected monthly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The constituents of concern list shall include all constituents listed in Table V. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons). In addition, the quantity of leachate transported to the Wastewater Treatment Plant or used for dust control (in gallons) shall be measured and reported monthly.

Leachate that seeps to the surface from the WMU shall be sampled and analyzed for the constituents listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day).

### **4. Surface Water Monitoring**

Surface waters shall be monitored in accordance with the State Water Resources Control Board Order No. 97-03-DWQ (General Permit No. CAS000001), *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* and the General Water Quality Monitoring and System Requirements in Section 20415 of Title 27. All monitoring parameters shall be graphed to show historical trends at each sample location.

### **5. Landfill Gas Monitoring**

The Discharger shall install a landfill gas collection system, which shall be monitored quarterly for the presence of methane and oxygen. Landfill gas extraction will commence if the presence of methane is detected at or above 35% for two quarters in a row, and quarterly monitoring does not detect the presence of oxygen at or above 1%.

**6. Facility Monitoring**

**a. 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 damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section F.4.f. of Order No. R5-2003-0144. Any necessary construction, maintenance, or repairs shall be completed **by 31 October**. **By 15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

**b. Storm Events**

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary repairs shall be completed **within 30 days** of the inspection. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

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

original signed by

Ordered by: \_\_\_\_\_  
THOMAS R. PINKOS, Executive Officer

\_\_\_\_\_  
5 September 2003

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

| <u>Parameter</u>  | <u>Units</u>             | <u>Frequency</u> |
|---|--------------------------|------------------|
| <b>Field Parameters</b>   |                          |                  |
| Groundwater Elevation   | Ft. & hundredths, M.S.L. | Quarterly        |
| Temperature   | °C                       | Semiannual       |
| Electrical Conductivity   | µmhos/cm                 | Semiannual       |
| pH  | pH units                 | Semiannual       |
| Turbidity   | Turbidity units          | Semiannual       |
| <b>Monitoring Parameters</b>                                      |                          |                  |
| Total Dissolved Solids (TDS)                                      | mg/L                     | Semiannual       |
| Chloride  | mg/L                     | Semiannual       |
| Carbonate   | mg/L                     | Semiannual       |
| Bicarbonate   | mg/L                     | Semiannual       |
| Nitrate - Nitrogen  | mg/L                     | Semiannual       |
| Sulfate   | mg/L                     | Semiannual       |
| Calcium   | mg/L                     | Semiannual       |
| Magnesium   | mg/L                     | Semiannual       |
| Potassium   | mg/L                     | Semiannual       |
| Sodium  | mg/L                     | Semiannual       |
| Volatile Organic Compounds<br>(USEPA Method 8260, see Table V)    | µg/L                     | Semiannual       |
| <b>Constituents of Concern (see Table V)</b>                      |                          |                  |
| Total Organic Carbon  | mg/L                     | 5 years          |
| Inorganics (dissolved)  | mg/L                     | 5 years          |
| Volatile Organic Compounds<br>(USEPA Method 8260B, extended list) | µg/L                     | 5 years          |
| Semi-Volatile Organic Compounds<br>(USEPA Method 8270C)           | µg/L                     | 5 years          |
| Chlorophenoxy Herbicides<br>(USEPA Method 8151A)                  | µg/L                     | 5 years          |
| Organophosphorus Compounds<br>(USEPA Method 8141A)                | µg/L                     | 5 years          |

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

**SOIL-PORE GAS**

| <u>Parameter</u>                                   | <u>Units</u>       | <u>Frequency</u> |
|--|--------------------|------------------|
| <b>Monitoring Parameters</b>                       |                    |                  |
| Volatile Organic Compounds<br>(USEPA Method TO-14) | µg/cm <sup>3</sup> | Semiannual       |
| Methane  | %                  | Semiannual       |

**PAN LYSIMETERS (or other vadose zone monitoring device)**

| <u>Parameter</u>        | <u>Units</u> | <u>Frequency</u> |
|-------------------------|--------------|------------------|
| <b>Field Parameters</b> |              |                  |
| Electrical Conductivity | µmhos/cm     | Semiannual       |
| pH                      | pH units     | Semiannual       |

**Monitoring Parameters**

|   |      |            |
|---|------|------------|
| Total Dissolved Solids (TDS)                                    | mg/L | Semiannual |
| Chloride  | mg/L | Semiannual |
| Carbonate   | mg/L | Semiannual |
| Bicarbonate   | mg/L | Semiannual |
| Nitrate - Nitrogen  | mg/L | Semiannual |
| Sulfate   | mg/L | Semiannual |
| Calcium   | mg/L | Semiannual |
| Magnesium   | mg/L | Semiannual |
| Potassium   | mg/L | Semiannual |
| Sodium  | mg/L | Semiannual |
| Volatile Organic Compounds<br>(USEPA Method 8260B, see Table V) | µg/L | Semiannual |

**Constituents of Concern (see Table VI)**

|   |      |         |
|---|------|---------|
| Total Organic Carbon  | mg/L | 5 years |
| Inorganics (dissolved)  | mg/L | 5 years |
| Volatile Organic Compounds<br>(USEPA Method 8260B, extended list) | µg/L | 5 years |
| Semi-Volatile Organic Compounds<br>(USEPA Method 8270C)           | µg/L | 5 years |
| Chlorophenoxy Herbicides<br>(USEPA Method 8151A)                  | µg/L | 5 years |
| Organophosphorus Compounds<br>(USEPA Method 8141A)                | µg/L | 5 years |

**TABLE III**  
**LEACHATE DETECTION MONITORING PROGRAM**

| <u>Parameter</u>  | <u>Units</u> | <u>Frequency</u> |
|---|--------------|------------------|
| <b>Field Parameters</b>   |              |                  |
| Total Flow  | Gallons      | Monthly          |
| Flow Rate   | Gallons/Day  | Monthly          |
| Electrical Conductivity   | µmhos/cm     | Monthly          |
| pH  | pH units     | Monthly          |
| <b>Monitoring Parameters</b>                                      |              |                  |
| Total Dissolved Solids (TDS)                                      | mg/L         | Annually         |
| Chloride  | mg/L         | Annually         |
| Carbonate   | mg/L         | Annually         |
| Bicarbonate   | mg/L         | Annually         |
| Nitrate - Nitrogen  | mg/L         | Annually         |
| Sulfate   | mg/L         | Annually         |
| Calcium   | mg/L         | Annually         |
| Magnesium   | mg/L         | Annually         |
| Potassium   | mg/L         | Annually         |
| Sodium  | mg/L         | Annually         |
| Volatile Organic Compounds<br>(USEPA Method 8260B, see Table V)   | µg/L         | Annually         |
| <b>Constituents of Concern (see Table V)</b>                      |              |                  |
| Total Organic Carbon  | mg/L         | 5 years          |
| Inorganics (dissolved)  | mg/L         | 5 years          |
| Volatile Organic Compounds<br>(USEPA Method 8260B, extended list) | µg/L         | 5 years          |
| Semi-Volatile Organic Compounds<br>(USEPA Method 8270C)           | µg/L         | 5 years          |
| Chlorophenoxy Herbicides<br>(USEPA Method 8151A)                  | µg/L         | 5 years          |
| Organophosphorus Compounds<br>(USEPA Method 8141A)                | µg/L         | 5 years          |

**TABLE IV**  
**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Surrogates for Metallic Constituents:**

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

**Constituents included in VOC:**

**USEPA Method 8260B**

Acetone  
Acrylonitrile  
Benzene  
Bromochloromethane  
Bromodichloromethane  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans-1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC-12)  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
2-Hexanone (Methyl butyl ketone)  
Hexachlorobutadiene

**TABLE IV**

**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Continued**

Hexachloroethane  
Methyl bromide (Bromomethene)  
Methyl chloride (Chloromethane)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Methyl ethyl ketone (MEK: 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether  
4-Methyl-2-pentanone (Methyl isobutylketone)  
Naphthalene  
Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride  
Xylenes

**TABLE V**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

| <b><u>Inorganics (dissolved):</u></b> | <b><u>USEPA Method</u></b> |
|---------------------------------------|----------------------------|
| Aluminum                              | 6010                       |
| Antimony                              | 7041                       |
| Barium                                | 6010                       |
| Beryllium                             | 6010                       |
| Cadmium                               | 7131A                      |
| Chromium                              | 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                               | 9010B                      |
| Sulfide                               | 9030B                      |

**Volatile Organic Compounds:**

**USEPA Method 8260**

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)

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

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  
Hexachloroethane  
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

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

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)

**Semi-Volatile Organic Compounds:**

**USEPA Method 8270 - base, neutral, & acid extractables**

Acenaphthene  
Acenaphthylene  
Acetophenone  
2-Acetylaminofluorene (2-AAF)  
Aldrin  
4-Aminobiphenyl  
Anthracene  
Benzo[a]anthracene (Benzanthracene)  
Benzo[b]fluoranthene  
Benzo[k]fluoranthene  
Benzo[g,h,i]perylene  
Benzo[a]pyrene  
Benzyl alcohol  
Bis(2-ethylhexyl) phthalate  
alpha-BHC  
beta-BHC  
delta-BHC  
gamma-BHC (Lindane)  
Bis(2-chloroethoxy)methane  
Bis(2-chloroethyl) ether (Dichloroethyl ether)  
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)  
4-Bromophenyl phenyl ether  
Butyl benzyl phthalate (Benzyl butyl phthalate)  
Chlordane  
p-Chloroaniline  
Chlorobenzilate  
p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol  
4-Chlorophenyl phenyl ether

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

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  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene  
Isodrin

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

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  
sym-Trinitrobenzene  
Toxaphene  
2,4,5-Trichlorophenol  
0,0,0-Triethyl phosphorothioate

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

**Chlorophenoxy Herbicides:**

**USEPA Method 8151A**

2,4-D (2,4-Dichlorophenoxyacetic acid)  
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)  
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)  
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

**Organophosphorus Compounds:**

**USEPA Method 8141A**

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

## INFORMATION SHEET

ORDER NO. R5-2003-0144  
COUNTY OF TEHAMA AND CITY OF RED BLUFF  
FOR CONSTRUCTION AND OPERATION OF  
TEHAMA COUNTY AND CITY OF RED BLUFF  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
TEHAMA COUNTY

Tehama County and the City of Red Bluff, through a joint powers authority called the Tehama County / City of Red Bluff Landfill Management Agency, own and contract for operation of a landfill two miles northwest of the City of Red Bluff in Tehama County, Section 15, T27N, R4W, MDB&M. The disposal site was opened in 1964 as an open burn dump. In 1974 the site was converted to a sanitary landfill, and in 1978 the California Integrated Waste Management Board classified the site as a Class II-2 disposal facility. Waste Discharge Requirements Order No. 88-036 reclassified the facility as a Class III waste facility accepting only non-hazardous municipal solid waste. The original landfill area comprised 83.6 acres. An additional 64.95 acres was acquired in 1999, and 11.02 acres in 2000. The existing landfill was increased 75.97 acres to a total of 159.57 acres. Seventy acres are permitted for waste disposal; waste covers 31.6 acres in Phase 1, and waste will be spread over 21.1 acres in Phase 2. Phase 1 is physically separated from Phase 2 by a WAPA power line easement. The remaining 106.9 acres are used for material recovery activities (MRF, composting, material stockpiles, etc.), the WAPA power line easement, soil stockpiling, and as a buffer.

The Phase 1 waste management unit (WMU) will reach an estimated total volume of 2,633,00 cubic yards with approximately one year of fill volume remaining. The Phase 2 WMU is estimated to have a capacity of 2,464,000 cubic yards and a life span of 20 years based on current disposal rates of 140 tons per day, refuse density of 1,200 pounds per cubic yard, and a refuse to soil ratio of three to one.

The facility is located within the Great Valley Geomorphic Province, and is underlain by the Tehama Formation, which consists of river deposited silts and clays, with interbedded sands and gravels. The Tehama Formation is the principal water bearing unit of the region; the general direction of groundwater flow is south-southeast. Depth to groundwater is approximately 340 feet MSL (60 to 100 feet below the bottom of the waste).

Based on lysimeter data, it appears that the Phase 1 WMU is affecting water quality in the vadose zone. The downgradient lysimeter shows increasing trends for chloride, electrical conductivity, total dissolved solids, and occasional detections of volatile organic compounds. Monitoring well data has not indicated that groundwater is impacted.

INFORMATION SHEET  
ORDER NO. R5-2003-0144  
TEHAMA COUNTY AND CITY OF RED BLUFF  
FOR CONSTRUCTION AND OPERATION OF  
TEHAMA COUNTY AND CITY OF RED BLUFF  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
TEHAMA COUNTY

-2-

The Phase 1 WMU is unlined. During winter operations, a small quantity of leachate seeps out of the toe of the unit, which must be contained on-site. Phase 2 will consist of four fill modules (Modules 1, 2, 3, and 4) and will be constructed with a single composite liner consisting of the following components (from bottom to top): a one-foot thick layer of compacted subgrade with a hydraulic conductivity of  $1 \times 10^{-6}$  cm/sec or less (base area only), a GCL, a 60-mil HDPE geomembrane, a six-inch gravel leachate collection and recovery system (base area only), a geotextile, and a 1-foot operations layer. Leachate from the Phase 2 WMU will be routed to and stored in a holding tank, placed near the sump extraction riser along the eastern edge of the WMU. The leachate will be transported to a Publicly Owned Treatment Works (POTW) for disposal and/or used for dust control within the Phase 2 WMU's lined footprint during the months of June through September.

In April 2001, a plan was submitted for implementing a landfill gas control system for the Phase 1 WMU. Methane exceeding 5 percent by volume has been detected during multiple LEA inspections. The Tehama County Environmental Health Department requested a plan for controlling landfill gas. A gas extraction system was installed consisting of eleven vertical gas extraction wells, one horizontal gas collector, a vacuum blower system, a gas flare, and a condensate tank. The condensate collected will be analyzed for hazardous waste constituents and if the liquid is determined non-hazardous it will be transported to a POTW, after neutralization. Alternately the condensate will be used for dust control within the Phase 2 WMU's lined footprint during the months of June through September. It is estimated that approximately 3,500 gallons of condensate will be generated per week during the winter and less frequently in the summer. A landfill gas control system for the Phase 2 WMU will consist of a series of horizontal collection trenches constructed during landfill operations within the refuse fill area.

Rainfall at the site averages 23 inches per year, while the mean evaporation is 65 inches. Approximately 95 percent of the total precipitation is received between October and May.

KB: 7/17/2003