

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0124

WASTE DISCHARGE REQUIREMENTS  
FOR  
COUNTY OF TUOLUMNE  
JAMESTOWN LANDFILL  
CLOSURE, POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION  
TUOLUMNE COUNTY

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

1. The County of Tuolumne owns and operates a municipal solid waste landfill about one-half mile southeast of Jamestown, in Section 14, T1N, R14E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order. The landfill accepted municipal solid waste from 1974 until 1995, and closure was completed in 2005. The landfill contains approximately 522,000 tons of in-place refuse.
2. The facility consists of one existing unlined waste management unit(s) (Unit) covering 15.5 acres, as shown in Attachment B, which is incorporated herein and made part of this Order.
3. The facility was previously regulated under Waste Discharge Requirements (WDRs) Order No. R5-2002-0173 in conformance with Title 27 of the California Code of Regulations, in which the facility was classified as a Class III landfill. This Order continues to classify the Unit(s) as a Class III landfill that contains municipal solid waste in accordance with Title 27, California Code of Regulations, §20005, et seq. (Title 27).
4. Order No. R5-2002-0173 required closure of the landfill in accordance with the Discharger's February 2003 Final Closure Plan. Closure was completed in 2005; however, the clay portions of the final cover experienced significant desiccation by October 2005, and the steeper portions of the landfill's side slopes experienced significant erosion and shallow slide failures over that winter. The western side slope, which is inclined as steep as 1.4 horizontal to 1 vertical (1.4H:1V), was subsequently covered with anchored plastic sheeting prior to the 2006-07 winter rains. The Regional Water Board issued Cease and Desist Order No. R5-2006-0100 requiring a revised closure plan for the western side slope by 2 January 2007. The revised closure plan was submitted; however, prior to its implementation, additional failures occurred on the eastern side of the landfill on the 2H:1V side slopes. These additional slope failures, as well as tension cracks observed near the outboard edges of the benches above the 2H:1V slopes, caused the Discharger to re-evaluate the long-term stability of the clay final cover on all of the side slopes. The Discharger determined that the clay cover needed to be replaced and that the steepness of the side slopes would need to be significantly reduced. The Discharger also determined that this would require the re-closure of the entire landfill due to the need to relocate large amounts of the landfill waste from the side slopes to the top deck.

5. On 2 April 2008, the Discharger submitted an amended Report of Waste Discharge (RWD) proposing a new landfill closure design. The Discharger also submitted an April 2008 *Revised Final Closure Plan* on 21 April 2008. Additional information regarding the proposed re-closure of the landfill is included in later Findings of this Order. The final post-closure maintenance plan for the landfill remains the *Postclosure Monitoring and Maintenance* section of the Discharger's February 2003 *Final Closure Plan*.
6. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal Municipal Solid Waste (MSW) regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D (Title 40, Code of Federal Regulations, Part 258), hereafter referred to as "Subtitle D". These regulations apply to all California Class II and Class III landfills that accept MSW.

#### **SITE DESCRIPTION**

7. The landfill is located along the crest of a twin-peak north-to-south trending ridgeline. Current fill and cover elevations range between about 1,760 to 1,889 feet above mean sea level. Following re-closure, maximum final fill elevations will be at 1,900 feet MSL, which is consistent with the maximum permitted height for the landfill.
8. The landfill is underlain by Mesozoic and Paleozoic metavolcanic and metasedimentary greenschist that correlates with the Logtown and/or Calaveras Formations. Trench excavations indicate the near-surface greenschist has been weathered to a reddish, clayey soil that is underlain by oxidized bedrock. The foliation and bedding of the greenschist is predominately north-northwest and steeply dips about 70 to 85 degrees to the east.
9. The April 2008 *Revised Final Closure Plan* lists seven active or potentially active faults considered capable of causing significant ground motion at the site. The Melones Fault Zone (Foothills Fault System) 9.0 km from the site is the closest fault to the site of the seven listed. A calculated peak horizontal ground acceleration (PHGA) of 0.21g would result at the site from a magnitude 5.2 Maximum Probable Earthquake (MPE) on this fault zone. However, the 2003 version of the Final Closure Plan used an MPE of 6.0 and PHGA of 0.36g. The Discharger has retained the PHGA of 0.36 g for seismic deformation analysis for the proposed re-closure of the landfill since it is more conservative relative to the new estimate, and since it was in the previously approved 2003 Final Closure Plan.
10. The western slope is inclined approximately 1.4H to 1V and is buttressed by an earthen berm that was constructed in a drainage swale located at the base of the slope. The buttress is approximately 20 to 40 feet in height and was constructed using soil fill. The buttress was constructed in 1974 as documented by site photos. At the base of the slope a leachate collection and removal system (LCRS) was installed. The LCRS was reported to be buried by a landslide in 1980 and access to the western slope LCRS was lost. The current leachate collection system in this area consists of a horizontal drain from the front

of the western toe buttress into the drain rock behind the buttress. The horizontal drain discharges leachate to a leachate collection tank. A leachate collection area was also installed on the northern portion of the landfill consisting of compacted clay that slopes to a leachate collection sump. This also drains to a collection tank. The tanks are periodically pumped and discharged to the sanitary sewer.

11. Land use within 1,000 feet of the facility is residential and agricultural. The closest private wells are located more than 1,500 feet west and northwest from the landfill.
12. The facility receives an average of 31.6 inches of precipitation per year as measured at the Sonora Ranger Station. The mean pan evaporation is 68 inches per year as measured at the Knights Ferry Station.
13. The 100-year, 24-hour precipitation event is estimated to be 5.9 inches, based on Department of Water Resources' bulletins.
14. The waste management facility is not within a 100-year flood plain.

#### **WASTE AND UNIT CLASSIFICATION**

15. The Discharger has discharged nonhazardous solids waste, including municipal solid wastes into the landfill, which are defined in §20164 and §20220 of Title 27.
16. The landfill is an existing, reclassified Class III waste management unit under Section 20080(d) of Title 27, since it operated prior to 27 November 1984, the effective date of former Chapter 15 regulations.

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

17. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
18. Surface drainage is toward (New) Don Pedro Reservoir in the Sonora Hydrologic Area (536.31) of the San Joaquin hydrologic Basin.
19. The designated beneficial uses of the Source to (New) Don Pedro Reservoir, as specified in the Basin Plan, are municipal and domestic supply, agricultural supply, hydropower generation, water contact recreation, non-contact water recreation, warm freshwater habitat, cold freshwater habitat, and wildlife habitat.

20. The first encountered groundwater has historically ranged from 0 to about 98 feet below the native ground surface based on data from the Discharger's monitoring reports. Groundwater elevations range from about 1,530 to 1,780 feet MSL. The depth to groundwater fluctuates seasonally as much as 40 feet. On the regional scale, groundwater is generally considered unconfined. Because groundwater is confined to fractures in the bedrock, each water-bearing fracture displays locally confining conditions. The groundwater phreatic surface approximately mirrors the ground surface topography, and because the landfill is located on a hilltop, groundwater movement is likely radially away from the center of the hill. Aquifer pump and slug tests indicate a transmissivity on the order of 10 to 20 gallons per day per square foot. Two springs are located to the north and west of the landfill at the locations JS-1 and JS-2 shown on Attachment B.
21. Monitoring well DW-2 is the background well for the landfill and has average electrical conductivity (EC) of 353 umhos/cm and total dissolved solids (TDS) of 219 milligrams per liter (mg/L). The Discharger uses intrawell statistical analysis (where each compliance well is its own background well) to calculate concentration limits for groundwater at the landfill. The approved method for calculating concentration limits is provided in Monitoring and Reporting Program No. R5-2008-0124.
22. The direction of groundwater flow is away from the site because the facility is on top of a ridge, therefore there is no upgradient background monitoring well. Monitoring well DW-2 was installed as an alternate background monitoring well and is 2,800 feet south of the landfill and downgradient of the unit. The average groundwater gradient to the south and west is approximately 0.2 feet per foot. The average gradient to the east of the landfill is approximately 0.07 feet per foot.
23. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are municipal and domestic supply, agricultural supply, and industrial supply.

### **GROUNDWATER MONITORING**

24. There are eleven groundwater wells installed at the landfill facility. Three of these wells, DM-1, DM-2, and DM-3, are located about 2,600 feet south of the landfill and were installed to monitor a new landfill that was not constructed. Monitoring well DM-2 has since been designated as a background monitoring well for the landfill, although the Discharger uses intrawell statistical analysis for detection monitoring. The remaining wells, DM-4, TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, and TM-7 are either in detection monitoring and corrective action monitoring. Wells, DM-1 and DM-3 do not serve any useful purpose, and are no longer monitored at the request of the Discharger.

25. 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 Unit.
26. Sections 20415(e)(8) and (9) of Title 27 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 Unit in accordance with §20415(b)(1)(B)2.-4. of Title 27. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
27. The Regional Water 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 Water 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.
28. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.
29. 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 Unit. 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 Unit has occurred. Following an indication of a release, verification testing will be conducted to determine whether there has been a release from the Unit, 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 AND CORRECTIVE ACTION**

30. Volatile organic compounds have been detected in monitoring wells TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, and TM-7. The Discharger submitted an August 2001 amended RWD for corrective action concluding that the source of the VOCs was from landfill gas and proposed the installation of a final cover and passive landfill gas vents. The Discharger also concluded that groundwater extraction would be costly and ineffective for remediation

due to the very low yield of the onsite wells, the low concentrations of the VOCs, and the fractured rock hydrogeology.

31. In 2002, the Regional Water Board issued WDRs approving the closure and corrective action plan, and the Discharger completed closure and installation of the passive landfill gas vents during 2005. The Regional Water Board concurred that for this site, a groundwater extraction and treatment system is economically infeasible because the low concentrations of the VOCs in groundwater that do not pose a substantial present or potential hazard to human health or the environment, the low transmissivity of the fractured bedrock, and that the additional cost to the citizens of Tuolumne County was not justified. Given the need to re-close the landfill, the Discharger proposes to re-install the passive landfill gas vents, wells, and trenches as part of the closure activities. Additional vents will be included on the benches of the side slopes, and at the east perimeter of the landfill where VOCs are most prevalent. Each passive landfill gas well will be installed to about 75 percent of the depth of the waste in the landfill. Passive wells and vents will be equipped with a wind-driven rotating stainless steel vent cowl to help extract the landfill gas. Geosynthetic boots will be fitted on each vent pipe as it penetrates the geomembrane and a concrete collar will be cast in place around the vents to limit movement of the system.
32. The Discharger evaluated the proposed landfill gas system using "Landfill Gas Emissions Model Version 3.02, May 2005". In summary, the Discharger estimates that overall methane gas and non-methane organic compounds production during 2008 are 69.55 cubic feet per minute and 4.45 megagrams per year. The Discharger also states that installation of passive landfill gas well vents and trenches in the 2008 closure construction will relieve landfill gas pressure and reduce perimeter landfill gas migration.
33. The Discharger has prepared a cost estimate for installing methane flares on each of the individual wellheads and for converting the passive landfill gas system into an active system with individual solar-powered blowers on the perimeter extraction wells. Additional information about this cost estimate is provided in later Findings regarding financial assurance for corrective action. If the proposed passive landfill gas system is ineffective in remediating groundwater, the Regional Water Board may require the Discharger to re-evaluate corrective action, including the potential of converting the landfill gas system to an active system.
34. Title 27 CCR Section 20430 requires Tuolumne County to take corrective action to achieve the following goals: to remediate releases from the Unit; and to ensure compliance with the Water Quality Protection Standards adopted under §20390 for that Unit. The Water Quality Protection Standards for corrective action are specified in Section C.3(d) of the Monitoring and Reporting Program.

### **SURFACE WATER, UNSATURATED ZONE, AND LEACHATE MONITORING**

35. The Discharger conducts surface water monitoring at three locations designated as RO-2, RO-4, and RO-5. RO-2 is located in the drainage to the south of the landfill. RO-4 is located in the drainage to the north of the landfill, and RO-5 is located in the surface water drainage from the western portion of the landfill. These locations are shown on Attachment B of this Order.
36. Unsaturated zone monitoring is not required because the Unit is unlined and leaking.
37. The leachate control system consists of a pre-landfill bottom surface preparation to enhance leachate collection, and leachate collection from a pipe installed in drain rock at the toe of the buttress on the western slope of the landfill, and at an area on the north side of the landfill where compacted clay was installed that slopes to a leachate sump. No leachate has been recovered from the pipe at the western buttress since its installation. Therefore, this Order requires the Discharger to investigate this portion of the leachate collection system and make modifications to allow leachate to drain from the drain rock.

### **CLOSURE CONSTRUCTION**

38. The Discharger submitted an April 2008 *Revised Final Closure Plan* that includes the plan for re-closing the landfill. The purpose of re-closing the landfill is to replace the existing clay cover that is desiccated and unstable, and to significantly reduce the steepness of the landfill side slopes from the current 1.4H:1V and 2H:1V slopes, to slopes no steeper than 2.75H:1V. The Discharger will construct 15-foot wide benches every 50 vertical feet.
39. The closure design includes constructing a stabilization buttress on the eastern side of the landfill, regarding the existing side slopes to meet stability criteria, relocating excavated refuse within the existing landfill footprint, reconstructing the final cover system, reconstructing the existing landfill gas system, reconstructing the existing surface water drainage system, and providing erosion control.
40. The proposed final cover is an engineered alternative consisting of, from top to bottom, the following:
- a. A two-foot thick soil vegetative/erosion resistant layer.
  - b. A geosynthetic layer consisting of either:
    - i. A double sided geocomposite over a 40-mil linear low-density polyethylene (LLDPE) textured geomembrane, or
    - ii. An 8-oz/yd<sup>2</sup> non-woven filter fabric over a 60-mil Agru Super Gripnet high-density polyethylene (HDPE) textured geomembrane.
  - c. A 12-oz/yd<sup>2</sup> cushion geotextile (only if required by the Engineer or CQA Officer to protect the geomembrane from rocks in the underlying foundation layer soil).

- d. An 18-inch compacted soil foundation layer.
41. Excavated refuse will be relocated within the landfill footprint and placed in layers not exceeding 24 inches and compacted with a minimum of four passes of a Caterpillar Model 826B landfill compactor or equivalent. The existing vegetative cover will be reused in the new cover system. The existing clay layer soil will be stockpiled for future re-sale or County use, but will not be used in the new cover system.
42. The foundation layer will consist of 18 inches of compacted soil, which is less than the prescriptive thickness of 2 feet required by Title 27. The Discharger originally proposed to construct a two-foot thick foundation layer with the first six inches consisting of compacted relocated waste material. The California Integrated Waste Management Board (CIWMB) provided comments with concerns regarding the use of the relocated waste as part of the foundation layer, and preferred that the full two feet of foundation layer be compacted soil to ensure protection of the cover from the effects of differential settlement. After discussions with the CIWMB, the Discharger conducted a settlement analysis that indicated negligible differences in differential settlement between an 18-inch foundation layer, and either a 24-inch or 36-inch foundation layer. The analysis indicated the total amount of expected differential settlement was negligible in each case. The Discharger also noted that the purpose of the foundation layer is to provide a firm surface upon which to compact the prescriptive clay layer, and that the proposed design does not include a clay layer. Section 21090(a)(1) of Title 27 allows a lesser thickness for the foundation layer if the Regional Water Board finds that differential settlement of waste, and ultimate land use will not affect the structural integrity of the final cover. The Regional Water Board approves the use of an 18-inch foundation layer based on the Discharger's finding that differential settlement will be negligible, and that the use of a thicker foundation layer will not provide an increased level of protection with respect to differential settlement.
43. The proposed barrier layer includes two options, one of which will be chosen at the discretion of the closure contractor. The 40-mil LLDPE geomembrane option is well-established for use as a barrier layer in landfill cover systems. The 60-mil Agru Super Gripnet HDPE geomembrane is a relatively new product that is not as well-established, although it has been used on a considerable number of projects in the United States. Because of the limited published information regarding the interface shear strength and transmissivity under load of the Agru Super Gripnet, the Discharger will conduct site-specific testing to demonstrate the material will meet project specifications if it is selected by the contractor.
44. The two-foot vegetative/erosion resistant layer will be hydroseeded, and a tackifier derived from natural plant sources will be used with the hydroseed slurry. The flexible growth medium "Flexterra" (or equivalent) will also be used for additional erosion resistance to protect the soil and seed until the vegetation can be established. Fiber rolls will also be installed every 25 feet along the side slopes. The upper one foot of the vegetative/erosion resistant layer will be fertilized, and the upper six inches will consist of 2/3 soil and



1/3 organic material such as compost, green waste, or biosolids-compost permitted for use as a soil amendment.

45. The drainage systems for the re-closure of the landfill have been designed to manage the runoff associated with the 100-year, 24-hour storm event as required by Title 27. Survey monuments will be installed on the closed landfill in compliance with Title 27 Section 20950(d).
46. Technical Specifications, Construction Drawings, and a Construction Quality Assurance Plan were included in the April 2008 *Revised Final Closure Plan*. These closure construction documents have been reviewed by Regional Water Board staff and are hereby approved.

### **ENGINEERED ALTERNATIVE DEMONSTRATION**

47. Section 21090 of Title 27 contains the prescriptive requirements for closure of a landfill. The prescriptive requirement for a landfill final cover is, at a minimum, from top to bottom, a one-foot soil erosion resistant layer, a one-foot clay layer with hydraulic conductivity less than  $1 \times 10^{-6}$  cm/s, and a two-foot soil foundation layer.
48. Section 20080(b) of Title 27 allows the Regional Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with §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 §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 §20080(b)(2) of Title 27.
49. The Discharger provided the required demonstrations for the proposed engineered alternative final cover design in the April 2008 *Revised Final Closure Plan*. The Discharger stated that a portion of the original final cover was constructed with compacted clay, and that although the clay had a hydraulic conductivity of lower than  $1 \times 10^{-6}$  cm/s, site observations indicated the clay is highly desiccated and cracked and does not meet the performance standard. The Discharger also stated that the low permeability layer for the proposed closure consists of a geomembrane that is essentially impermeable to through-flow of water and therefore exceeds the performance standard. Additionally, the final cover system will include an internal drainage layer to remove water from the cover system before it potentially could flow through the underlying barrier. The Discharger states that therefore the proposed barrier layer is consistent with the performance goal and provides better protection against water quality impairment than the prescriptive standard. The

Regional Water Board hereby finds that the Discharger has provided an adequate demonstration for the proposed engineered alternative final cover as required by Title 27.

### SLOPE STABILITY

50. Title 27 CCR section 21090 states: “**Final Cover Requirements** — Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one, and shall have a minimum of one fifteen-foot wide bench for every fifty feet of vertical height. Designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component [under (a)(2)], shall have these aspects of their design specifically supported in the slope stability report required under §21750(f)(5). The RWQCB can require flatter slopes or more benches where necessary to ensure preservation of the integrity of the final cover under static and dynamic conditions.” The Discharger proposes slopes steeper than three to one and a geosynthetic component in the final cover. Therefore, the Discharger prepared a slope stability report as required by §21750(f)(5) of Title 27 CCR.
51. Title 27 CCR Section 21750(e)(5)(C) states, in part: “Except as otherwise provided in (f)(5)(D), the report must indicate a factor of safety for the critical slope of at least 1.5 under dynamic conditions.” Title 27 CCR Section 21750(e)(5)(D) states: “In lieu of achieving a factor of safety of 1.5 under dynamic conditions, pursuant to ¶(f)(5)(C), the discharger can utilize a more rigorous analytical method that provides a quantified estimate of the magnitude of movement. In this case, the report shall demonstrate that this amount of movement can be accommodated without jeopardizing the integrity of the Unit’s foundation or the structures which control leachate, surface drainage, erosion, or gas.”
52. The Discharger’s April 2008 *Revised Final Closure Plan* included a slope stability analysis. The stability analysis considered the stability of the proposed final cover on the 2.75H:1V side slopes using the weakest interface strength in the cover system, as well as the overall stability of the re-graded final slopes. For all analyses, the Discharger’s engineering geologist utilized the computer program SLIDE, version 5.03, 2007. The computer program SHAKE2000 was used to model the effects of local site conditions on ground response during an earthquake.
53. Seismic stability was initially evaluated based on pseudostatic methods. For cases where the pseudostatic factor of safety was less than 1.5, seismic deformation analyses were performed to evaluate potential deformations associated with the design earthquake for the site. The seismic analysis indicated pseudostatic safety factors between 1.0 and 1.5 for the different materials analyzed. Dynamic deformation analysis indicate deformations less than six inches for both slope and material conditions that were analyzed for the design earthquake. The static safety factors were also calculated for the weakest interfaces of the proposed final cover. The static factor of safety for the LLDPE/geocomposite final cover section was about 2.1 for the 2.75H:1V interbench slope, and the static factor of safety for the Agru Super Gripnet/filter fabric section was about 1.6 for the same slope.

54. The Discharger's slope stability analysis indicates that the proposed landfill slopes and final cover system will be stable under static conditions, and that deformations under dynamic conditions will be less than six inches for the design earthquake (ground shaking from the MPE for the Melones Fault Zone (Foothills Fault System)).

### **FINANCIAL ASSURANCES**

55. The Discharger's April 2008 *Revised Final Closure Plan* includes a lump sum estimate of the cost of carrying out all actions necessary to close the landfill. The total amount of the closure cost estimate including contingencies and administration is \$7,267,873. The Regional Water Board hereby approves this cost estimate. The Discharger also reports that the current balance in the closure fund is \$573,633, which was confirmed in a 28 March 2008 letter from the CIWMB. The Discharger states that additional sources of funding for the 2008 re-closure of the landfill will include a \$500,000 loan from the CIWMB (if approved), and a \$6.33 million loan from CSAC Excess Insurance Authority. This Order requires that the Discharger maintain financial assurance for closure with the CIWMB in at least the amount of the closure cost estimate.

56. The Discharger's February 2003 *Final Closure Plan* includes a cost estimate to carry out the first thirty years of post-closure maintenance at the landfill. In a letter dated 28 March 2008, the CIWMB reported the Pledge of Revenue established for post-closure maintenance covers the post-closure maintenance cost estimate adjusted for inflation, in the amount of \$7,578,867. This Order requires that the Discharger maintain financial assurance for closure with the CIWMB in at least the amount of the post-closure maintenance cost estimate, plus any annual inflation adjustments required by the CIWMB.

57. On 17 April 2008, the Discharger submitted a revised cost estimate for financial assurances for corrective action of a known or reasonably foreseeable release from the landfill as required by Section 22221 of Title 27. The cost estimate includes costs to upgrade the landfill gas venting system in the event that the proposed system to be installed during closure is not adequate to remediate the VOCs in groundwater. The estimate also includes upgrades to flare the methane in the landfill gas if needed to comply with air quality regulations. The total amount of the cost estimate is \$129,504. The Regional Water Board hereby approves this cost estimate. This Order requires that the Discharger maintain financial assurance for corrective action with the CIWMB in at least the amount of this cost estimate, plus any annual inflation adjustments required by the CIWMB.

### CEQA AND OTHER CONSIDERATIONS

58. On 3 February 2004, the Tuolumne County Board of Supervisors adopted a Negative Declaration for the closure of the Jamestown Landfill. Section 15162 of the California Environmental Quality Act (CEQA) Guidelines states that when a Negative Declaration has been adopted for a project, no subsequent Negative Declaration is necessary if the significant effects of the proposed project were addressed in the previously adopted Negative Declaration. The currently proposed project includes regrading and reconstruction of the final cover of the landfill. On 4 March 2008, the Tuolumne County Development Department determined that the potential significant impacts associated with the proposed reconstruction were adequately addressed in the previously adopted Negative Declaration.
59. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of CEQA, Public Resource Code Section 21000, et seq., and the CEQA Guidelines, in accordance with Title 14 CCR, Section 15301.
60. 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, and revised on 21 July 2005.
61. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Regional Water Board may require that any person who has discharged, discharges, or is suspected of having discharged or 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 having discharged or discharging, or who proposed to discharge waste outside of its 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 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.

62. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2008-0124" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility where waste has been discharged that is subject to this Order.

### **PROCEDURAL REQUIREMENTS**

63. 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.

64. The Regional Water 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.

65. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

66. Any person affected by this action of the Regional Water 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.waterboards.ca.gov/water\\_laws/](http://www.waterboards.ca.gov/water_laws/) and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that No. R5-2002-0173 is rescinded, and that the County of Tuolumne, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted there under, shall comply with the following:

#### **A. PROHIBITIONS**

1. The discharge of 'hazardous waste' or 'designated waste' into the landfill 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 new waste to the landfill is prohibited.
3. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.

4. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

**B. DISCHARGE SPECIFICATIONS**

1. No new waste shall be discharged to the landfill.
2. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the landfill property.

**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 Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which 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. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
5. Methane and other landfill gases shall be adequately vented, removed from the landfill, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or impacts to surface water or groundwater due to migration through the unsaturated zone.
6. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
7. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWG (or subsequent storm water permit), or retain all storm water on-site.

#### D. CLOSURE CONSTRUCTION SPECIFICATIONS

1. The Discharger shall re-close the landfill in accordance with the approved April 2008 *Revised Final Closure Plan*, the plans and technical specifications contained therein, and this Order. Construction quality assurance shall be conducted in accordance with the approved Construction Quality Assurance Plan included in Appendix E of the Revised Final Closure Plan.
2. The Discharger shall remove the existing final cover of the landfill, excavate and relocate wastes within the landfill footprint to reduce the side slopes to no steeper than 2.75H:1V, and install a new final cover with the following components, from top to bottom:
  - a. A two-foot thick soil vegetative/erosion resistant layer.
  - b. A geosynthetic layer consisting of either:
    - i. A double sided geocomposite over a 40-mil linear low-density polyethylene (LLDPE) textured geomembrane, or
    - ii. An 8-oz/yd<sup>2</sup> non-woven filter fabric over a 60-mil Agru Super Gripnet high-density polyethylene (HDPE) textured geomembrane.
  - c. A 12-oz/yd<sup>2</sup> cushion geotextile (only if required by the Engineer or CQA Officer to protect the geomembrane from rocks in the underlying foundation layer soil).
  - d. An 18-inch compacted soil foundation layer.
3. The Discharger shall install a landfill gas venting system during re-closure of the landfill as specified in the April 2008 *Revised Final Closure Plan*.
4. Final slopes on the closed landfill shall be no steeper than 2.75H:1V.
5. The Discharger shall conduct laboratory shear testing of the weakest interface of the final cover system to demonstrate that the assumed shear strength used in the stability analysis is met or exceeded.
6. The Discharger shall construct minimum 15-foot wide benches at least every 50 vertical feet on the landfill side slopes.
7. The top deck of the landfill shall have a minimum slope of three percent.
8. The Discharger shall install surface water drainage features for the closed landfill as specified in the April 2008 *Revised Final Closure Plan* that are designed to manage the runoff associated with the 100-year, 24-hour storm event as required by Title 27.

9. During the re-closure project, the Discharger shall relocate excavated waste within the landfill footprint and place it in layers not exceeding 24 inches that are compacted with a minimum of four passes of a Caterpillar Model 826B landfill compactor or equivalent.
10. The Discharger shall require the construction contractor to prepare a project-specific Health and Safety Plan (HASP), and shall ensure that the all personnel onsite during the closure construction project are familiar with the location and contents of the HASP.
11. The Discharger shall require the construction contractor to prepare and comply with an Airborne Emissions Control Plan that shall be reviewed and approved by the Discharger's engineer.
12. The Discharger shall vegetate the vegetative/erosion resistant layer using the seed mix specified in the April 2008 *Revised Final Closure Plan*. The seed mix shall be broadcast by hydroseed equipment, and a tackifier derived from natural plant sources shall be used with the hydroseed slurry. The flexible growth medium "Flexterra" (or equivalent) shall be used for additional erosion resistance to protect the soil and seed until the vegetation can be established. Fiber rolls shall also be installed every 25 feet along the side slopes at least one inch below the ground surface.
13. The Discharger shall fertilize the upper one foot of the vegetative/erosion resistant layer, and the upper six inches shall consist of 2/3 soil and 1/3 organic material such as compost, green waste, or biosolids-compost permitted for use as a soil amendment to promote proper vegetative growth.
14. The Discharger shall install appropriate sedimentation and erosion controls for any stockpiled soil from the existing final cover in accordance with the Storm Water Pollution Prevention Plan.
15. The Discharger shall submit a Final Closure Construction Report following completion of the landfill re-closure project demonstrating that the landfill was closed in accordance with the April 2008 *Revised Final Closure Plan*, plans and technical specifications, and that all construction quality assurance testing was conducted showing passing results in accordance with the April 2008 *Construction Quality Assurance Plan*.

#### **E. POST-CLOSURE MAINTENANCE SPECIFICATIONS**

1. The Discharger shall maintain the closed landfill in accordance with the *Postclosure Monitoring and Maintenance* section of the February 2003 *Final Closure Plan*.



2. The Discharger shall conduct final cover visual inspections of the closed landfill unit at least **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September) to check for evidence of settlement, erosion, ponded water, odor, exposed waste, exposed geomembrane, cracks, slope failure, leachate seeps, or damage to vegetation. More frequent inspections shall be conducted during the wet season as necessary. Areas of the final cover showing evidence of any of the problems described above shall be repaired in a timely manner, and the cause shall be investigated to prevent recurrences of the problem(s).
3. The Discharger shall, in a timely manner, repair any areas of the final cover that have been damaged by erosion, cracking, differential settlement, subsidence or any other causes that could allow ponding of surface water or percolation of surface water into the wastes.
4. Closed landfill units shall be graded and maintained at least a three percent (3%) grade to prevent ponding.

#### **F. DETECTION MONITORING SPECIFICATIONS**

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program No. R5-2008-0124. A detection monitoring program for a new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [Title 27 CCR Section 20415(e)(6)].
2. The Discharger shall provide Regional Water 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.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2008-0124, and the Standard Provisions and Reporting Requirements, dated April 2000.
4. 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 repeated detection of one or more non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.

5. 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. R5-2008-0124.
6. 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. R5-2008-0124 and Title 27 CCR Section 20415(e).
7. The Discharger shall establish and maintain 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.
8. 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 a longer time period is approved, and shall be taken in a manner that ensures sample independence. 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.
9. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted to Regional Water Board staff for review and approval prior to use.
10. 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.

11. **“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.
12. **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.
13. 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.
14. 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.
15. 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.
16. 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, CCR, 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".

17. 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-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval.
18. 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. Upon receiving written approval, 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 Water Board staff.
19. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
  - a. From the constituent of concern or monitoring parameter list, identify each analyte in the **current** sample that exceeds either its respective MDL or PQL. For any monitoring well not already in the Corrective Action Monitoring Program for a particular constituent, the Discharger shall conclude that the exceedance 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 MDLs; 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 Water 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 Water 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 ¶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.
20. If the Discharger determines that there is measurably significant evidence of a release from the Unit 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.

**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. R5-2008-0124, 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 (27 CCR §20005 et seq. and 40 CFR 258 et seq.)*, dated April 2000, which are hereby incorporated into this Order.
5. 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 Water 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.
6. 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 Unit, 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 Water 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.”

7. 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.
8. 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 post-closure maintenance period of the Unit(s) and during subsequent use of the property for other purposes.
9. 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.
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Water 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 Water Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.6. 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 Water Board.
11. The Discharger shall maintain assurances of financial responsibility for closure of the landfill in the amount of the approved cost estimate described in Finding No. 55 of this Order, plus any annual inflation adjustments required by the California Integrated Waste Management Board (CIWMB). If the CIWMB determines that either the amount of coverage or the mechanism is inadequate, the Discharger shall submit a demonstration of acceptable financial assurance to the CIWMB within no more than 90 days of notification.
12. The Discharger shall maintain assurances of financial responsibility for carrying out the first 30 years of post-closure maintenance at the landfill in the amount of the

approved cost estimate described in Finding No. 56 of this Order, plus any annual inflation adjustments required by the CIWMB. If the CIWMB determines that either the amount of coverage or the mechanism is inadequate, the Discharger shall submit a demonstration of acceptable financial assurance to the CIWMB within no more than 90 days of notification.

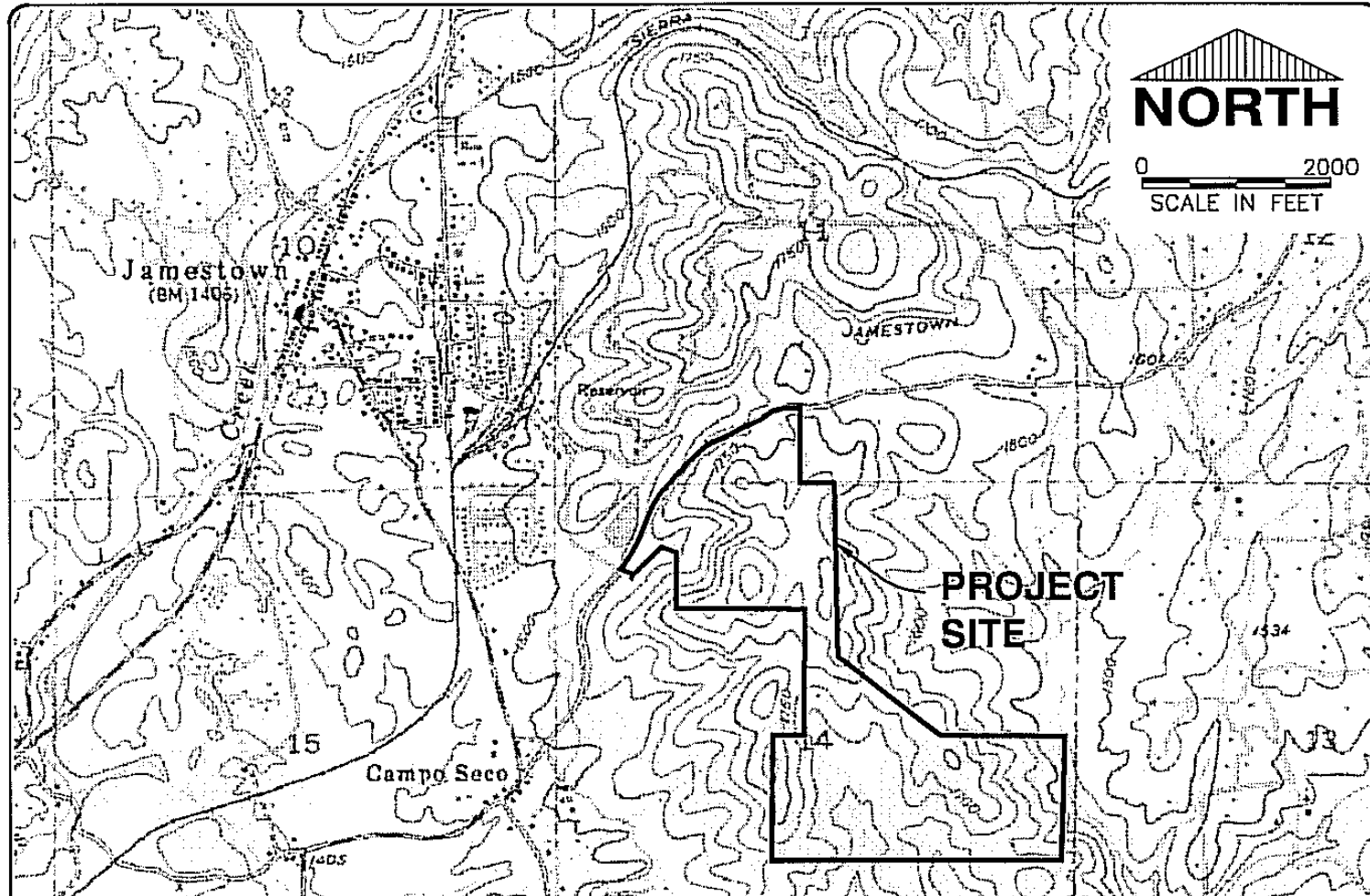
13. The Discharger shall maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill with the CIWMB in the amount of the approved cost estimate described in Finding No. 57 of this Order, plus any annual inflation adjustments required by the CIWMB. If the CIWMB determines that either the amount of coverage or the mechanism is inadequate, the Discharger shall submit a demonstration of acceptable financial assurance to the CIWMB within no more than 90 days of notification.
14. Technical reports required by this Order shall be submitted pursuant to Section 13267 of the California Water Code.
15. By **30 January 2009**, the Discharger shall submit a technical report with the results of the investigation of the leachate collection system at the western buttress and report on modifications made to allow leachate to drain and be collected for disposal.
16. By **30 January 2009**, the Discharger shall submit a Final Closure Construction Report demonstrating that the landfill has been closed in accordance with the April 2008 *Revised Final Closure Plan*, the plans and technical specifications, and that all construction quality assurance testing was conducted showing passing results in accordance with the April 2008 *Construction Quality Assurance Plan*. The report shall include a certification statement from a California-registered civil engineer or engineering geologist stating that the landfill was closed in accordance with the April 2008 *Revised Final Closure Plan*, plans and technical specifications, WDRs Order No. R5-2008-0124, and Title 27, California Code of Regulations.

I, PAMELA C. CREEDON, 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 31 July 2008.

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PAMELA C. CREEDON  
Executive Officer

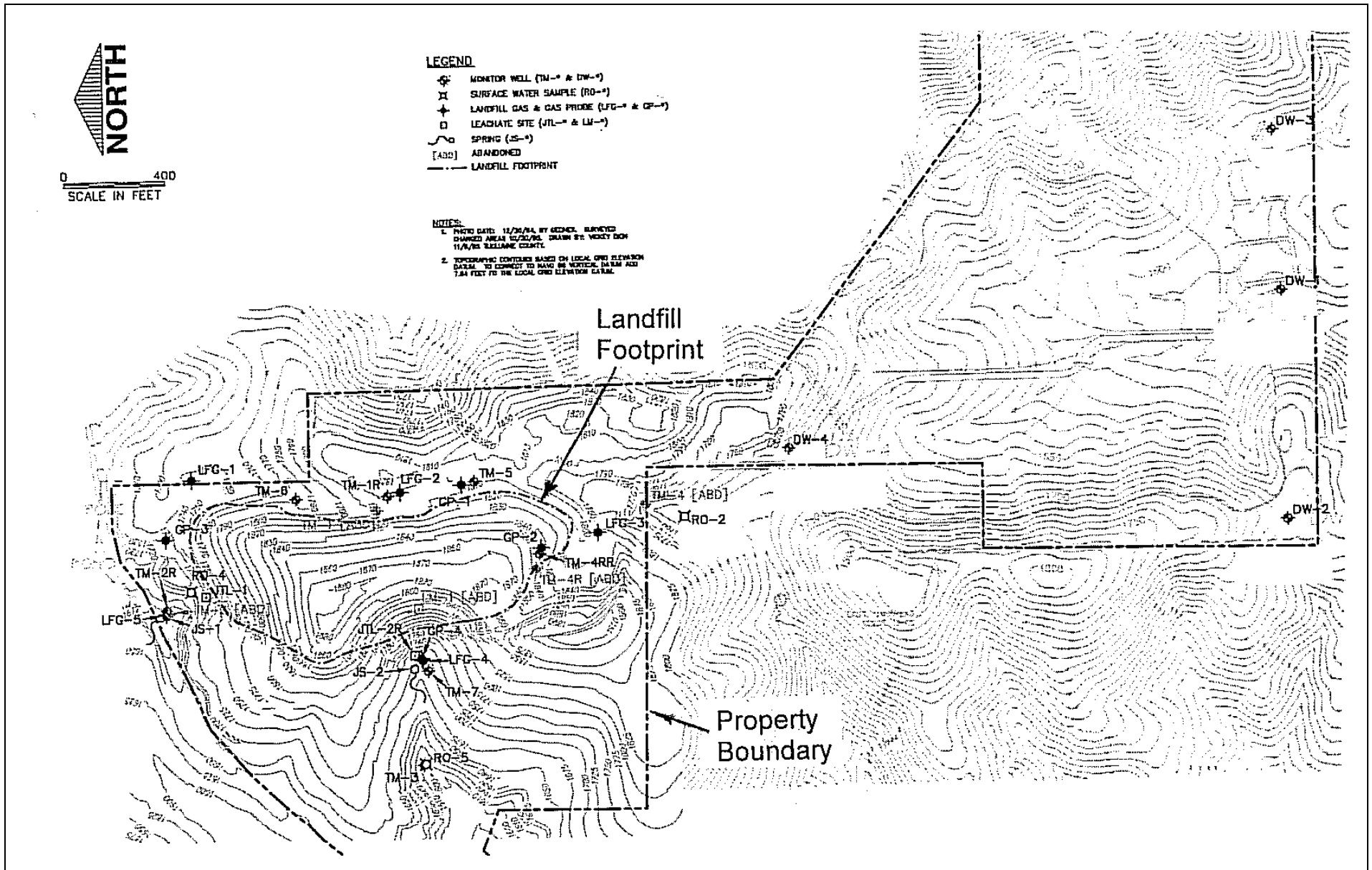




Drawing Reference:

Condor Earth Technologies, Inc., Fourth  
Quarter 2007 Report, Figure 1

**SITE VICINITY MAP**  
JAMESTOWN LANDFILL  
CLASS III LANDFILL  
TUOLUMNE COUNTY



Drawing Reference:  
 Condor Earth Technologies, Inc., Fourth  
 Quarter 2007 Report, Figure 2

**SITE MAP**  
 JAMESTOWN LANDFILL  
 CLASS III LANDFILL  
 TUOLUMNE COUNTY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0124

FOR  
COUNTY OF TUOLUMNE  
JAMESTOWN LANDFILL  
CLOSURE, POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION  
TUOLUMNE COUNTY

The Discharger shall comply 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 Non-hazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, as ordered by Waste Discharge Requirements Order No. R5-2008-0124.

**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 (Section E.5)	<b>Annually</b>
3. Unsaturated Zone Monitoring (Section D.2)	<b>See Tables II &amp; VII</b>
4. Leachate & Seep Monitoring (Section D.3)	<b>See Table III</b>
5. Surface Water Monitoring (Section D.4)	<b>See Table IV</b>
6. Facility Monitoring (Section D.5)	<b>As necessary</b>
7. Response to a Release (Standard Provisions and Reporting Requirements)	<b>As necessary</b>

**B. REPORTING**

The Discharger shall submit semiannual monitoring reports with the data and information required in this Monitoring and Reporting Program and as required in Order No. R5-2008-0124 and the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the 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. R5-2008-0124.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Regional Water 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	Semiannually	Last Day of Month	<b>by Semiannual Schedule</b>
Quarterly	Semiannually	30 June 31 December	<b>by Semiannual Schedule</b>
Semiannually	Semiannually	30 June 31 December	<b>31 July 31 January</b>
Annually	Annually	31 December	<b>31 January</b>
5-Year	Every 5 years	31 December	<b>31 January</b>

The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in E. Reporting Requirements, below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

The results of any monitoring conducted more frequently than required at the locations specified herein or by the waste discharge requirements shall be reported to the Regional Water Board.

## **C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

### **1. Water Quality Protection Standard Report**

For each waste management unit (Unit), 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 for each monitored medium.

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 Water Quality Protection Standard, or any modification thereto, shall be submitted in a report for review and approval.

The report shall:

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

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

## **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 Unit. The constituents of concern for all Units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. 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 Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

### **3. Concentration Limits**

For a naturally occurring constituent of concern, the detection monitoring and corrective action concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415(e)(8) of Title 27; or
- b. By an alternate statistical method meeting the requirements of §20415(e)(8)(E) of Title 27.
- c. Concentration limits greater than background (CLGB) for corrective action may be proposed by the discharger in accordance with §20430 of Title 27 if, after proposed corrective action measures reveal that it is technically and economically infeasible to achieve background levels.
- d. Site specific concentration limits have been established for Jamestown Landfill and are the following both for detection and corrective action:
  1. Use of upper tolerance limits ( $TL_u$ ) may be used to set concentration limits for inorganic constituents, calculated by the using the mean ( $\bar{x}$ ) plus the product of the sample standard deviation ( $s$ ) and the tolerance limit factor ( $K$ ) for the number of observations in the background data set [ $TL_u = \bar{x} + (s \cdot K)$ ]. Use of the tolerance limit factors for one-sided normal tolerance intervals with 95% coverage and a 95% probability is acceptable. Upper tolerance limits for each constituent (except pH) may be calculated using the one-sided  $K$  values, as defined in Table 5 of the EPA publication PB-151047. Tolerance limit factors for a two-sided normal tolerance interval (Miller, 1965, pg. 413) may be used to calculate the upper and lower tolerance limits for pH.
  2. Concentration limits for organic constituents are based on background conditions, which are non-detect (ND).

### **4. Point of Compliance**

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through

the uppermost aquifer underlying the Unit.

## **5. Compliance Period**

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. 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. R5-2008-0124. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that shall be submitted for review and approval.

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 IV.

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

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

### **1. Groundwater**

The Discharger shall install and operate a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with an approved Detection Monitoring Program. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. 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.

Each monitoring wells shall be purged prior to sampling. The Discharger may use low-flow purging and groundwater monitoring procedures described in Appendix A of the Discharger's April 2008 Report of Waste Discharge.

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. The groundwater monitoring points are: TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, TM-7, DW-2, and DW-4. Monitoring wells DW-1 and DW-3 are eliminated from the monitoring program. 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 Piper graph or a Stiff diagram. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

## **2. Unsaturated Zone/Landfill Gas Monitoring**

The Discharger shall monitor the unsaturated zone by monitoring landfill gas generated from the landfill. An evaluation of the effectiveness of the passive gas system proposed in the April 2008 Report of Waste Discharge must be made and reported in the regular semiannual monitoring reports. This evaluation shall be based on concentrations of VOCs detected at the landfill, as reported in Table 5 of the August 2001 Report of Waste Discharge. Data from landfill gas monitoring probes shall be collected quarterly for methane and annually for VOCs as specified in Tables II and VII. Trend analysis shall be graphed and included in the semiannual reports. If these trends do not show a continuing decrease in LFG concentrations, the Regional Water Board requires the Discharger to propose an alternative solution to remediate LFG such as installing an active LFG system. LFG levels must be remediated to achieve



background levels, which would be non-detectable. Landfill gas monitoring will resume following re-closure of the landfill and installation of the new landfill gas venting system.

### **3. Leachate & Seep Monitoring**

All Unit 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 semiannually 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 VI. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons).

Leachate which seeps to the surface from the Unit shall be sampled and analyzed for the Monitoring Parameters and Constituents of Concern listed in Table III upon detection. The quantity of leachate shall be *estimated* and reported as Leachate Flow Rate (in gallons/day). Also refer to Section E.4 below. The leachate monitoring points are: JTL-1 and the replacement for LM-1.

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

The Discharger shall install and operate a surface water detection monitoring system where appropriate that complies with the applicable provisions of §20415, §20420 and §20430 of Title 27 in accordance with and approved Detection Monitoring Program.

For all monitoring points and background monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the constituents of concern specified in Table IV. All monitoring parameters shall be graphed so as to show historical trends at each sample location. The monitoring points for surface water are: RO-2, RO-4, and RO-5 as shown on Attachment B.

## 5. 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 E.3.f, below. 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.

## E. REPORTING REQUIREMENTS

1. 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.
2. 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.
  3. 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 Unit, 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. Results of all corrective action monitoring, and an assessment of the effectiveness of the Corrective Action Program including graphical presentation of all constituents (e.g., VOCs) that are part of the release.
- g. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard observations for INACTIVE or CLOSED landfill units shall be conducted **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September). The Standard Observations shall include:
  - 1) For the Unit:
    - 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 Unit:
    - a) Evidence of liquid leaving or entering the Unit, 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;
  - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation; and
  - g) The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.
4. 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 Water Board **within seven days**, containing at least the following information:
- a. A map showing the location(s) of seepage;
  - b. An estimate of the flow rate;
  - c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
  - d. Verification that samples have been submitted for analysis of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Water Board; and
  - e. Corrective measures underway or proposed, and corresponding time schedule.
5. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the reporting period of the previous monitoring year. This report shall contain:
- a. All monitoring parameters, including VOCs, 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, 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. The Regional Water 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 Water 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. A comprehensive assessment of the effectiveness of the Corrective Action Program for VOCs in groundwater, including graphical presentation of the data, an estimate of when corrective action will be completed (i.e., background conditions are achieved), and any recommended modifications to the Corrective Action Program to achieve background concentrations.

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

Ordered by: \_\_\_\_\_  
PAMELA C. CREEDON  
Executive Officer

\_\_\_\_\_  
31 July 2008  
(Date)

WLB

**TABLE I**  
**GROUNDWATER DETECTION/CORRECTIVE ACTION 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	Semiannually
Electrical Conductivity	µmhos/cm	Semiannually
pH	pH units	Semiannually
Turbidity	Turbidity units	Semiannually
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Semiannually
Chloride	mg/L	Semiannually
Carbonate	mg/L	Semiannually
Bicarbonate	mg/L	Semiannually
Nitrate - Nitrogen	mg/L	Semiannually
Sulfate	mg/L	Semiannually
Calcium	mg/L	Semiannually
Magnesium	mg/L	Semiannually
Potassium	mg/L	Semiannually
Sodium	mg/L	Semiannually
Volatile Organic Compounds (USEPA Method 8260 B, + oxygenates, see Table V)	µg/L	Semiannually
<b>Constituents of Concern (see Table VI)</b>		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, + oxygenates extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	5 years <sup>1</sup>
Chlorophenoxy Herbicides (USEPA Method 8150)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	5 years

<sup>1</sup> Semiannually for monitoring wells TM-1R and TM-6

**TABLE II**

**UNSATURATED ZONE DETECTION/CORRECTIVE ACTION MONITORING PROGRAM**

**SOIL-PORE GAS**

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

**TABLE III**

**LEACHATE DETECTION/CORRECTIVE ACTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Total Flow	Gallons	Monthly/Quarterly <sup>1</sup>
Flow Rate	Gallons/Day	Monthly/Quarterly <sup>1</sup>
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly

<sup>1</sup> Leachate flow shall be monitored **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September)

**Monitoring Parameters**

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



**TABLE III**  
**LEACHATE DETECTION/CORRECTIVE ACTION MONITORING PROGRAM**  
**Continued**

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

Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, + oxygenates extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8150)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	5 years

**TABLE IV**  
**SURFACE WATER DETECTION/CORRECTIVE ACTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Temperature	°C	Twice per year <sup>1</sup>
Electrical Conductivity	µmhos/cm	Twice per year <sup>1</sup>
pH	pH units	Twice per year <sup>1</sup>
Turbidity	Turbidity units	Twice per year <sup>1</sup>
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Twice per year <sup>1</sup>
Carbonate	mg/L	Twice per year <sup>1</sup>
Bicarbonate	mg/L	Twice per year <sup>1</sup>
Chloride	mg/L	Twice per year <sup>1</sup>
Nitrate - Nitrogen	mg/L	Twice per year <sup>1</sup>
Sulfate	mg/L	Twice per year <sup>1</sup>
Calcium	mg/L	Twice per year <sup>1</sup>
Magnesium	mg/L	Twice per year <sup>1</sup>
Potassium	mg/L	Twice per year <sup>1</sup>
Sodium	mg/L	Twice per year <sup>1</sup>
Volatile Organic Compounds (USEPA Method 8260 B, + oxygenates, see Table V)	µg/L	Twice per year <sup>1</sup>

<sup>1</sup> Sample surface water monitoring points RO-2, RO-4, and RO-5 during the first storm event of the wet season and at least one other storm event in the wet season.

**TABLE IV**  
**SURFACE WATER DETECTION/CORRECTIVE ACTION MONITORING PROGRAM**  
**Continued**

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

Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, + oxygenates extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8150)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141)	µg/L	5 years

## TABLE V

### MONITORING PARAMETERS FOR DETECTION/CORRECTIVE ACTION MONITORING

#### Surrogates for Metallic Constituents:

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

#### Constituents included in VOC:

##### USEPA Method 8260 B, + oxygenates

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)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans-1,4-Dichloro-2-butene  
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  
Ethylbenzene  
2-Hexanone (Methyl butyl ketone)  
Methyl bromide (Bromomethane)

**TABLE V**

**MONITORING PARAMETERS FOR DETECTION/CORRECTIVE ACTION MONITORING**

**Continued**

Methyl chloride (Chloromethane)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Methyl ethyl ketone (MEK: 2-Butanone)  
Methyl iodide (Iodomethane)  
4-Methyl-2-pentanone (Methyl isobutylketone)  
Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)  
Toluene  
1,1,1-Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride  
Xylenes

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

<b><u>Inorganics (dissolved):</u></b>	<b><u>USEPA Method</u></b>
Aluminum	6010
Antimony	6020 (ICP.MS)
Barium	6020 (ICP.MS)
Beryllium	6020 (ICP.MS)
Cadmium	6020 (ICP.MS)
Chromium	6020 (ICP.MS)
Chromium VI	7199
Cobalt	6020 (ICP.MS)
Copper	6020 (ICP.MS)
Silver	6020 (ICP.MS)
Tin	6020 (ICP.MS)
Vanadium	6020 (ICP.MS)
Zinc	6020 (ICP.MS)
Iron	6010
Manganese	6010
Arsenic	6020 (ICP.MS)
Lead	6020 (ICP.MS)
Mercury	7470A
Nickel	6020 (ICP.MS)
Selenium	6020 (ICP.MS)
Thallium	6020 (ICP.MS)
Cyanide	9010B
Sulfide	9030B

**Volatile Organic Compounds:**

**USEPA Method 8260B, + oxygenates**

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 VI**

**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  
Ethylbenzene  
Ethyl methacrylate  
Hexachlorobutadiene  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl methacrylate  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Propionitrile (Ethyl cyanide)  
Styrene  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1 -Trichloroethane, Methylchloroform  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane

**TABLE VI**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**  
**Continued**

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  
Chrysene  
o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)  
4,4'-DDD

**TABLE VI**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**  
**Continued**

4,4'-DDE  
4,4'-DDT  
Diallate  
Dibenz[a,h]anthracene  
Dibenzofuran  
Di-n-butyl phthalate  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
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  
Hexachlorobutadiene  
Hexachlorocyclopentadiene  
Hexachloroethane  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene  
Isodrin



**TABLE VI**

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

**Continued**

Isophorone  
Isosafrole  
Kepone  
Methapyrilene  
Methoxychlor  
3-Methylcholanthrene  
Methyl methanesulfonate  
2-Methylnaphthalene  
Naphthalene  
1,4-Naphthoquinone  
1-Naphthylamine  
2-Naphthylamine  
o-Nitroaniline (2-Nitroaniline)  
m-Nitroaniline (3-Nitroaniline)  
p-Nitroaniline (4-Nitroaniline)  
Nitrobenzene  
o-Nitrophenol (2-Nitrophenol)  
p-Nitrophenol (4-Nitrophenol)  
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)  
N-Nitrosodiethylamine (Diethylnitrosamine)  
N-Nitrosodimethylamine (Dimethylnitrosamine)  
N-Nitrosodiphenylamine (Diphenylnitrosamine)  
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)  
N-Nitrosomethylethylamine (Methylethylnitrosamine)  
N-Nitrosopiperidine  
N-Nitrosopyrrolidine  
5-Nitro-o-toluidine  
Pentachlorobenzene  
Pentachloronitrobenzene (PCNB)  
Pentachlorophenol  
Phenacetin  
Phenanthrene  
Phenol  
p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol  
o-Toluidine  
Toxaphene  
  
1,2,4-Trichlorobenzene  
2,4,5-Trichlorophenol

**TABLE VI**

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

**Continued**

2,4,6-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**Chlorophenoxy Herbicides:**

**USEPA Method 8150**

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 8141**

0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Dimethoate  
Disulfoton  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate

**TABLE VII**

**LANDFILL GAS CONSTITUENTS & APPROVED USEPA ANALYTICAL METHODS**

**USEPA Method TO-14, TO-15, or TO-17**

1,1,1-Trichloroethane (methyl chloroform)<sup>a</sup>  
1,1,2,2-Tetrachloroethane<sup>a</sup>  
1,1-Dichloroethane (ethylidene dichloride)<sup>a</sup>  
1,1 -Dichloroethene (vinylidene chloride)<sup>a</sup>  
1,2-Dichloroethane (ethylene dichloride)<sup>a</sup>  
1,2-Dichloropropane (propylene dichloride)<sup>a</sup>  
2-Propanol (isopropyl alcohol)  
Acetone  
Acrylonitrile<sup>a</sup>  
Bromodichloromethane  
Butane  
Carbon disulfide<sup>a</sup>  
Carbon tetrachloride<sup>a</sup>  
Carbonyl sulfide<sup>a</sup>  
Chlorobenzene<sup>a</sup>  
Chlorodifluoromethane  
Chloroethane (ethyl chloride)<sup>a</sup>  
Chloroform<sup>a</sup>  
Chloromethane  
Dichlorobenzene<sup>b</sup>  
Dichlorodifluoromethane  
Dichlorofluoromethane  
Dichloromethane (methylene chloride)<sup>a</sup>  
Dimethyl sulfide (methyl sulfide)  
Ethane  
Ethyl mercaptan (ethanethiol)  
Ethylbenzene<sup>a</sup>  
Ethylene dibromide  
Fluorotrichloromethane  
Hexane<sup>a</sup>  
Hydrogen sulfide  
Methyl ethyl ketone<sup>a</sup>  
Methyl isobutyl ketone<sup>a</sup>  
Methyl mercaptan  
Pentane  
Perchloroethylene (tetrachloroethylene)<sup>a</sup>  
Propane  
t-1,2-dichloroethene  
Trichloroethylene (trichloroethene)<sup>a</sup>  
Vinyl chloride<sup>a</sup>  
Xylenes<sup>a</sup>

**TABLE VII**

**LANDFILL GAS CONSTITUENTS & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

NOTE: This is not an all-inclusive list of potential landfill gas constituents.

<sup>a</sup> Hazardous Air Pollutants (HAP) listed in Title III of the 1990 Clean Air Act Amendments.

<sup>b</sup> Source tests did not indicate whether this compound was the para- or ortho- isomer. The para isomer is a Title III-listed HAP.

## INFORMATION SHEET

ORDER NO. R5-2008-0124  
COUNTY OF TUOLUMNE  
JAMESTOWN LANDFILL  
CLOSURE, POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION  
TUOLUMNE COUNTY

The Jamestown Landfill is owned and operated by the County of Tuolumne (Discharger) and is located approximately one-half mile southeast of Jamestown, California. The Landfill is on a 54-acre parcel and consists of one existing unlined waste management Unit covering 15.5 acres. The landfill began accepting waste in 1974 and stopped accepting waste in 1995, and closure was completed in 2005. The landfill contains approximately 522,000 tons of in-place refuse. The landfill essentially occupies the top of a north-south trending ridge as well as ravines to the north and west. Groundwater moves radially away from the facility in all four directions. The nearest water well is reported to be 1,500 feet west of the landfill.

Previous Waste Discharge Requirements Order No. R5-2002-0173 required closure of the landfill in accordance with the Discharger's February 2003 Final Closure Plan. Closure was completed in 2005; however, the clay portions of the final cover experienced significant desiccation by October 2005, and the steeper portions of the landfill's side slopes experienced significant erosion and shallow slide failures over that winter. The western side slope, which is inclined as steep as 1.4 horizontal to 1 vertical (1.4H:1V), was subsequently covered with anchored plastic sheeting prior to the 2006-07 winter rains. The Regional Water Board issued Cease and Desist Order No. R5-2006-0100 requiring a revised closure plan for the western side slope by 2 January 2007. The revised closure plan was submitted; however, prior to its implementation, additional failures occurred on the eastern side of the landfill on the 2H:1V side slopes. These additional slope failures, as well as tension cracks observed near the outboard edges of the benches above the 2H:1V slopes, caused the Discharger to re-evaluate the long-term stability of the clay final cover on all of the side slopes. The Discharger determined that the clay cover needed to be replaced and that the steepness of the side slopes would need to be significantly reduced. The Discharger also determined that this would require the re-closure of the entire landfill due to the need to relocate large amounts of the landfill waste from the side slopes to the top deck.

The Discharger submitted an April 2008 *Revised Final Closure Plan* that includes the plan for re-closing the landfill. The purpose of re-closing the landfill is to replace the existing clay cover that is desiccated and unstable, and to significantly reduce the steepness of the landfill side slopes from the current 1.4H:1V and 2H:1V slopes, to slopes no steeper than 2.75H:1V. The Discharger will construct 15-foot wide benches every 50 vertical feet.

The closure design includes constructing a stabilization buttress on the eastern side of the landfill, regarding the existing side slopes to meet stability criteria, relocating excavated refuse within the existing landfill footprint, reconstructing the final cover system, reconstructing the existing landfill gas system, reconstructing the existing surface water drainage system, and providing erosion control.

INFORMATION SHEET  
ORDER NO. R5-2008-0124  
JAMESTOWN LANDFILL  
TUOLUMNE COUNTY

The proposed final cover is an engineered alternative consisting of, from top to bottom, the following:

- a. A two-foot thick soil vegetative/erosion resistant layer.
- b. A geosynthetic layer consisting of either:
  - i. A double sided geocomposite over a 40-mil linear low-density polyethylene (LLDPE) textured geomembrane, or
  - ii. An 8-oz/yd<sup>2</sup> non-woven filter fabric over a 60-mil Agru Super Gripnet high-density polyethylene (HDPE) textured geomembrane.
- c. A 12-oz/yd<sup>2</sup> cushion geotextile (only if required by the Engineer or CQA Officer to protect the geomembrane from rocks in the underlying foundation layer soil).
- d. An 18-inch compacted soil foundation layer.

The Discharger provided demonstrations required by Title 27 for the proposed engineered alternative final cover design in the April 2008 *Revised Final Closure Plan*. The Discharger stated that a portion of the original final cover was constructed with compacted clay, and that although the clay had a hydraulic conductivity of lower than  $1 \times 10^{-6}$  cm/s, site observations indicated the clay is highly desiccated and cracked and does not meet the performance standard. The Discharger also stated that the low permeability layer for the proposed closure consists of a geomembrane that is essentially impermeable to through-flow of water and therefore exceeds the performance standard. Additionally, the final cover system will include an internal drainage layer to remove water from the cover system before it potentially could flow through the underlying barrier. The Discharger states that therefore the proposed barrier layer is consistent with the performance goal and provides better protection against water quality impairment than the prescriptive standard.

There are eleven groundwater wells installed at the landfill facility. Three of these wells, DM-1, DM-2, and DM-3, are located about 2,600 feet south of the landfill and were installed to monitor a new landfill that was not constructed. Monitoring well DM-2 has since been designated as a background monitoring well for the landfill, although the Discharger uses intrawell statistical analysis for detection monitoring. The remaining wells, DM-4, TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, and TM-7 are either in detection monitoring or corrective action monitoring. Wells DM-1 and DM-3 do not serve any useful purpose, and are no longer monitored at the request of the Discharger.

Volatile organic compounds have been detected in monitoring wells TM-1R, TM-2R, TM-3, TM-4RR, TM-5, TM-6, and TM-7. The Discharger submitted an August 2001 amended RWD for corrective action concluding that the source of the VOCs was from landfill gas and proposed the installation of a final cover and passive landfill gas vents. The Discharger also concluded that groundwater extraction would be costly and ineffective for remediation due to the very low yield of the onsite wells, the low concentrations of the VOCs, and the fractured rock hydrogeology.

INFORMATION SHEET  
ORDER NO. R5-2008-0124  
JAMESTOWN LANDFILL  
TUOLUMNE COUNTY

In 2002, the Regional Water Board issued WDRs approving the closure and corrective action plan, and the Discharger completed closure and installation of the passive landfill gas vents during 2005. The Regional Water Board concurred that for this site, a groundwater extraction and treatment system is economically infeasible because the low concentrations of the VOCs in groundwater that do not pose a substantial present or potential hazard to human health or the environment, the low transmissivity of the fractured bedrock, and that the additional cost to the citizens of Tuolumne County was not justified. Given the need to re-close the landfill, the Discharger proposes to re-install the passive landfill gas vents, wells, and trenches as part of the closure activities. Additional vents will be included on the benches of the side slopes, and at the east perimeter of the landfill where VOCs are most prevalent.

Surface drainage is toward (New) Don Pedro Reservoir in the Sonora Hydrologic Area (536.31) of the San Joaquin hydrologic Basin.

WLB