CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2009-0051

WASTE DISCHARGE REQUIREMENTS
FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
STANISLAUS COUNTY

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

1. The Stanislaus County Department of Environmental Resources (hereafter referred to as Discharger) owns and formerly operated the Geer Road Landfill, a municipal solid waste landfill that was closed in 1995. The landfill is eight miles east of Modesto, near the Tuolumne River in the southeast corner of Section 34, Township 3 South, Range 10 East, and the northeast corner of Section 3, Township 4 South, Range 10 East, Mount Diablo Base and Meridian, as shown in Attachment A, which is incorporated herein and made part of this Order.

2. The 168-acre facility comprises Assessor's Parcel Number 9-29-09, 9-29-12, and 18-03-13 and includes the closed Class III landfill and a sedimentation basin. The site was operated as a sanitary landfill by the County of Stanislaus from 1970 until 1990 and accepted residential, commercial, industrial (including cannery waste), and construction and demolition wastes. The landfill used a trench and fill method and consists of a single unlined landfill unit. The Discharger estimates that the landfill contains approximately 4.5 million tons of waste. The landfill was closed in 1995 with a geomembrane and vegetative soil on the top deck and compacted clay and vegetative soil on the side slopes. Closure was approved in July 1996.

3. The Discharger submitted a 31 October 2007 amended Report of Waste Discharge (RWD) as part of the Joint Technical Document (JTD) for the landfill. The information in the RWD/JTD has been used in writing these waste discharge requirements (WDRs). The RWD contains the applicable information required in Title 27, California Code of Regulations (CCR), Chapter 4, Subchapter 3, Article 4. Within the RWD, the Discharger proposed to submit an Engineering Feasibility Study (EFS) for corrective action of volatile organic compounds (VOCs) in groundwater. The EFS was submitted 13 February 2009. These WDRs include a time schedule for determining the nature and extent of VOC contamination at the north area of the landfill, and for implementing and documenting corrective actions for VOC removal from groundwater at the north and south areas of the landfill. These WDRs have also been updated since previous Order No. 5-00-087 with current site information and to ensure consistency with the Regional Water Board's plans and policies.

4. Previous WDRs for the facility, including most recent Order No. 5-00-087, classified the facility as a Class III waste disposal site. This Order continues to classify the landfill as a Class III landfill in accordance with Title 27, CCR Section 20005, et seq. (Title 27).

SITE DESCRIPTION

5. The site lies near the eastern edge of the San Joaquin Valley adjacent to the Tuolumne River. The terrain is characterized by river terraces and is gently sloping with elevations at approximately 140 feet above mean sea level.

6. The Foothills Fault zone is the nearest significant fault and is located approximately 25 miles east of the site. The maximum credible earthquake (MCE) for the Foothills Fault zone is a magnitude 6.5 event. Other regionally significant faults are located within the Coast Ranges geomorphic province to the west of the site. One of these, the Calaveras Fault, approximately 50 miles west of the landfill, may be a potential source of seismicity with an MCE of 7.5. The maximum peak bedrock acceleration expected at the landfill for an event from either the Foothills or the Calaveras Faults is approximately 0.13 g.

7. Land within 1,000 feet of the facility is used for irrigated agricultural purposes, buffer area, and residential housing. Around the perimeter of the site, agriculture is the principal use, with the predominant crops being walnuts and peaches. A 15-acre multiple family housing development, Pinewood Meadows Mobile Home Park with 174 trailer spaces, is located across Geer Road 350 feet east of the landfill.

8. The facility receives an average of 12.2 inches of precipitation per year as measured by Modesto Irrigation District. Mean evaporation is estimated to be between 65-75 inches per year. Based on these data, the average annual net evaporation is approximately 53-63 inches.

9. The 100-year, 24-hour precipitation event for Modesto is 2.43 inches, as calculated from rainfall intensity-duration-frequency curves from the County of Stanislaus Department of Environmental Resources Storm Drain Design Manual, developed with data from the California Department of Water Resources.

10. According to the Federal Insurance Administration Map, Stanislaus County, Community Panel No. 060384055A, August 1980, the landfill footprint is outside the 100-year flood plain. However, it is within Zone C (area of minimal flooding). The 100-year flood plain crosses the southwest property boundary, an area that is open land outside of the footprint of the landfill. During the winter of 1997-1998, portions of the property were flooded. The landfill area is protected by a 10-foot high berm.

11. There are four groundwater supply wells near the landfill including two immediately south of the landfill (Streeter wells) and two east of the landfill (Pine Wood Meadows Mobile Home Park wells), as shown on Attachment B, which is incorporated herein and made part of this Order. A third supply well formerly located at the mobile home park was

capped by the property owner. In 2006, the Discharger purchased a property near the northern section of the landfill and abandoned its well (former Lopez well).

WASTES AND THEIR CLASSIFICATION

12. The landfill began operation in November 1970 and was continuously operated by Stanislaus County. The landfill accepted municipal solids waste and cannery wastes. These wastes are classified as non-hazardous solid waste using the criteria in Chapter 15 of Title 23, CCR that was applicable to the landfill at that time.

SURFACE AND GROUNDWATER CONDITIONS

13. The *Water Quality Control Plan for Sacramento 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.

14. Storm runoff from the site is routed to the sedimentation basin. The sedimentation basin is in the south central area of the site, as shown on Attachment B. The basin allows suspended material to settle out from surface water runoff prior to discharge into the Tuolumne River. Discharge from the basin only occurs in very wet weather years. As of January 2009, there have been no discharges from the basin since 31 December 2001.

15. The designated beneficial uses of the Tuolumne River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact and non-contact water recreation; warm fresh water habitat; cold fresh water habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

16. Due to topographic variations across the site, groundwater is first encountered at depths ranging between approximately 20 to 60 feet below grade. The shallow monitoring wells are screened across a 20-foot interval ranging from 40 to 80 feet in elevation above mean sea level. The shallow water-bearing zone is unconfined. The deeper zone groundwater monitoring wells are screened at about 80 to100 feet bgs in an unconfined to semiconfined aquifer that is likely in hydraulic communication with the shallow zone.

17. Groundwater gradients vary seasonally, but range from southwest to westerly. Groundwater elevations may vary up to five feet, however elevations varied by as much as 15 feet during the winter of 1997, which was unusually wet. The gradient in the shallow zone is approximately 0.31 foot per foot (ft/ft), generally toward the southwest. The gradient in the deeper aquifer is approximately 0.32 ft/ft toward the southwest. According to the Discharger, groundwater velocities calculated from transmissivity values range from 11.4 to 119 feet per year.

18. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER MONITORING AND CORRECTIVE ACTION

19. There are 22 groundwater monitoring wells completed in the shallow groundwater zone and 12 groundwater monitoring wells in the deeper zone. The monitoring well locations are shown on Attachment B.

20. The facility is in corrective action monitoring for impacts to groundwater from VOCs. The two methods of corrective action are: (1) source control measures consisting of installation and operation of the landfill gas (LFG) extraction system and landfill capping, and (2) installation and operation of a groundwater extraction and treatment system. The groundwater extraction and treatment system is located near the southern end of the landfill, as shown on Attachment B.

21. Groundwater degradation at this site was initially identified in 1985 and later confirmed in both 1986 groundwater studies and 1987 Solid Waste Assessment Test (SWAT) water quality studies. Aromatic and halogenated VOCs are present in groundwater in the "shallow" and "deeper" groundwater zones under the landfill and downgradient of the site. The lateral and vertical extent of VOCs has not been completely defined. For example, MW-23S, located outside and southwest of the property boundary and along the river bank, has concentrations of vinyl chloride ranging from 2.3 ug/L to 3.4 ug/L. These concentrations are above the California Primary MCL of 0.5 ug/L. Vinyl chloride is a degradation product of tetrachloroethylene (PCE). MW-23S also has detected concentrations of other PCE degradation products, including 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, and trichloroethene. The deeper companion well to MW-23S, MW-23D, also has detected concentrations of Freon and PCE degradation products. Similarly, MW-15S (a shallow well), located outside the property boundary to the south of the landfill, has concentrations of Freon, PCE, and PCE degradation products. Wells along the property boundary to the north also contain halogenated VOCs. Thus, at a minimum the horizontal and vertical extent of contamination have not been completely defined to the south, southwest, and north of the landfill.

22. As of May 2007, halogenated VOCs remaining in groundwater included 1,1-dichloroethane, 1,1-dichloroethene, PCE, trichloroethene, cis- and trans-1,2-DCE, vinyl chloride, trichlorofluoromethane (Freon-11), and dichlorodifluoromethane (Freon-12). The greatest concentrations of volatiles are under the southernmost portion of the landfill and off-site to the south, southwest, and southeast. Lower concentrations of VOCs have been detected in the shallow offsite, upgradient wells to the northeast.

23. As of 2007, aromatic VOCs reported in groundwater included benzene, chlorobenzene, toluene, and 1,2-dichloropropane.

24. During 1991, arsenic was reported in monitoring wells MW-14S at 130 micrograms per liter (ug/L). During 1996, arsenic was present in shallow monitoring well MW-4S at 64 ug/L and in all four deep wells and nine other shallow wells at concentrations up to 3.8 ug/L. In 2007, a study of arsenic concentrations in the area of the landfill concluded that natural background concentrations of arsenic ranged from ND to 4.42 ug/L. The primary maximum contaminant level, a drinking water standard, for arsenic is 10 ug/L and the one-in-a-million incremental cancer risk estimate for drinking water based on the US EPA Integrated Risk Information System is 0.02 ug/L. Iron and manganese are elevated in one deep well and six shallow wells. Lead was detected in one deep well at a concentration above the Public Health Goal for drinking water as recommended by the Office of Environmental Health Hazard Assessment.

25. A LFG control system consisting of an air injection curtain was installed in 1983 along a portion of the site's southern perimeter. Phase 1 of the LFG extraction system, which included the first flare station, was in operation from 1992 to 2006 and covered the northeast one-third of the site. The system was expanded to include 45 gas wells with aboveground piping and a second flare station located near the center of the landfill. The current LFG control system is comprised of 83 extraction wells and one flare station. Many of the VOCs found in groundwater are commonly found in landfill gas. Measurements of LFG concentrations indicate that the system is capturing landfill gas from the landfill (i.e., methane). Methane in each of the shallow, medium, and deep probes around the landfill show concentrations at or near zero percent. Methane concentrations in the LFG extraction wells within the waste average about 24 percent. Perimeter gas monitoring probes were sampled in 2000, 2001, and 2006 for VOCs. In the 2006 investigation, PCE and other halogenated VOCs were detected at probes GP-01, GP-02, GP-03, GP-05, GP-08, GP-09, GP-10, GP-11, GP-13, and GP-17. Freon species were detected in all these probes. Freon 12 concentrations ranged from of 0.8 parts per billion by volume (ppbv) to 230 ppbv. In wells GP-01, GP-02, GP-03, GP-09, GP-10, GP-13, and GP-17, PCE concentrations ranged from 0.97 ppbv (GP-17) to 220 ppbv (GP-02). In the June 2001 sampling event, samples obtained from GP-17, GP-18, GP-22, GP-23, GP-24 had concentrations of PCE and other halogenated VOCs. PCE concentrations ranged from 1.7 to 6.4 ppbv. In July 2000, gas probes GP-36, GP-37, and GP-38 were sampled and had detected concentrations of 16 VOC constituents. At 850 ppbv and 2,200 ppbv, GP-38 had the highest concentrations of PCE and Freon 12, respectively.

26. As of 2006, only one flare station (the South Flare) has been operating to burn the landfill gas. The location of the flare station is shown on Attachment B. The North Flare was decommissioned in 2006 due to vandalism (Stanislaus County Sheriff case # S06-62706).

27. During 1991 and 1993, 12 groundwater extraction wells were installed as part of a groundwater remediation system to address groundwater impacts from VOCs and metals. The groundwater remediation system consists of the 12 extraction wells, a granular activated carbon (GAC) treatment system, and eight injection trenches. The injection trenches are located immediately southwest of the treatment plant which is shown on

Attachment B along the eastern side of the landfill. Groundwater is pumped from the 12 extraction wells located along the perimeter of the landfill and is pumped through a bag filter to remove suspended solids and then through two 10,000-pound GAC units, in series, to remove VOCs. Treated groundwater, prior to injection into the shallow zone via infiltration trenches, is sampled and analyzed to assess effluent quality from the treatment system and to evaluate the system efficiency.

28. In May 2007, the Discharger completed a study of the southern portion of the landfill and surrounding lands. This study evaluated the distribution of VOCs in existing monitoring wells, and at other locations where samples were collected from direct push borings. Although LFG and groundwater extraction and treatment systems are and have been in operation for more than 15 years, the Discharger concluded that: VOCs and halogenated VOCs continue to be detected in LFG and groundwater beyond the boundary of the landfill; the existing LFG system does not adequately capture the gases; and expansion of the LFG system into the south area of the landfill was recommended. The Discharger concluded that VOCs are distributed in groundwater throughout the area, with the highest concentrations adjacent to the landfill. The study also found that the VOC concentrations were generally higher in the shallow zone compared to the deeper zone groundwater. The Discharger concluded that the existing groundwater extraction system was not extracting sufficient volumes of water to form a barrier to VOCs migrating away from the site. During 2007 and early 2008, the Discharger upgraded the extraction and treatment system to increase the flow rate, including replacing extraction well pumps, air lines, discharge lines, installing more filters, and replacing the GAC.

29. Groundwater exceeds the Maximum Concentration Limit (MCL) for PCE. The US EPA Primary MCL for PCE is 5 ug/L. At the south area of the landfill, the concentration of PCE at well MW-1D has trended upward from 0.86 ug/L in March 1996 to 5.6 ug/L in June 2008; and the concentration of PCE at MW-12S has ranged from 12 ug/L (1987) to 20 ug/L (November 2008). During 2008, groundwater at MW-01D and MW-12S exceeded the MCL for PCE in groundwater.

30. On 14 April 2008, the Discharger submitted a corrective action work plan for expansion of the existing LFG system into the south area of the landfill. The work plan includes installation of 10 LFG extraction wells, connection of the new LFG wells to the existing flare, and installation of two groundwater monitoring wells near the Tuolumne River. The two groundwater monitoring wells (MW-15D and MW-23D) were installed and a report was submitted on 15 January 2009. An LFG well installation report, including analytical and test results, was due by 30 September 2008. The Discharger has not submitted the report, and on 23 February 2009 confirmed that the 10 new LFG extraction wells have not been installed. This Order requires that the Discharger install, operate, and maintain the 10 new LFG extraction wells.

31. Groundwater concentrations at the north area of the landfill, including wells MW-13, MW-17, MW-18, MW-22, and MW-13, show concentrations of halogenated VOCs in

groundwater. In a letter dated 23 February 2009, the Discharger proposed to define the nature and extent of VOCs in groundwater at the north area of the landfill. This Order requires that the Discharger define the nature and extent of VOC concentrations in groundwater, to submit a report documenting the findings, and to submit and implement a corrective action for groundwater remediation at the north area of the landfill.

32. The Discharger submitted a report on 1 July 2008 summarizing the GWETS upgrades and system effectiveness, and the results of an aquifer test to estimate the radius of influence for each of the groundwater extraction wells. The aquifer test was conducted by shutting off the extraction system (all 12 extraction wells), and measuring the water levels in those wells every 10 minutes for several hours and then over the next several days. The system was then restarted, and further measurements were recorded over several days. Pressure transducers were installed in 23 monitoring wells to observe response away from the extraction wells.

33. The results of the aquifer test indicate that the extraction system does not influence any of the monitoring wells at the landfill. Monitoring wells located closest to the extraction wells were 40 to 60 feet away. The Discharger concluded that the radius of influence of the extraction system was less than the distance to these wells. Pumping rates from the wells ranged from 0.13 gallons per minute (gpm) in EX-1 to about 11 gpm in EX-7, and the total system flow rate was about 61 gpm. Pumping rates were averaging about 40 gpm prior to the system upgrades. Total VOC loading in the influent to the system during the test was about 6.4 grams per day with an average VOC concentration of about 19 ug/L.

34. Based on the results of the aquifer test, the Discharger proposed to prepare a new EFS to compare ongoing use of the groundwater extraction system (including upgrading the system to achieve higher flow rates) to other available technologies for low-level VOC removal from groundwater.

35. The Discharger submitted an EFS on 13 February 2009 for corrective action of VOCs within the landfill boundary of the south area of the landfill. The Discharger's recommendations include installation of 10 LFG extraction wells (the same wells that were to be installed by 31 August 2008 under a corrective action plan submitted on 14 April 2008 [see Finding 30]). In addition, the Discharger recommended one of two options: (1) replacement of an existing flare with a 1,500 scfm capacity flare, installation of an additional 28 LFG extraction wells or (2) enhancement of the existing groundwater extraction and treatment system with 20 dual-completion groundwater extraction wells, upgraded treatment units, and increased treatment capacity. This Order requires the Discharger to install 10 LFG extraction wells, and to install either (1) a 1,500 scfm capacity flare and the additional 28 LFG extraction wells or (2) to install 20 dual-completion groundwater extraction wells, upgraded groundwater treatment units, and increased treatment capacity and to implement corrective action for VOC-impacted groundwater at the south area of the landfill, including remediation of groundwater outside

the landfill property boundary. This Order requires that the Discharger submit a Construction Report documenting that the corrective action facilities have been installed.

36. This Order requires the Discharger to submit an Operation and Maintenance Plan for the new corrective action facilities installed under this Order.

37. Under WDRs R5-00-087, the Discharger has been required to submit historical analytical data annually in an electronic file format (.xls) that is acceptable to the Regional Water Board. On 5 March 2009, the Board received an electronic file of historical data through 2005. However, the Discharger has not submitted the historical data for 2006 through 2008. In the 2008 annual monitoring report, the Discharger submitted an incomplete file with omitted inorganic results, omitted VOC analytical results, and approximately 2,000 lines of data without a sample location identifier. The Discharger stated that a new consultant was unable to retrieve historical data from the prior consultants database. This Order requires that the Discharger submit all the historical data from 1 January 2006 through 31 December 2008, including all inorganic, VOC, and non-detects, in an electronic format file that is acceptable to the Regional Water Board.

FINANCIAL ASSURANCES

38. The March 1994 Post-Closure Maintenance Plan (PCMP) includes a cost estimate for post-closure maintenance at the landfill. The amount of the post-closure maintenance cost estimate is $322,780/year. According to the California Integrated Waste Management Board (CIWMB), the amount adjusted for inflation in 2008 dollars is $441,282 per year. The Discharger has a Pledge of Revenue Agreement on file with the CIWMB for post-closure maintenance.

39. Title 27 Section 22222 requires the Discharger to prepare a cost estimate and establish financial assurances for corrective action of all known or reasonably foreseeable releases at the landfill. The Regional Water Board has not received a cost estimate for corrective action financial assurances. This Order therefore requires the Discharger to prepare a cost estimate for corrective action of all known or reasonably foreseeable releases from the landfill. Since the landfill has a known release, the Discharger should prepare a cost estimate with a lump sum present day cost for a third-party to complete remediation of the known release. This Order also requires that the Discharger establish and maintain financial assurance with the CIWMB in at least the amount of this cost estimate, plus annual inflation.

CEQA AND OTHER CONSIDERATIONS

40. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code Section 21000, et seq., and the CEQA guidelines, in accordance with Title 14 CCR, Section 15301.

41. 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 amended 21 July 2005.

42. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of 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 regional board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

43. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2009-0051" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

44. 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.

45. 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.

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

47. 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/laws_regulations/ and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 5-00-087 is rescinded, and that Stanislaus County Department of Environmental Resources, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of any waste at this facility, other than treated groundwater to the infiltration trenches, is prohibited.

2. The discharge of treated groundwater with detectable levels of organic compounds, or that fails to conform to the site's water quality protection standards, is prohibited.

B. DISCHARGE SPECIFICATIONS

General Specifications

1. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control and irrigation to promote vegetation for erosion control.

2. Groundwater discharged to the unsaturated zone shall be treated to remove organic compounds and shall not exceed the site’s water quality protection standards.

Protection from Storm Events

3. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.

4. Annually, prior to the anticipated rainy season, but no later than **1 November**, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the facility and to prevent surface drainage from contacting or percolating through wastes.

C. FACILITY SPECIFICATIONS

1. 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 that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

2. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

3. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

4. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

5. 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-DWQ, or retain all storm water on-site.

D. POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. During the closure and post-closure maintenance period, the Discharger shall conduct routine maintenance of the final cover, areas with interim cover, the precipitation and drainage control facilities, the groundwater, unsaturated zone and landfill gas monitoring systems, the landfill gas extraction system, and any facilities associated with corrective action.

2. 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.

3. The Discharger shall perform all post-closure maintenance activities specified in the facility's Final Closure and Post-Closure Maintenance Plan that are not specifically referred to in this Order.

4. The post-closure maintenance period shall continue until the Board determines that the remaining wastes in all waste management units will not threaten water quality.

E. DETECTION AND CORRECTIVE ACTION MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, as appropriate, and in accordance with Monitoring and Reporting Program No. R5-2009-0051.

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.

3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2009-0051, and the Standard Provisions and Reporting Requirements, dated April 2000.

4. The Water Quality Protection Standard for organic compounds that 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. R5-2009-0051.

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. R5-2009-0051 and Title 27 CCR Section 20415(e).

7. The Discharger shall submit for review and approval a Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:

    a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;

    b. Sample preservation information and shipment procedures;

c. Sample analytical methods and procedures;

d. Sample quality assurance/quality control (QA/QC) procedures; and

e. Chain of Custody control.

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 by the Executive Officer, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan.

9. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted 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 (e.g., 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. Unless a given monitoring point is already under corrective action monitoring for a given 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 contain 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 contain 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 19.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 ¶20, below if any constituent or constituents were verified to be present.

3) Any analyte that is confirmed 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.

F. FINANCIAL ASSURANCES

1. The Discharger shall obtain and maintain Financial Assurance Instruments (Instruments), which comply with CCR Title 27 (Sections 22207 [Closure Fund], 22212 [Post-Closure Fund], and 22220 et seq. [Corrective Action Fund]) and 40 CFR parts 257 and 258. The Discharger shall evaluate the cost of Financial Assurance to cover the estimated costs of the worst case known release. The Discharger shall submit a report on financial assurance for corrective action for the Regional Water Board Executive Officer's review and approval within in accordance with Provision 12.b of this Order. The Discharger shall also submit a copy of a request letter to the CIWMB—Financial Assurance Division to establish corrective action financial assurances in accordance with Provision 12.e of this Order. The most recent acceptance letter from the CIWMB Financial Assurance Division shall also be included in the Landfill's Annual Report.

2. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for corrective action has been updated in accordance with the fund balance calculations provided in Section 22226 of Title 27.

3. The Discharger shall maintain assurances of financial responsibility with the CIWMB for post-closure maintenance costs in the amount of the cost estimate in the March 1994 Post-Closure Maintenance Plan (PCMP), plus annual inflation.

4. At least **annually** (as required by the CIWMB), the Discharger shall submit a report demonstrating that the financial assurance fund for closure and post-closure

maintenance has been updated in accordance with the fund balance calculations provided in Section 22225 of Title 27.

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the County Offices 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. R5-2009-0051, which is incorporated into and made part of this Order.

4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (Title 27 CCR Section 20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.

5. 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 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 evaluate 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 postclosure 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. All technical reports required by this Order shall be submitted pursuant to Section 13267 of the California Water Code. Technical reports are necessary in order to demonstrate compliance with the requirements of this Order, including but not limited to, requirements for remediation of impacted groundwater.

12. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

    a. By **30 May 2009**, submit an electronic Excel (.xls) file with all inorganic and organic historical analytical data from 1 January 2006 through 31 December 2008 in a format acceptable to the Regional Water Board. All results must be reported, including non-detects, inorganic, and organic analyses.

    b. By **30 June 2009**, submit a present day lump-sum cost estimate for a third-party to complete corrective action of the known release at the landfill per Sections 20380(b) and 22221 of Title 27 and a proposed financial assurances mechanism meeting the requirements of Title 27 for maintaining financial assurances.

    c. By **30 June 2009**, submit a Sample Collection and Analysis Plan with the information required in Detection and Corrective Action Monitoring Specification E.7.

    d. By **30 July 2009**, submit an LFG extraction well installation report for the 10 new LFG wells at the south area of the landfill.

    e. By **30 October 2009**, submit a copy of correspondence with the CIWMB requesting to establish financial assurances for corrective action in the amount of the approved cost estimate and using the approved financial assurances mechanism.

    f. By **30 October 2009**, submit an evaluation monitoring report documenting the nature and extent of groundwater contamination at the north area of the landfill.

    g. By **29 January 2010**, submit a corrective action plan for remediation of contaminated groundwater at the north area of the landfill.

    h. By **30 August 2010**, submit a well installation report for corrective action at the north area of the landfill.

    i. By **31 October 2010**, submit a corrective action work plan for installation of either (1) the additional 28 LFG wells and the 1,500 scfm flare, or (2) for installation of the 20 dual-completion groundwater extraction wells, and upgraded treatment units and capacity as described in the Discharger's 13 February 2009 EFS.

    j. By **29 July 2011**, submit an operations and maintenance plan for the new corrective action facilities for north and south areas of the landfill.

k. By **31 October 2011**, submit a construction report documenting installation, startup, operation, and maintenance of the facilities and improvements in the Discharger's 31 January 2010 and 31 October 2010 corrective action work plans, as approved by the Regional Water Board, for the north and south areas of the landfill.

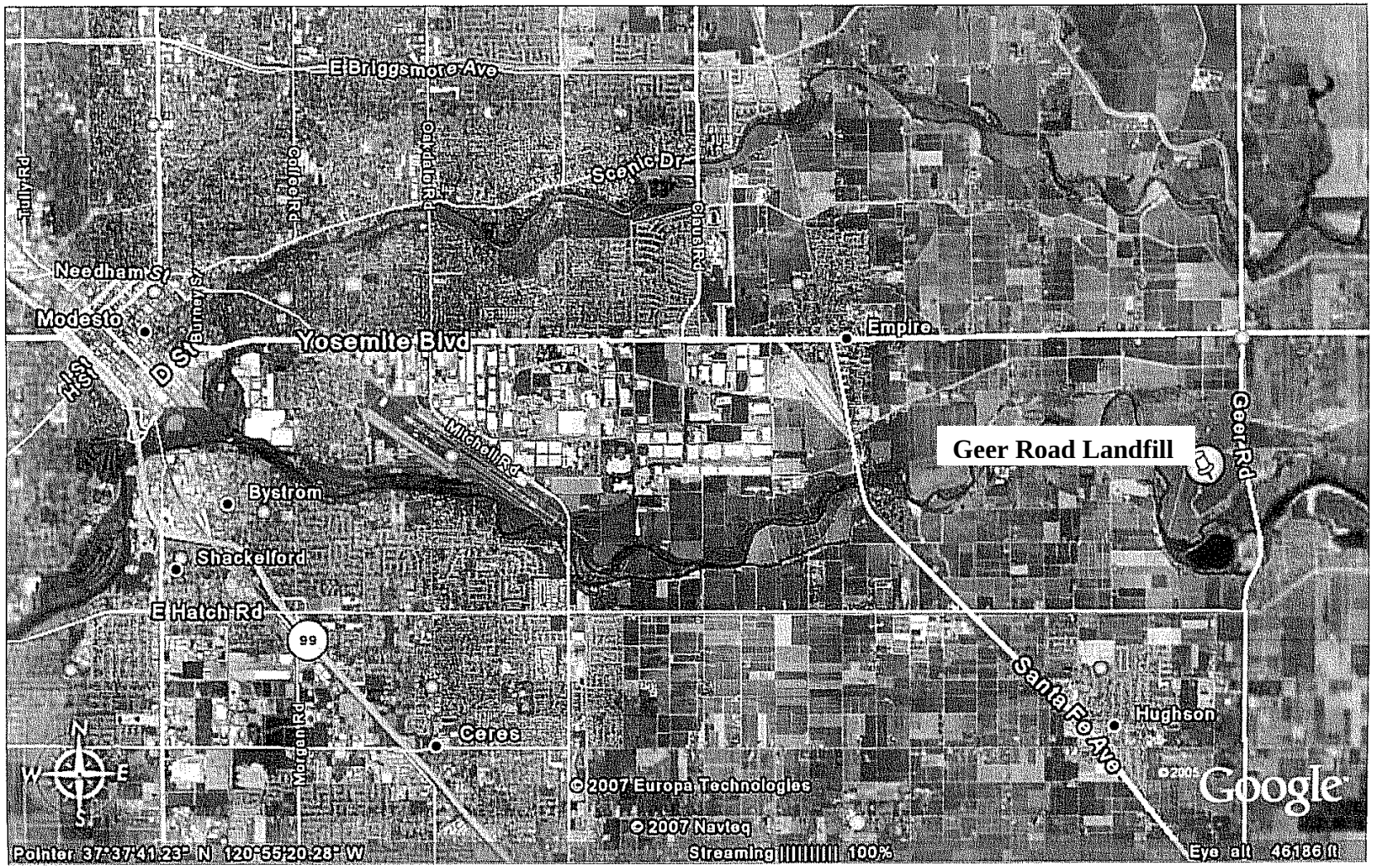
l. By **31 January 2010 and annually thereafter**, upload monitoring reports, a site map, well survey data, and analytical data into the GeoTracker database, as required by Chapter 30 of Title 23. The global ID number for the Geer Road Landfill is L10005824413.

m. By **31 January 2010 and annually thereafter**, submit an electronic Excel (.xls) file with all historical and current analytical data in a format acceptable to the Regional Water Board.

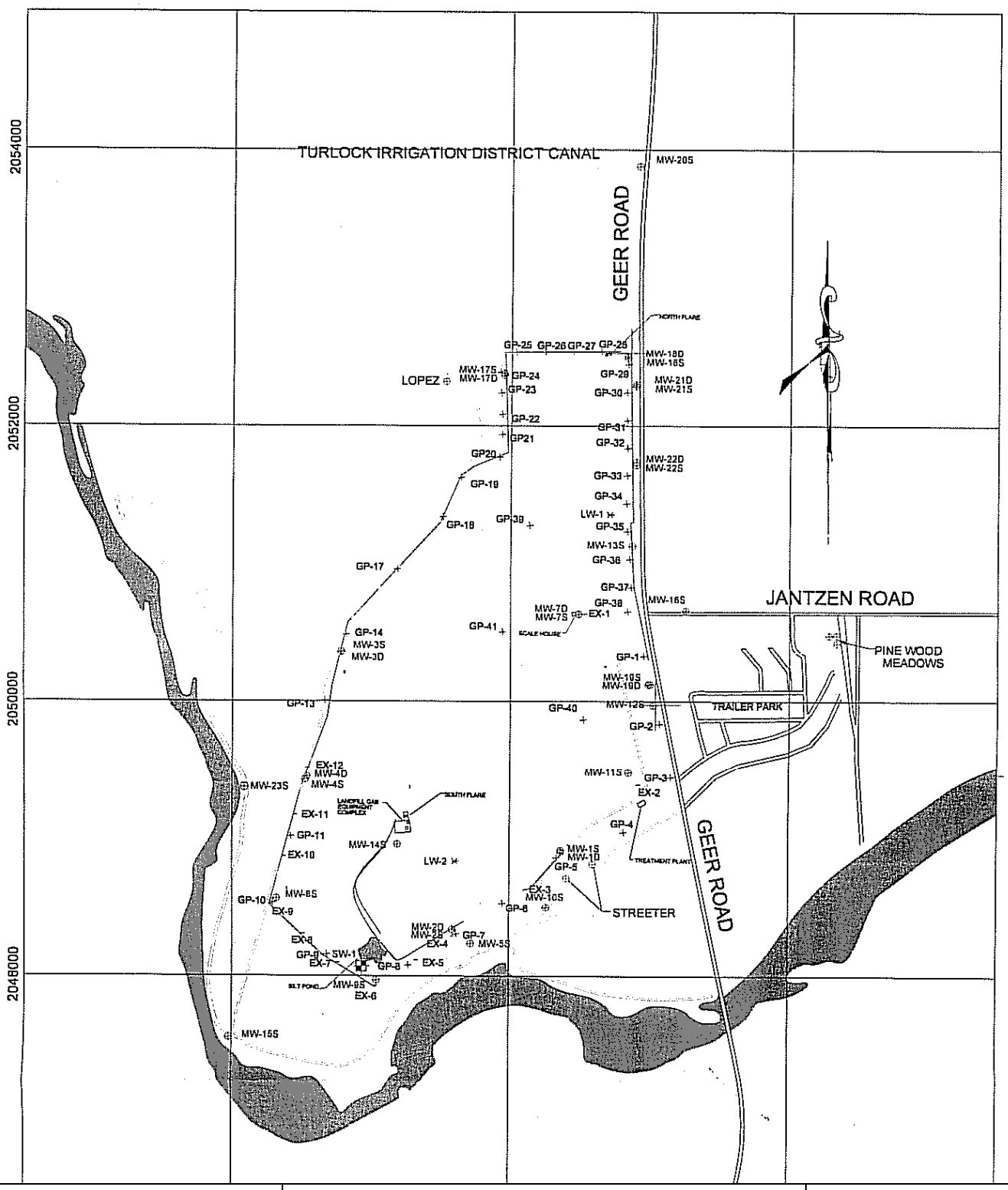
I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 24 April 2009.

_____
PAMELA C. CREEDON, Executive Officer

WLB



N W E S	Drawing Reference: Revised Report of Waste Discharge, SCS Engineers, 31 October 2007, Figure 2-1	**SITE LOCATION MAP** **GEER ROAD LANDFILL** **STANISLAUS COUNTY**



Drawing Reference:
Revised Report of Waste Discharge, SCS Engineers, 31 October 2007, Figure 2-3

SITE MAP
GEER ROAD LANDFILL
STANISLAUS COUNTY

N
W E
S

Scale:
Approx 1" = 1,000'

ATTACHMENT C
ORDER NO. R5-2009-0051
GEER ROAD LANDFILL
ITEMS TO BE INCLUDED IN THE
FEASIBILITY STUDY/REMEDIAL OPTIONS EVALUATION REPORT

The outline below is a minimum requirement for the contents and items to be included and discussed in the text of all feasibility studies/remedial options evaluation reports submitted to the Regional Water Quality Control Board. Reports shall be stamped and/or signed, as appropriate, by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California. The Discharger's certification statement shall be included with each report and plan.

I. Purpose of Feasibility Study/Remedial Options Evaluation

II. Background

A. Description of Facility
B. Site History
   1. Years of Operation
   2. Chemical Use
   3. Chemical Releases (Potential and Documented)
C. Geology
   1. Regional
   2. Local, soil type, lithology, lateral extent of lithologic units
D. Hydrogeology
   1. Aquifers, Aquitards, Perched Aquifers
   2. Groundwater flow rates, directions, recharge, discharge
   3. Groundwater Use
   4. Extraction and injection wells affect on groundwater flow
E. Surface Water
   1. Losing or gaining streams, ponds etc.
   2. Hydraulic connection with aquifers
F. Local Land Use
G. Previous Investigation and Remedial Actions

II. Nature and Extent of Contamination

A. Contaminants in Soils
   1. Types and Concentrations
   2. Lateral and Vertical Extent
B. Pollutants in Groundwater
   1. Constituents, concentrations, and water quality goals
   2. Lateral and Vertical Extent (including Perched Zones) of contamination

ITEMS TO BE INCLUDED IN THE FEASIBILITY STUDY/REMEDIAL OPTIONS EVALUATION REPORT

III. Contaminant Fate and Transport

A. Contaminant Properties
   1. Mobility
   2. Toxicity
   3. Half-life
   4. Chemical and biological degradation
   5. References for above information

B. Contaminant Transport based on Soil and Aquifer Properties

IV. Remedial Action Objectives

V. Description of Remedial Action Alternatives – at a minimum, 3 alternatives must be considered

A. Alternative that meets background levels
B. Alternative that meets water quality objectives
C. Alternative that meets levels between background and water quality objectives

VI. Evaluation of Remedial Action Alternatives

A. Overall Protectiveness of Human Health and the Environment
B. Compliance with Laws and Regulations
C. Long Term Effectiveness and Permanence
D. Reduction of Toxicity, Mobility, and Volume
E. Short Term Effectiveness
F. Implementability
G. Cost
F. State and Community Acceptance

VII. Potential Impacts of Remedial Actions

VIII. Estimated Project Schedule for Each Alternative

IX. Preferred Alternative

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2009-0051
FOR
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
STANISLAUS 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 Nonhazardous 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. R5-2009-0051.

A. REQUIRED MONITORING REPORTS

	Report	Due
1.	Groundwater Monitoring (Section D.1)	**See Table I**
2.	Annual Monitoring Summary Report (Section E.5.)	**Annually**
3.	Unsaturated Zone Monitoring (Section D.2)	**See Table II**
4.	Leachate Monitoring (Section D.3)	**See Table III**
5.	Surface Water Monitoring (Section D.4)	**See Table IV**
6.	Facility Monitoring (Section D.5)	**As necessary**
7.	Response to a Release (Standard Provisions and Reporting Requirements)	**As necessary**

B. REPORTING

The Discharger shall submit semiannual monitoring reports with the data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2009-0051 and the Standard Provisions and Reporting Requirements. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data required by this program, the

Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in E. Reporting Requirements, below.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, 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.

Sampling Frequency	Reporting Frequency	Reporting Periods End	Report Date Due
Monthly	Semiannual	Last Day of Month	**by Semiannual Schedule**
Quarterly	Semiannually	31 March	**by Semiannual Schedule**
		30 June	**by Semiannual Schedule**
		30 September	**by Semiannual Schedule**
		31 December	**by Semiannual Schedule**
Semiannually	Semiannually	30 June	**31 July**
		31 December	**31 January**
Annually	Annually	31 December	**31 January**
5-Year	Every 5 years	31 December	**31 January**

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 Discharger shall monitor all **Constituents of Concern** (COCs) for all Monitoring Points for each monitored medium every fifth year (5-year sampling frequency). The last COC monitoring event occurred in May 2007. Subsequent COC monitoring efforts shall be carried out every fifth year thereafter beginning in **2012**, and reporting of five-year COCs will next be due on **31 January 2013**. The report for the COC monitoring shall be submitted with, or reported in, the Annual Report for that year.

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

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each COC, 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 COCs, the concentration limits, and the point of compliance and all monitoring points.

The Discharger submitted a water quality protection standard in the *"Article 5 Technical Report"* dated 13 October 1992 and a *Proposed Concentration Limits* was submitted on 31 August 1999. Concentration limits proposed are listed in Table VII.

Any modifications to the Water Quality Protection Standard shall be submitted in a report for review and approval.

The report shall:

a. Identify **all distinct bodies of surface and groundwater** 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 zones.

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 (COCs)

The COCs 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 COCs 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 COCs every five years, or more frequently as required in accordance with a Corrective Action Program.

a. Monitoring Parameters

Monitoring parameters are COCs 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 COC, the concentration limit for each COC shall be determined as follows:

a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27(e)(8); or

b. By an alternate statistical method meeting the requirements of §20415(e)(8)(E) of Title 27.

Concentration limits for groundwater proposed by the Discharger in 1999 are listed in Table VII. Currently, background groundwater monitoring well MW 16S is impacted with sporadic low-level detections of VOCs. Therefore, the well is not currently representative of background conditions. Concentration limits for the landfill shall be as listed in Table VII until representative background groundwater quality can be established, and the Discharger calculates updated concentration limits.

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. Monitoring Points

Surface Water: At the discharge from the sedimentation basin

Groundwater: Background: None (formerly MW-16S)

Detection Monitoring (shallow zone):
MW-9S, MW-10S, MW-20S, MW-23S

Detection Monitoring (deep zone):
MW-7D, MW-17D, MW-18D, MW-19D, MW-20D

Other Off-site Monitoring Points (deep zone):
Streeter wells (2 wells), Pinewood Meadows Mobile Home Park (2 wells). Monitoring of these wells is required contingent upon access by property owners.

Corrective Action Monitoring (shallow zone):
MW-1S, MW-2S, MW-3S, MW-4S, MW-5S, MW-7S, MW-8S, MW-11S, MW-12S, MW-13S, MW-14S, MW-15S, MW-16S, MW-17S, MW-18S, MW-19S, MW-21S, MW-22S, MW-23S

Corrective Action Monitoring (deep zone):
MW-1D, MW-2D, MW-3D, MW-4-D, MW-15D, MW-21D, MW-22D, MW-23D

6. 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 and corrective action monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan that is due by the date shown in section G.12.D, Provisions, of the Waste Discharge Requirements R5-2009-0051. The submitted Sample Collection and Analysis Plan must include quality assurance/quality control standards and must be submitted for review and approval, as described in the Waste Discharge Requirements R5-2009-0051.

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

Method detection limits and practical quantitation limits shall be reported. All peaks and trace concentrations must be reported, including those that 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 operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with approved Detection and Corrective Action Monitoring Programs, where appropriate. The 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 assess 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 semiannually and submitted annually.

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

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

2. Unsaturated Zone Monitoring

Unsaturated zone monitoring shall consist of the landfill gas monitoring probes at the landfill. The Discharger shall monitor the landfill gas monitoring probes in accordance with Table II.

3. Leachate/Seep Monitoring

Leachate which seeps to the surface from the Unit shall be sampled and analyzed for the Monitoring Parameters and COCs 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 **Reporting Requirements** Section E.4, which lists the reporting requirements for seepage from the landfill.

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 and §20420 of Title 27 in accordance with an 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 COCs specified in Table IV every five years. All monitoring parameters shall be graphed to show historical trends at each sample location.

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. 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 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 repairs.

c. Standard Observations

The Discharger shall conduct Standard Observations for the waste management unit, for the perimeter of the landfill module, and for the receiving waters. The standard observations shall include those elements identified in Section E.3.f and shall be performed at the required frequencies.

6. Corrective Action Monitoring

A release from the landfill has resulted in groundwater and unsaturated zone degradation. The Discharger has implemented a corrective action program that includes a groundwater extraction, treatment, and injection system (GWETS) and a landfill gas extraction (LFG) and treatment system. The corrective action monitoring program shall be implemented to demonstrate the effectiveness of the corrective action. A discussion of the effectiveness of the corrective action shall be included in the annual reports. Corrective action monitoring shall include groundwater monitoring; monitoring of the influent, midpoint, and

effluent of the GWETS system; LFG probe monitoring; and LFG treatment system monitoring of the influent to the LFG plant.

The Discharger shall collect and analyze all data necessary to assess the success of corrective actions. This assessment shall include an evaluation of the spatial distribution and concentration of each COC throughout the zone affected by the release. In conjunction with the assessment the Discharger shall monitor groundwater, surface water, and the unsaturated zone to evaluate changes in water quality resulting from the corrective action. Based on the data collected the corrective action may be revised, or discontinued.

Groundwater monitoring shall be accomplished with the same parameters and schedule as specified in Table I. The Discharger shall determine at each sampling whether there is a statistically significant increase over water quality protection standards for each parameter and constituent analyzed, or a statistically significant change from the last sample round.

Groundwater Extraction and Treatment System Monitoring:

The efficiency of the GWETS shall be monitored. The GWETS plant includes prefilters to remove precipitation and two granulated activated carbon (GAC) units in series. The Discharger shall record the cumulative flow going into the system on a weekly basis. The three established sampling ports shall be monitored for concentrations of VOCs in water. Sampling port SP-13 is the influent monitoring point to the GWETS plant. Sampling port SP-14 is the midpoint between the two GAC vessels. Sampling port SP-15 is the effluent monitoring point and is located at the discharge point of the secondary GAC vessel. Sample analyses and frequency of monitoring are as follows:

Sample Location	Analytical Methods	Frequency of Sampling
SP-13, Influent	USEPA 8260B and TDS	Every 40-days
SP-14, Mid-point	USEPA 8260B	Every 40 days
SP-15, Effluent	USEPA 8260B and TDS	Every 40 days

When breakthrough of VOCs is noted at monitoring point SP-14 (the midpoint between GAC vessels) or at SP-15 (the effluent monitoring point), then the Discharger shall take immediate steps to complete the carbon vessel change-out.

The analytical results, mass of VOCs removed for the reporting period, cumulative mass of VOCs removed, volume of water treated for the reporting period, and the cumulative flow recorded in gallons shall be reported with the semi-annual/annual reports. However, whenever breakthrough occurs the

Discharger shall notify the Regional Water Board within 72 hours of the discovery.

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 post-closure 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 shall identify if the violations were corrected or not. If no violations have occurred since the last submittal, then this information must be stated in the transmittal letter. The transmittal letter must provide a discussion of any violations found since the last report was submitted, must provide a description of the actions taken or planned for correcting those violations, must include any references to previously submitted time schedules, and must state if a schedule is contained in the accompanying report or not. The transmittal letter must also include the Discharger's signed certification statement.

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. 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 shall be conducted **monthly** during the wet season (1 October to 30 April) and **quarterly** during the dry season (1 May to 30 September). Standard 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; and

   f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.

g. A discussion about the effectiveness of the Corrective Action Program including comparison of the current data with historical data, trends, and the status of the GWETS, including sampling data, flow rates, and effectiveness.

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 analyses of the Monitoring Parameters and COCs listed in Table III of this MRP, 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 and COCs shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous ten 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. All historical monitoring data, including data for the previous year, shall be submitted in tabular format and in a digital MS Excel file (.xls) in a format acceptable to the Regional Water Board. Data for all field, monitoring, and constituents of concern must be included. Detected and non-detected constituents must be included along with the sample date, well number, analytical method, constituent, MDL, PQL, and qualifiers. 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)], that 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 written summary of the monitoring results, indicating any changes made or observed since the previous annual report.

   e. A comprehensive evaluation of the effectiveness of the Corrective Action Program, including graphs showing trends for all historical and current data for each detected constituent in all wells listed as corrective action wells in this MRP must be provided. The evaluation shall include the status of landfill gas controls, and landfill gas monitoring data for the probes and gas extraction wells.

      1) For the GWETS, all data, flow rates, annual volumetric flow, and cumulative volumetric flow shall be reported and tabulated. The annual GWETS plant run time, down time, and duration of downtime shall be reported in hours of operation, hours not in operation, and percent of total time in full operation. At a minimum, the plant shall operate 95% of the time over the course of a calendar

year. The cumulative pounds of VOCs removed for the year and over the life of the project by the GWETS shall be reported.

2) In reporting the progress of the corrective action, the annual monitoring report must provide the total volumetric flow into the landfill gas treatment (LFG) system, the mass of halogenated VOCs destroyed for the year, and a trend analysis of halogenated VOCs constituents (not total VOCs) in groundwater at each monitoring point over the life of the LFG treatment system. The annual LFG plant run time, down time, and duration of downtime shall be reported in hours in operations, hours not in operation, and percent of total time in full operation. At a minimum, the plant shall be operating 95% of the time over the course of a calendar year.

3) In reporting the progress of the corrective action, the annual report must include contaminant contour maps for specific VOCs in groundwater. Separate contour maps must be provided for vinyl chloride, tetrachloroethene (PCE), trichloroethylene, 1,1-DCE, 1,1-dichloroethane (DCA), 1,2-DCA, cis-1,2-dichloroethene (DCE), trans-1,2-DCE, and similar halogenated VOC constituents. Separate maps shall be provided for the deep wells and for the shallow wells. Summary maps showing contours of totalized VOCs do not meet the aforementioned requirements.

4) The Discharger shall report any modifications to the Corrective Action Program intended to improve the effectiveness, and shall also report any major maintenance such as replacement/addition of pumps, piping, and dates of carbon change-outs.

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

Ordered by:_____
PAMELA C. CREEDON, Executive Officer

24 April 2009
(Date)

WLB

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

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

TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS AND LFG Plant

Parameter	Units	Frequency
LFG Plant Field Parameters		
Atmospheric Temperature	^{o}F	Monthly
Atmospheric Pressure	PSIG	Monthly
Temperature into LFG Plant	^{o}F	Monthly
Pressure into the LFG plant	in mm of Hg vacuum	Monthly
Totalized flow and flow rate into the LFG Plant	Cubic feet & CFM	Monthly
Total halogenated VOCs into the LFG Plant	$\mu g/cm^3$	Monthly[1]
Gas Probe and LFG Plant Influent Monitoring Parameters		
Volatile Organic Compounds (USEPA Method TO-15)	$\mu g/cm^3$	Semiannual[2]
Methane	%	Semiannual

1 Discharger shall measure total halogenated VOCs using field instrument with appropriate lamp.

2 Volatile organic compounds by TO-15 to be sampled at LFG Plant Influent, and at any landfill gas perimeter probe where methane is detected at greater than or equal to one percent (1.0 %).

TABLE III

LEACHATE SEEP MONITORING

Parameter	Units
Field Parameters	
Total Flow	Gallons
Flow Rate	Gallons/Day
Electrical Conductivity	µmhos/cm
pH	pH units
Monitoring Parameters	
Total Dissolved Solids (TDS)	mg/L
Chloride	mg/L
Carbonate	mg/L
Bicarbonate	mg/L
Nitrate - Nitrogen	mg/L
Sulfate	mg/L
Calcium	mg/L
Magnesium	mg/L
Potassium	mg/L
Sodium	mg/L
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L

TABLE IV

SURFACE WATER DETECTION MONITORING PROGRAM

Parameter	Units	Frequency
Field Parameters		
Temperature	^{o}C	Twice Annually[1]
Electrical Conductivity	µmhos/cm	Twice Annually[1]
pH	pH units	Twice Annually[1]
Turbidity	Turbidity units	Twice Annually[1]
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Twice Annually[1]
Total Suspended Solids (TSS)	mg/L	Twice Annually[1]
Carbonate	mg/L	Twice Annually[1]
Bicarbonate	mg/L	Twice Annually[1]
Chloride	mg/L	Twice Annually[1]
Nitrate - Nitrogen	mg/L	Twice Annually[1]
Sulfate	mg/L	Twice Annually[1]
Calcium	mg/L	Twice Annually[1]
Magnesium	mg/L	Twice Annually[1]
Potassium	mg/L	Twice Annually[1]
Sodium	mg/L	Twice Annually[1]
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Twice Annually[1]
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	µg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

1 The Discharger shall collect surface water samples during the first storm of the rainy season that produces significant flow discharging from the sedimentation basin, and during one other storm event that produces significant flow discharging from the sedimentation basin.

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC analysis:

USEPA Method 8260B

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

TABLE V (Continued)

MONITORING PARAMETERS FOR DETECTION MONITORING

Hexachlorobutadiene
Hexachloroethane
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl tertiary butyl ether (MTBE)
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1.2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloethane (Methylchloroforrn)
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

Inorganics (dissolved):	**USEPA Method**
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010B
Sulfide	9030B

Volatile Organic Compounds:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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, l-Dichloroethene; Vinylidene chloride)
cis- l ,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- l ,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- l ,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
Hexachloroethane
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether (MTBE)
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1 -Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methyethyl) 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

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimehtylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosospyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE VI (Continued)

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Chlorophenoxy Herbicides:

USEPA Method 8l51A
2,4-D (2,4-Dichlorophenoxyacetic acid)
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

Organophosphorus Compounds:

USEPA Method 8141A
Atrazine
Chlorpyrifos
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)
Diazinon
Dimethoate
Disulfoton
Ethion
Methyl parathion (Parathion methyl)
Parathion
Phorate
Simazine

TABLE VII– GROUNDWATER CONCENTRATION LIMITS

Constituent	Units	Concentration Limit
Specific Conductance (EC)	µmhos/cm	973
pH	pH Units	6.0-7.8
Total Dissolved Solids (TDS)	mg/L	739
Chloride	mg/L	155
Sulfate	mg/L	83
Nitrate as N	mg/L	55
Total Alkalinity	mg/L	TBD
Total Organic Carbon	mg/L	TBD
Carbonate	mg/L	5.0
Alkalinity, Bicarbonate	mg/L	141
VOCs (EPA 8260B)	µg/L	MDL[1]
SVOCs (EPA 8270C)	µg/L	MDL[1]
Organochlorine Pesticide (EPA 8081A)	µg/L	MDL[1]
Polychlorinated Biphenyls (EPA 8082)	µg/L	MDL[1]
Chlorophenoxy Herbicides (EPA 8151)	µg/L	MDL[1]
Organophosphorus Compounds (EPA 8141A)	µg/L	MDL[1]
Aluminum, dissolved	mg/L	TBD
Antimony, dissolved	mg/L	TBD
Arsenic, dissolved	mg/L	TBD
Barium, dissolved	mg/L	TBD
Beryllium, dissolved	mg/L	TBD
Cadmium, dissolved	mg/L	TBD
Chromium, dissolved	mg/L	TBD
Chromium VI+, dissolved	mg/L	TBD
Cobalt, dissolved	mg/L	TBD
Copper, dissolved	mg/L	TBD
Iron, dissolved	mg/L	115
Lead, dissolved	mg/L	TBD
Manganese, dissolved	mg/L	11
Mercury, dissolved	mg/L	TBD
Nickel, dissolved	mg/L	TBD
Selenium, dissolved	mg/L	TBD
Silver, dissolved	mg/L	TBD
Sulfide, dissolved	mg/L	TBD
Thallium, dissolved	mg/L	TBD
Tin, dissolved	mg/L	TBD
Vanadium, dissolved	mg/L	TBD
Zinc, dissolved	mg/L	73

Notes:
[1] Laboratory Method Detection Limit (MDL)

INFORMATION SHEET

ORDER NO. R5-2009-0051
STANISLAUS COUNTY DEPARTMENT OF ENVIRONMENTAL RESOURCES
GEER ROAD CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
STANISLAUS COUNTY

The Stanislaus County Department of Environmental Resources (hereafter referred to as Discharger) owns and formerly operated a municipal solid waste landfill that was closed in 1995. The landfill is eight miles east of Modesto. The 168-acre facility was operated as a sanitary landfill by the County of Stanislaus from 1970 until 1990 and accepted residential, commercial, industrial (including cannery waste), and construction and demolition wastes. The landfill was closed in 1995 with a geomembrane and vegetative soil on the top deck and compacted clay and vegetative soil on the side slopes. Closure was approved during July 1996. The landfill contains approximately 4.5 million tons of waste.

Groundwater degradation was identified in 1985, and later confirmed in both 1986 groundwater studies and 1987 Solid Waste Assessment Test (SWAT) water quality studies. Aromatic and halogenated volatile organic constituents (VOCs) are present in groundwater in the "shallow" or "upper" groundwater zone under the landfill and downgradient of the site. The exact lateral and vertical extent of degradation is not determined. Halogenated VOCs have been continuously detected in groundwater since 1987.

A LFG control system consisting of an air injection curtain was installed in 1983 along a portion of the site's southern perimeter. Phase 1 of the LFG extraction system, which included the first flare station, was in operation from 1992 to 2006 and covered the northeast one-third of the site. The system was expanded to include 45 gas wells with aboveground piping and a second flare station located near the center of the landfill. The current LFG control system is comprised of 83 extraction wells and one flare station.

During 1991 and 1993, 12 groundwater extraction wells were installed as part of a groundwater remediation system to address groundwater impacts from VOCs and metals. The groundwater remediation system consists of 12 extraction wells, a granular activated carbon (GAC) treatment system, and eight injection trenches. Groundwater is pumped from the 12 extraction wells located along the perimeter of the landfill and is pumped through a bag filter to remove suspended solids and then through two 10,000-pound GAC units, in series, to remove VOCs. Treated groundwater, prior to injection to the shallow zone via infiltration trenches, is sampled and analyzed to assess effluent quality from the treatment system and to evaluate the system efficiency.

The Discharger upgraded the groundwater extraction system during 2007 to increase the flow rate, including replacing extraction well pumps, air lines, discharge lines, installing more filters, and replacing the GAC. During 2008, the Discharger conducted an aquifer test to estimate the radius of influence for each of the groundwater extraction wells. The results of the aquifer test indicate that the extraction system did not influence any of the monitoring

wells at the landfill. Monitoring wells located closest to the extraction wells were 40 to 60 feet away. The Discharger concluded that the radius of influence of the extraction system was less than the distance to these wells. Based on the results of the aquifer test, the Discharger proposed to prepare a new Engineering Feasibility Study (EFS) to compare ongoing use of the groundwater extraction system (including upgrading the system to achieve higher flow rates) to other available technologies for low-level VOC removal from groundwater.

On 14 April 2008, the Discharger submitted a corrective action work plan for expansion of the existing LFG system into the south area of the landfill. The work plan includes installation of 10 LFG extraction wells, connection of the new LFG wells to the existing flare, and installation of two groundwater monitoring wells near the Tuolumne River. The two groundwater monitoring wells (MW-15D and MW-23D) were installed and a report was submitted on 15 January 2009.

The Discharger submitted an EFS on 13 February 2009 for corrective action of VOCs within the landfill boundary of the south area of the landfill. The Discharger's recommendations include installation of 10 LFG extraction wells. This Order requires that the Discharger install, operate, and maintain the 10 new LFG extraction wells. In addition, the Discharger recommended one of two options: (1) replacement of an existing flare with a 1,500 scfm capacity flare, installation of an additional 28 LFG extraction wells or (2) enhancement of the existing groundwater extraction and treatment system with 20 dual-completion groundwater extraction wells, upgraded treatment units, and increased treatment capacity. This Order requires the Discharger to install 10 LFG extraction wells, and to install either (1) a 1,500 scfm capacity flare and the additional 28 LFG extraction wells or (2) to install 20 dual-completion groundwater extraction wells, upgraded groundwater treatment units, and increased treatment capacity and to implement corrective action for VOC-impacted groundwater at the south area of the landfill, including remediation of groundwater outside the landfill property boundary. This Order requires that the Discharger submit a Construction Report documenting that the corrective action facilities have been installed.

Storm runoff from the site is routed to the sedimentation basin. The basin allows suspended material to settle out from surface water runoff prior to discharge into the Tuolumne River. Discharge from the basin only occurs in very wet weather years. As of January 2009, there have been no discharges from the basin since 31 December 2001.

WLB