CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0059

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF TULARE
FOR
OPERATION
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE, AND CORRECTIVE ACTION
VISALIA MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

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

1. The County of Tulare (hereinafter Discharger) owns and operates the Visalia Municipal Solid Waste Landfill (facility) at the intersection of Road 80 and Avenue 328 about seven miles northwest of Visalia in the eastern ½ of Section 5 and western ½ of Section 4, T18S, R24E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a municipal solid waste (MSW) landfill regulated under authority given in the California Water Code, Section 13000 et seq.; California Code of Regulations, Title 27 ("Title 27"), Section 20005 et seq.; and Title 40, Code of Federal Regulations (40 CFR) Section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.

2. The facility is on a 631-acre property. The facility contains one existing unlined, 127-acre waste management unit (Unit I) and one 115-acre expansion Unit (Unit II) east of and adjacent to Unit I, as shown in Attachment B which is incorporated herein and made part of this Order by reference. The facility is a portion of Assessor's Parcel Numbers (APN) 077-020-018, 077-020-021, 077-020-012, and 077-020-011.

3. Units I and II authorized by this Order are described as follows:

Unit	Area	Liner/LCRS[1] Components[2]	Unit Classification & Status
I	127 acres	unlined	Class III, active
II	115 acres	engineered alternative double-composite liner system with an LCRS	Class III, active

[1] LCRS – Leachate collection and removal system

[2] All liner systems are composite liner systems

4. On 5 September 2003, the Central Valley Water Board adopted Waste Discharge Requirements Order R5-2003-0146 in which it classified Unit I and Unit II as Class III Units for the discharge of municipal solid waste. This Order continues to classify Unit I and Unit II as Class III Units in accordance with Title 27.

5. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations Section 258, and are hereafter referred to as either "Subtitle D" in reference to the RCRA federal law that required the regulations or "40 C.F.R. Section 258.XX". These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in waste discharge requirements (WDRs) for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.

6. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in **Sections A through I** of these WDRs below, and in the Standard Provisions and Reporting Requirements dated January 2012 (SPRRs), which are attached hereto and made part of this Order by reference. Monitoring and reporting requirements are included in Monitoring and Reporting Program R5-2013-0059 (MRP) and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be "standard" and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section **(A through I)** of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.

7. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Section 20012 of Title 27 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

SITE DESCRIPTION

8. The facility is located on the westward dipping, eastern limb of the asymmetrical trough of the San Joaquin Valley. Sediments ranging in age from Jurassic to Holocene fill the trough. The site overlies a basement complex of pre-Tertiary age metasediments, plutonics, and ultramafics. Sequentially overlying the basement complex are approximately 1,000 to 3,500 feet of consolidated and unconsolidated

Tertiary marine deposits, continental deposits, and unconsolidated Quaternary alluvium. Of significance to the facility, are the unconsolidated alluvial fan deposits of the Kaweah River that occur above the continental deposits. The unconsolidated alluvial fan deposits consist of approximately 330 to 350 feet of interbedded clayey-silt, silt, and fine-to-medium-grain fluvial and flood basin sands. A 30-foot thick, low resistivity, hard clay and silt zone that may possibly represent the regionally extensive E-Clay, occurs between 180 and 210 feet below ground surface (bgs) beneath the western margin of Unit I and areas west of Unit I. The low-resistivity layer is laterally continuous and serves as an aquitard that separates groundwater into an unconfined upper alluvial groundwater zone (above 180 feet bgs) and a lower alluvial groundwater zone (below 210 feet bgs).

9. Units I and II are not within a fault hazard zone. The closest Holocene faults are approximately 25 miles to the southeast near Lake Success. Recorded magnitudes of seismic events along these faults range between 4.5 and 4.9. The Coalinga Nose Fault is approximately 68 miles northwest of the facility. A seismic event along the Coalinga Nose Fault has a recorded magnitude of 6.7. The ground maximum acceleration associated with the maximum probable earthquake of the Coalinga Nose Fault is estimated to be 0.03 g. The Landers Fault, approximately 220 miles southeast of the facility, generated a magnitude 7.3 earthquake in 1992. The Landers Fault is considered to be the maximum probable earthquake associated with Units I and II based on studies by the Discharger, and was used to calculate the peak ground acceleration for the design of the Unit's containment structures. The ground maximum acceleration associated with the maximum probable earthquake of the Landers Fault was calculated to be 0.11 g.

10. Land uses within one mile of the facility are agriculture.

11. There are approximately 35 domestic and agricultural supply wells within one mile of the facility. No surface springs or other sources of groundwater supply have been observed.

12. The measured hydraulic conductivity of the native soils underlying the facility ranges between 1×10^{-6} and 3×10^{-2} centimeters/second (cm/sec).

13. The facility receives an average of 11.34 inches of precipitation per year as measured at the Exeter Station. The mean pan evaporation is 70.7 inches per year as measured at the Tulare Station.

14. The 100-year, 24-hour precipitation event for the facility is estimated to be 3.38 inches, based on the Department of Water Resources' bulletin entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.

15. The facility is designated as Zone "B" (500-year flood zone) according to the National Flood Insurance Program Community Panel 065066, Flood Insurance Rate Map Panel 0475B.

16. Storm water percolation/evaporation basins are located immediately south and north of Unit I and as shown on Attachment B. The storm water percolation/evaporation basins capture runoff from the facility and retain it on-site.

WASTE AND UNIT CLASSIFICATION

17. The Discharger discharges MSW to Units I and II. Municipal solid wastes are defined in Section 20164 of Title 27. Nonhazardous solid waste includes MSW, as referred to in the Code of Federal Regulations, Title 40, Part 258.2.

18. The site characteristics where Units I and II are located (see Finding No. 12) do not meet the siting criteria for a Class III landfill contained in Section 20260(a) and (b)(1) of Title 27. As such, the site is not suitable for operating new Units or lateral expansions of existing Units for the discharge and containment of wastes as described in Finding No. 17, without the construction of additional waste containment features in accordance with Section 20260(b)(2) of Title 27 and State Water Resources Control Board Resolution 93-62.

19. Title 27, Section 20690 allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, Section 20705 provides the Water Board's regulations for all daily and intermediate cover, including that it shall minimize the percolation of liquids through waste and that the cover shall consist of materials that meet the landfill unit classification (Class II or Class III). The regulations also require that for non-composite lined portions of the landfill, any contaminants in the daily or intermediate cover are mobilized only at concentrations that would not adversely affect beneficial uses of waters of the State in the event of a release. For composite-lined portions of the landfill, the regulations require that constituents and breakdown products in the cover material are listed in the water quality protection standard (WQPS).

20. Landfills propose new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, Section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, Section 20690. This Order allows any ADC proposed for use at the facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, Section 20705. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to

surface water quality. The demonstration can take sedimentation basins into account.

21. The Discharger uses a geosynthetic blanket named Airspace Saver and a thin film degradable plastic on a year-round basis, and shredded green waste on Unit I during May through mid-October (non-rainy season) and on a year-round basis on Unit II. The annual utilization of Airspace Saver as an ADC was approved by Central Valley Water Board staff in a 21 December 1995 letter and memorandum. The annual utilization of a thin film degradable plastic as an ADC was approved by Central Valley Water Board staff in September 2000 and the utilization of shredded green waste as an ADC on Unit I during the non-rainy season and annually on Unit II, was approved by Central Valley Water Board staff in a 14 December 1995 letter and memorandum. Based on inspections of the Airspace Saver and shredded green waste at the active face since their approval, they appear to be working satisfactorily.

SURFACE WATER AND GROUNDWATER CONDITIONS

22. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

23. Surface drainage is toward Cross Creek in the Kaweah Delta Hydrologic Area (558.10) of the Tulare Lake Hydrologic Basin. The St. Johns River is the nearest surface water body to the facility and is approximately one mile north of the facility. Facility operations should not impact the St. Johns River.

24. The facility is on the floor of the southern San Joaquin Valley. The designated beneficial uses of surface waters on the valley floor, as specified in the Basin Plan, are agricultural supply; industrial service and process supply; water contact and non-contact water recreation; warm fresh water habitat; preservation of rare, threatened and endangered species; and groundwater recharge.

25. The first encountered groundwater occurs between 40 and 50 feet below the native ground surface (bgs) depending on location. Groundwater elevations range between 235 and 250 feet mean sea level (MSL). The first encountered groundwater is unconfined. The depth to the first encountered groundwater fluctuates seasonally as much as 15 feet.

26. Four distinct hydrostratigraphic units have been identified beneath the facility. The uppermost unit is termed the upper alluvial groundwater zone, which is unconfined and extends from the water table to about 180 feet below ground surface (bgs). Directly beneath the upper alluvial groundwater zone is a 30-foot thick, low resistivity, hard-clay and silt zone that the Discharger considers being the E-clay.

According to the Discharger, the low resistivity zone extends from 180 to 210 feet bgs and is laterally continuous. Directly beneath the low resistivity layer is what the Discharger terms the lower alluvial groundwater zone, which is confined or at least semi-confined. The lower alluvial groundwater zone extends from the base of the E-clay (about 210 feet bgs) downward to the top of oxidized continental deposits (about 340 feet bgs). Underlying the lower alluvial groundwater zone is what the Discharger terms the deep groundwater zone.

27. Monitoring data indicate background groundwater quality for first encountered groundwater during the 1st semiannual period 2012 has an electrical conductivity (EC) ranging between 330 and 630 micromhos/cm, with total dissolved solids (TDS) ranging between 310 and 710 milligrams per liter (mg/L).

28. The direction of groundwater flow in the upper alluvial groundwater zone during the 1st semiannual period 2012 is toward the southwest with an average groundwater gradient ranging between 0.003 and 0.005 feet per foot beneath the facility. The estimated groundwater flow velocity for the upper alluvial groundwater zone during the 1st semiannual period 2012 is approximately 1.07 feet per day. Groundwater flow in the lower alluvial groundwater zone during the 1st semiannual period 2012 ranges between westerly and southwesterly with an average groundwater gradient ranging between 0.005 and 0.006 feet per foot. Groundwater flow directions can vary to the west. Groundwater flow velocity for the lower alluvial groundwater zone is not available. The groundwater flow direction and velocity for the deep groundwater zone are not available.

29. The facility is in Detailed Analysis Unit (DAU) 242 of the Tulare Lake Basin Plan. The designated beneficial uses of the groundwater, as specified in the Basin Plan are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

30. The existing groundwater monitoring network for the facility consists of 52 wells (42 on-site and ten off-site). Upper alluvial groundwater zone background monitoring wells consist of M-6A, M-6B, M-7A, M-7B, M-7C, M-19S, M-19A, and M-19B. Upper alluvial groundwater zone point of compliance groundwater monitoring wells consist of M-1, M-2A, M-2B, M-3A, M-3B, M-4A, M-4B, M-12, M-16S, M-16A, M-16B, M-18S, M-18A, and M-18B (S, A, and B wells). Lower alluvial groundwater zone background monitoring wells consist of M-6C, M-7Cz, and M-19C (C wells). Upper alluvial corrective action groundwater monitoring wells consist of M-5, M-11S, M-11A, M-11B, M-13S, M-13A, M-13B, M-14S, M-14A, M-14B, M-15S, M-15A, M-15B, M-17S, M-17A, M-17B, M-20S M-20A, and M-20B. Lower alluvial corrective action groundwater monitoring wells consist of M-11C, M-13C, M-14C, M-17C, and M-20C. Additionally, the County of Tulare Environmental Quality Control Division collects and analyzes groundwater samples from the Van Grouw North Dairy Well

and South Dairy Well, and agricultural (AG) water supply wells AG-8 and AG-9 on a monthly basis. The County of Tulare Environmental Quality Control Division also collects and analyzes groundwater samples from AG-15R on a quarterly basis. All groundwater monitoring well and water supply well locations are shown on Attachment B.

31. The landfill gas (LFG) detection monitoring system consists, in part, of LFG probes G-1 through G-4 and G-8 through G-24, which were installed along the entire perimeter of the Visalia Landfill property (see Attachment B). Landfill gas probes G-5, G-6 and G-7 are no longer part of the monitoring network.

32. There is no unsaturated zone monitoring system beneath Unit I to detect the release of liquids from the unit. Unit I was permitted and in operation before 1 July 1991. Therefore, Unit I qualifies for exemption of unsaturated zone monitoring pursuant to Section 20415(d) of Title 27. The Discharger demonstrated that there is no monitoring device or method designed to operate under the existing subsurface conditions to collect liquids migrating from the base of Unit I to the unsaturated zone, and that the installation of an unsaturated zone detection monitoring system would require unreasonable dismantling or relocating of permanent structures. Unsaturated zone monitoring for Unit I is not required. The unsaturated zone detection monitoring system for Unit II is a pan lysimeter consisting of a 60-mil thick high-density polyethylene (HDPE) geomembrane overlain by a geonet composite under the sumps for the primary LCRS sump and the secondary LCRS and extending approximately 70 feet under the central leachate collection pipe. A three-inch polyvinylchloride (PVC) riser pipe will provide access to the pan lysimeter for monitoring purposes.

33. The Discharger's detection monitoring program (DMP) for groundwater at the facility satisfies the requirements contained in Title 27.

34. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of LFG rather than leachate. Since VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Sections 20415(e)(8) and (9) of Title 27, allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Sections 20415(b)(1)(B)2-4 of Title 27. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.

35. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Section 20080(a)(1) of Title 27. Water Code Section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes

a method to provide the best assurance of determining the earliest possible detection of a release.

36. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a landfill unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

37. For a naturally occurring constituent of concern, Title 27 requires concentration limits for each constituent of concern be determined as follows:

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

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

38. The Discharger submitted a WQPS plan as a part of its revised DMP in February 1997. The WQPS report proposed statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. After several revisions to the Discharger's WQPS plan, Central Valley Water Board staff approved the WQPS plan in July 2000. As a result of the approval of the WQPS plan component of the DMP, the DMP was approved in July 2000. The WQPS and approved data evaluation methods are included in Monitoring and Reporting Program R5-2013-0059.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

39. Unit I has released volatile organic compounds (e.g., tetrachloroethylene (PCE); trichloroethylene (TCE); 1,1,1- trichloroethane (1,1,1-TCA); cis-1,2-dichloroethylene (cis-1,2-DCE); trans-1,2-dichloroethylene (trans-1,2-DCE); 1,1-dichloroethylene (1,1-DCE); 1,1-dichloroethane (1,1-DCA); 1,2-dichlorethane (1,2-DCA); vinyl

chloride; and chloroethane) to groundwater. The latest semiannual monitoring report, First Semiannual Monitoring Report, 2012 (1st semiannual 2012 SMR), stated that 1,1-DCA, chloroform, cis-1,2-DCE, dichlorodifluoromethane, methylene chloride, PCE, TCE, and trichlorofluoromethane were detected in the upper alluvial groundwater zone Point of Compliance groundwater monitoring wells. Volatile organic compounds detected in the upper alluvial groundwater zone, corrective action or non-Point of Compliance groundwater monitoring wells, included 1,1-DCA, chloroform, cis-1,2-DCE, dichlorodifluoromethane, vinyl acetate, PCE, trans-1,2-DCE, TCE, and trichlorofluoromethane. Additionally, the 1st semiannual 2012 SMR stated that dichlorodifluoromethane, PCE, TCE, and trichlorofluoromethane were detected in off-site lower alluvial groundwater zone monitoring wells. Acetone was detected in a background groundwater monitoring well in the lower alluvial groundwater zone. The Discharger demonstrated that the VOCs migrated from the upper alluvial groundwater zone into the lower alluvial groundwater zone as a result of two agricultural supply wells (AG well-13 and AG well-15) and the landfill supply well that were screened across the E-Clay and into both groundwater zones. The aforementioned agricultural supply wells and the landfill supply well have been properly destroyed.

40. Statistical analysis indicates that arsenic; barium; chloride, potassium; TDS; bicarbonate; chromium; cobalt; iron; sodium; sulfide; calcium; manganese; magnesium; total organic carbon; and EC have exceeded their respective background concentration limits on one or more occasions in one or more upper alluvial groundwater zone detection monitoring wells. The latest semiannual monitoring report, 1st semiannual 2012 SMR, stated that calcium, chromium, cobalt, iron, magnesium, manganese, and sodium possibly exceeded their respective background concentrations in the upper alluvial groundwater zone along the southern point of compliance of Unit I and are comingled with the VOC plume.

41. Cleanup and Abatement Order 99-718, directed the Discharger to complete an evaluation monitoring program (EMP) and establish a corrective action program (CAP) in accordance with a time schedule. The nature of the release was demonstrated to be VOCs, originating from LFG, and inorganic waste constituents (see Finding Nos. 39 and 40). The EMP determined that the lateral extent of the VOC plume in the upper alluvial groundwater zone extends approximately 3,300 feet to the southwest of the southwestern corner of Unit I to well AG-8; approximately 750 feet north of the northwestern corner of Unit I to groundwater monitoring well M-5; approximately 350 feet north of the northern boundary of Unit I; and approximately 450 east of the southeastern corner of Unit I. The lateral extent of the VOC plume in the lower alluvial groundwater zone was determined to extend approximately 2,300 feet southwest of the southwestern corner of Unit I to the Van Grouw Dairy South Well; possibly as much as 850 feet south of the southwestern corner of Unit I to groundwater monitoring well M-11C; and along the western boundary between destroyed well AG-15 to groundwater monitoring well M-20C. Volatile organic compound degradation in the deep groundwater zone was

determined to be localized around the Van Grouw Dairy South Well; the landfill's former supply well at the southwest corner of Unit I; and destroyed wells AG-13 and AG-15.

42. The vertical extent of VOC degradation was determined to extend to the deep zone in the vicinity of the Van Grouw Dairy South Well (screened from 300 feet to 400 feet bgs), destroyed well AG-13 (screened from 153 feet to 360 feet bgs), and possibly in the vicinity of destroyed well AG-15 (screened from 201 feet to 371 feet bgs).

43. In a 23 August 2002 EMP report, the Discharger stated that as a result of groundwater monitoring data collected during the EMP, no further delineation of groundwater degradation (VOCs and inorganic waste constituents) was required. In a 26 November 2002 letter and memorandum, Central Valley Water Board staff stated they understood that the EMP focused primarily on the release and migration of VOCs since these waste constituents are more mobile and have the greater potential to impact downgradient receptors than inorganic waste constituents. Additionally, Central Valley Water Board staff stated that since inorganic waste constituents typically do not migrate from a unit to distances and depths and at rates that VOCs do, it was Central Valley Water Board staff's opinion that the vertical and lateral extents of inorganic waste constituent releases fall within the upper alluvial groundwater zone VOC plume boundaries. It was also Central Valley Water Board staff's opinion that the groundwater extraction and treatment system proposed for the CAP would capture and remove inorganic waste constituents from the upper alluvial groundwater zone along with the VOCs. Central Valley Water Board staff concluded that since the vertical and lateral extents of released metals and other inorganic waste constituents fell within the upper alluvial groundwater zone VOC plume boundaries, the Discharger had determined the spatial distribution and concentration of each constituent of concern (COC) throughout the zone(s) affected by the release.

44. In a 26 November 2002 letter and memorandum, Central Valley Water Board staff concurred with the Discharger that the EMP for the Visalia Landfill was complete and satisfied the provisions of Section 20425(b) of Title 27, and complied with Order No. 5 and Task 18.e of Cleanup and Abatement Order No. 99-718.

45. The Discharger submitted an initial engineering feasibility study (EFS) for a CAP on 15 August 2001 in accordance with Section 20425(c) of Title 27. Several other updated feasibility studies were subsequently submitted. A final EFS for a CAP proposal was submitted by the Discharger on 14 April 2005. In a 26 May 2005 letter and memorandum, Central Valley Water Board staff, concurred with the Discharger's EFS for a CAP proposal and stated that it complied with Order No. 6 of Cleanup and Abatement Order No. 99-718. The EFS for a CAP, consists in part, of four groundwater extraction wells (EW-1 through EW-4) constructed within the upper alluvial groundwater zone where total VOC concentrations of 100

micrograms per liter (µg/l) and above (target zone) were detected (see Attachment B). The groundwater extraction rates were designed to achieve full capture of VOCs in the target zone and prevent southwesterly VOC migration from the Unit I western boundary. Extracted groundwater treatment consists of air stripping with treated effluent water discharged to a borrow pit north and hydraulically upgradient of Unit I. The pump and treat system along the western Unit I boundary has been in continual operation since 2001. Additionally, the Discharger proposed monitored natural attenuation of VOCs not captured by the groundwater extraction system.

46. Three groundwater extraction wells (EW-5 through EW-7) were constructed into the upper alluvial groundwater zone along the southern boundary of Unit 1 in 2003 (see Attachment B). It was later determined by the Discharger (October 2003) that the groundwater extraction wells along the southern boundary of Unit I did not produce sufficient volumes of water due to the low hydraulic conductivity of subsurface materials in that area. These wells were subsequently converted to bioremediation injections points.

47. In April 2005, the Discharger proposed the injection of the extended release formula Hydrogen Release Compound (HRC-x) into groundwater injection wells EW-5 through EW-7 to accelerate in-situ biodegradation rates of VOCs in the immediate vicinity of the groundwater extraction wells. According to the Discharger, hydrogen-based (anaerobic) reactions are more effective with PCE, TCE, and immediate breakdown products, which comprise the majority of the VOC plume. When hydrated, HRC-x releases lactate which is metabolized by microorganisms facilitating reductive dechlorination. Reductive dechlorination is a biodegradation process that transforms chlorinated ethenes to successively less chlorinated compounds. In a 26 May 2005 letter and memorandum, Central Valley Water Board staff concurred with the Discharger's proposal to inject HRC-x into groundwater extraction wells EW-5 through EW-7 and stated that it complied with Order No. 6 of Cleanup and Abatement Order No. 99-718. Central Valley Water Board staff required an annual evaluation of the status of VOCs in the upper alluvial groundwater zone along the southern boundary of Unit I by including time-series plots of PCE, TCE, 1,2-DCE, 1,1-DCA, vinyl chloride in Annual Monitoring Reports. In-situ bioremediation along the southern boundary of Unit I was implemented in April 2005.

48. In a 26 May 2005 letter and memorandum, Central Valley Water Board staff concurred with the Discharger that the EFS for a CAP was complete, and that it satisfied the provisions of Section 20425(c) of Title 27, and complied with Order No. 6 of Cleanup and Abatement Order No. 99-718.

49. Implementation of pump and treat corrective action methods along the western boundary of Unit 1 began in 2001 and in-situ bioremediation methods along the southern boundary of Unit 1 began in 2005 in compliance with Order No. 10 of

Cleanup and Abatement Order No. 99-718. The Discharger has complied with Cleanup and Abatement Order No. 99-718.

50. The Van Grouw Dairy drinking water supply wells, located within the upper and lower VOC plumes, are being commercially treated with an activated carbon system. The Discharger pays for the on-going operation and maintenance of the treatment system and provides bottled drinking water to the Van Grouws. The Van Grouw Dairy drinking water supply wells are being monitored for VOCs by the County of Tulare Environmental Quality Control Division on a monthly basis.

51. The Discharger submitted a CAP evaluation report on 30 December 2010. In the report, the Discharger contended that the CAP has been successful in significantly reducing total VOC concentrations along the western and southern boundaries of Unit I. Along the western boundary of Unit I, total VOCs were reported to have been reduced from average concentrations in the 100's of µg/l to less than 20 µg/l. Additionally, the Discharger stated that PCE concentrations along the southern Unit I boundary have been reduced by 89% to 94%. However, the Discharger stated that the VOC plume may be laterally expanding. In the upper alluvial groundwater zone, PCE: laterally extended hydraulically downgradient to well AG-8 where it increased in concentration from 0.44 µg/l to 1.9 µg/l and increased in concentration to as much as 18 µg/l at groundwater monitoring well M-13B. The lower alluvial groundwater zone PCE concentrations increased at the Van Grouw South Well to 1.4 µg/l and to 5.5 µg/l at groundwater monitoring well M-13C. The latest analytical results provided by the County of Tulare Environmental Quality Control Division on 7 February 2013, detected PCE at 2.0 µg/l and TCE at 0.8 µg/l in the Grouw South Well. The County attributed the possible VOC plume expansion to: reduced pumping rates at extraction wells EW-1 through EW-4 due to 45-50 feet decreases in groundwater elevations along the Unit I western boundary; the possible plugging of extraction well screens; and increased pumping of agricultural wells west of the Van Grouw Dairy residence. The Discharger also stated that the HRC-x had been exhausted along the southern Boundary of Unit I and needed to be replenished.

52. In a 4 June 2012 report, the Discharger stated that the groundwater extraction system along the western boundary of Unit I had been experiencing problems (e.g., biofouling and lowered groundwater elevations) and that it would repair the problems and adjust the pumping frequencies to decrease VOC concentrations in hydraulically downgradient upper and lower groundwater zones. Additionally, the Discharger stated that 3D Microemulsion, a new formula of HRC-x, was injected into wells EW-5 through EW-7 along the Unit I southern boundary.

53. In a report received on 1 October 2012, the Discharger stated that the groundwater extraction system along the western boundary of Unit I underwent maintenance in June 2012 and that all four groundwater extraction wells have been fully operational since 17 July 2012. The Discharger stated it would continue to: maintain the groundwater extraction and treatment system as needed; monitor and adjust the

groundwater extraction and treatment system to optimize its efficiency on an ongoing basis; and continue monthly groundwater monitoring of the Van Grouw Dairy supply wells. Additionally, the Discharger investigated the expansion of the VOC plume and determined by sampling and analysis of agricultural and domestic supply wells at properties west and southwest of the Van Grouw Dairy, that VOCs were not detected in those wells. The Discharger concluded that the VOC plumes in the upper and lower alluvial groundwater zones were not expanding laterally.

LINER PERFORMANCE DEMONSTRATION

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

55. In a letter dated 17 April 2001, the Executive Officer notified owners and operators of solid waste landfills that "the Board will require a demonstration that any proposed landfill liner system to be constructed after 1 January 2002 will comply with Title 27 performance standards. A thorough evaluation of site-specific factors and cost/benefit analysis of single, double and triple composite liners will likely be necessary."

56. Reports entitled: *Amended Design Report, Response to Comments, Visalia Landfill, Phase I Construction* and *Base Liner Demonstration report, Visalia Landfill, Phase I Construction*, were submitted by the Discharger on 15 August 2002 and provided a performance demonstration for an engineered alternative liner design for Unit II. The proposed liner system (in ascending order) consists of: 1) a six-inch thick prepared subgrade; 2) a secondary double non-woven geosynthetic clay liner (GCL); a secondary double-textured 60-mil thick HDPE geomembrane; 4) a tri-planar geocomposite secondary LCRS; 5) a one-foot thick protective clean soil layer; 6) a primary double non-woven GCL; and 7) a primary double-textured 60-mil HDPE geomembrane. A primary LCRS will be placed atop the primary geomembrane and will consist of a tri-planar geocomposite drainage layer on which will be placed an HDPE geopipe network nestled in a gravel layer exhibiting a permeability of 1cm/sec and wrapped by a non-woven geotextile filter fabric. A two-foot thick clean soil operations layer will be placed over the LCRS.

57. The Discharger states that the secondary LCRS will serve to intercept any leachate that may penetrate the primary liner system and greatly reduce the likelihood that a release of leachate to groundwater will occur. The Discharger also states that the one-foot thick protective clean soil layer separating the primary liner system from

the secondary LCRS provides additional protection against wrinkling and rupturing of the secondary geomembrane during and after construction.

58. The proposed liner system consisting of secondary and primary composite liner systems, each equipped with a GCL and a 60-mil HDPE geomembrane, exceeds the hydraulic conductivity liner requirement contained Title 27 CCR Section 30320(e) for a Class III landfill. The proposed double-composite liner systems combined with a primary LCRS and a secondary LCRS provide for an overall containment system that meets the performance goal contained in Section 20310 of Title 27 for a Class III landfill.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

59. On 17 June 1993, the State Water Board adopted Resolution No. 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D).

60. Resolution 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993.

61. Resolution 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.

62. Section 20080(b) of Title 27 allows a Regional Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Sections 20080(c)(1) and (2) of Title 27, the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Section 20080(b) of Title 27, or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Section 20080(b)(2) of Title 27.

63. Section 13360(a)(1) of the California Water Code allows a Regional Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.

64. The Discharger proposes an engineered alternative liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Board Resolution No. 93-62 for municipal solid wastes.

65. The Discharger submitted a May 2000 report of waste discharge requesting approval of an engineered alternative to liner requirements. The Discharger submitted a design report on 7 November 2001 containing draft plans, technical specifications, a construction quality assurance program, and design information for the Phase I expansion cell of Unit II. On 20 August 2002, the Discharger submitted an amended design report that contained modifications to the Phase I expansion cell's liner system.

66. The engineered alternative liner system proposed by the Discharger in the amended design report for the liner of Unit II consists of, in ascending order: 1) a six-inch thick engineered subgrade that meets specific gradation and compaction criteria; 2) a secondary double nonwoven geosynthetic clay liner (GCL); a secondary double-textured 60-mil thick high-density polyethylene (HDPE) geomembrane; 4) a tri-planar geocomposite secondary LCRS; 5) a one-foot thick protective clean soil layer; 6) a primary double nonwoven GCL; and 7) a primary double-textured 60-mil HDPE geomembrane. A primary LCRS is proposed to be placed atop the primary geomembrane consisting of a tri-planar geocomposite drainage layer on which will be placed an HDPE geopipe network nestled in a gravel layer exhibiting a hydraulic conductivity of one cm/sec or greater and wrapped by a non-woven geotextile filter fabric. A two-foot thick clean soil operations layer is proposed to be placed over the primary LCRS.

67. The Discharger proposed that side slope liners be constructed of the same materials and in the same sequence and manner as the bottom liner system. A two-foot thick operation soil layer is proposed to be placed over the side slope liner system for protection from refuse and landfill equipment. Prior to the discharge of waste to each new expansion cell, the operation soil layer is proposed to be placed ten feet up the side slopes by the construction contractor. Following the placement of the initial lift of refuse, the operation soil layer will continue to be placed on the side slope ahead of refuse placement.

68. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design. The soils underlying the facility consist primarily of interbedded coarse sand, silty-sand, and sandy-silt. There are no known local sources of clay with low hydraulic conductivities to construct the prescriptive two-feet thick, 1×10^{-7} cm/sec secondary and primary liner systems. The Discharger performed an economic analysis to compare the costs of constructing the prescriptive double-composite liner system verses the proposed engineered alternative double-composite liner system. The

results determined that constructing the prescriptive double-composite liner system would cost substantially more than the engineered alternative double-composite liner system. The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.

69. The proposed primary LCRS design for each expansion cell of Unit II consists of a tri-planar geocomposite drainage layer placed on top of the primary geomembrane liner and extending to the top of each waste cell slope. A six-inch-diameter perforated HDPE main pipe surrounded by gravel exhibiting a hydraulic conductivity of one cm/sec or greater and wrapped in a non-woven geotextile filter fabric will be placed in a trench down the center of each waste cell. The HDPE perforated main pipe will drain to a three-foot deep sump located at the low point of each waste cell on the east and west sides of the Unit II footprint. Each sump will be fitted with an automated submersible pump housed in a riser pipe accessible from the surface, and each sump will be filled with gravel. A two-foot thick clean soil operations layer will be placed over the primary LCRS. The proposed primary LCRS design for the Phase 1 expansion cell of Unit II was analyzed using the Hydrologic Evaluation of Landfill Performance (HELP) model. The results of the HELP analysis determined that the maximum leachate head on the liner system would be less than one inch and that the maximum daily leachate generation rate would be approximately 126 gallons per acre per day.

70. A secondary LCRS is proposed to monitor for leaks from the primary liner system of each expansion cell of Unit II. The Discharger proposes to construct the secondary LCRS with a triplanar geocomposite and place it directly above the secondary geomembrane. Liquids collected in the secondary LCRS will drain via a gravel-filled trench down the center of each waste cell to a gravel-filled, dedicated secondary LCRS sump where it will be removed to the surface by a submersible pump through a riser pipe.

71. This Order approves the Discharger's proposed liner system for future cells as described in Finding 3 and requires that the Discharger submit design plans and construction quality assurance (CQA) plans for each new cell or cells for Executive Officer review and approval at least 120 days prior to construction.

LANDFILL CLOSURE AND POSTCLOSURE MAINTENANCE

72. Section 21090 of Title 27, provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:

- Two-foot soil foundation layer.
- One-foot soil low flow-hydraulic conductivity layer, less than $1x10^{-6}$ cm/s or equal to the hydraulic conductivity of any bottom liner system.

- Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
- One-foot soil erosion resistant/vegetative layer.

73. Title 27 allows engineered alternative final covers provided the alternative design will provide a correspondingly low flow-through rate throughout the postclosure maintenance period.

74. The Discharger submitted a report on 25 June 2003 proposing to close Unit I with an engineered alternative final cover system. The Discharger's proposed engineered alternative final cover system was included in Waste Discharge Requirements Order R5-2003-0146 and adopted by the Central Valley Water Board and consists of, in ascending order: 1) a two-foot thick soil foundation layer; 2) a GCL low-hydraulic conductivity layer; and 3) a two-foot thick vegetative layer.

75. The Discharger submitted a report on 27 August 2008 proposing to change the final cover system specified in Waste Discharge Requirements Order R5-2003-0146 to an evapotranspiration (ET) final cover system. Additionally, the County proposed completing closure of Unit I in spring 2010 in lieu of the 1 December 2006 closure date since Unit I contained approximately 80,000 cubic yards of remaining disposal capacity.

76. The Discharger submitted an amended report of waste discharge on 20 September 2010 proposing an ET final cover system and closure schedule. Central Valley Water Board staff, in a 3 October 2011 letter and memorandum, determined the amended report of waste discharge to be adequate.

77. The Discharger submitted a final closure and postclosure maintenance plan for the proposed ET final cover system for Unit I on 7 May 2012. An addendum to the final closure and postclosure maintenance plan containing additional information was subsequently submitted. The final closure and postclosure maintenance plan proposed in part, a 6.5 feet thick ET final cover system for Unit I that would meet the equivalency design criteria of a percolation rate of less than ten millimeters per year. In addition, the Discharger proposes to construct a pan lysimeter on the top-deck of Unit I and associated monitoring systems to provide long-term performance monitoring of the ET final cover system. The proposed ET final cover system, according to the Discharger, would equal or exceed the performance goal of the Subtitle D composite liner prescriptive standard for closure of Unit I.

78. Central Valley Water Board staff determined that the final closure and postclosure maintenance plan complied with the provisions of Section 21090 of Title 27 and found the final closure and postclosure maintenance plan to be adequate on 22 August 2012.

79. The Discharger, on 20 September 2010, submitted an amended report of waste discharge that estimated the completion of closure of Unit I to be between January and March 2014.

80. The final closure and postclosure maintenance plan includes inspection, maintenance, and monitoring of the landfill during the postclosure maintenance period, and includes a postclosure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, groundwater monitoring wells, access roads, landfill gas monitoring system, groundwater corrective action system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to water quality, whichever is greater.

81. Once every five years during the postclosure maintenance period, the Discharger proposes to prepare iso-settlement maps to determine the amount of differential settlement occurring over the previous five years pursuant to Section 21090(e)(2) of Title 27.

82. The completed final cover will be monitored for performance and for damage or defects by visual inspection and by monitoring surface emissions pursuant to Section 21090(a)(4)(A) of Title 27. Defects will be repaired and tested for adequacy based on the closure CQA plan.

FINANCIAL ASSURANCES

83. Sections 21820 and 22206 of Title 27 requires a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The lump sum estimate is for the cost to close the largest future area needing closure at any one time. On 3 December 2012, the Discharger submitted a financial assurance review for closure for 2011/2012 stating that the closure fund balance for all of its landfills is $16,893,501. An individual closure assurance review for the facility for 2011/2012 has not been received. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the closure cost estimate.

84. Sections 21840 and 22211 of Title 27 requires a cost estimate for landfill postclosure maintenance. The final closure and postclosure maintenance plan includes a cost estimate for landfill postclosure maintenance. On 3 December 2012, the Discharger submitted a financial assurance review for postclosure maintenance for 2011/2012 stating that the postclosure maintenance fund balance for all of its landfills is $16,862,808. An individual postclosure assurance review for the facility for 2012 has not been received. This Order requires that the Discharger

maintain financial assurance for postclosure maintenance with CalRecycle in at least the amount of the cost estimate adjusted annually for inflation.

85. Section 22221 of Title 27 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. On 3 December 2012, the Discharger submitted a financial assurance review for corrective action for 2011/2012 stating that the corrective action fund balance for all of its landfills is $5,149,446. An individual corrective action review for the facility for 2012 has not been received. This Order requires that the Discharger maintain financial assurance for corrective action with CalRecycle in at least the amount of the cost estimate adjusted annually for inflation.

CEQA AND OTHER CONSIDERATIONS

86. The Tulare County Resource Management Agency certified the final environmental impact report for Unit II on 26 September 2001. The Tulare County Resource Management Agency filed a Notice of Determination on 25 September 2001 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and California Environmental Quality Act guidelines (14 CCR Section 15000 et seq.). The Central Valley Water Board considered the environmental impact report and incorporated mitigation measures from the environmental impact report into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.

87. Unit II is in Flood Zone “B” (see Finding No. 15). A significant impact to surface water may occur from the generation of degraded runoff water resulting from flood water contacting refuse. To mitigate the potential for flood water to contact refuse, the Discharger designed all drainage control facilities to prevent the inundation of Unit II by a 100-year, 24-hour storm event or lesser storm event.

88. A significant impact to groundwater may occur due to the generation of leachate within the refuse. Leachate containing a variety of volatile organic compounds and inorganic waste constituents can migrate from a unit and degrade underlying groundwater. To mitigate the potential for groundwater degradation by leachate, the Discharger has and will continue to construct Unit II cells with a double-composite liner system, a primary LCRS, and a secondary LCRS. Also, to minimize the generation of leachate within the refuse, the Discharger has designed all drainage control facilities to prevent the inundation of Unit II by a 100-year, 24-hour storm event or lesser storm event and cover refuse daily with six inches of daily cover soils and/or alternative daily cover materials. The Discharger has installed groundwater detection monitoring wells at the point of compliance to monitor for releases from Unit II to groundwater.

89. A significant impact to groundwater may occur due to the migration of LFG from Unit II. Landfill gas often contains a variety of volatile organic compounds. To

mitigate the impacts of LFG on groundwater, the Discharger proposes to install an active LFG collection system to remove LFG from the refuse within Unit II. The Discharger does not provide information as to whether an LFG collection system will be installed after the filling of each Unit II cell is filled or after all cells of Unit II have been filled. An active LFG collection system currently exists at Unit I. Additionally, the Discharger has installed LFG monitoring probes at various depths around the perimeter of Units I and II to monitor the migration of LFG in the subsurface.

90. This order implements:

    a. *The Water Quality Control Plan for the Tulare Lake Basin, Second Edition*;

    b. The prescriptive standards and performance goals of California Code of Regulations, Title 27, Section 20005 et seq., effective 18 July 1997, and subsequent revisions;

    c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993; and revised on 21 July 2005; and

    d. The applicable provisions of Title 40 C.F.R. Section 258 “Subtitle D” federal regulations as required by State Water Board Resolution 93-62.

91. Based on the threat and complexity of the discharge, the facility is determined to be classified 1B as defined below:

    a. Category 1 threat to water quality, defined as, “Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish.”

    b. Category B complexity, defined as, “Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.”

92. Water Code Section 13267(b) 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 having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall

furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports."

93. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0059 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

94. 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.

95. The Central Valley 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.

96. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

97. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code Section 13320 and California Code of Regulations, Title 23, Sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

    http://www.waterboards.ca.gov/public_notices/petitions/water_quality

    or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code Sections 13263 and 13267, that Order R5-2003-0146 is rescinded except for purposes of enforcement, and that the County of Tulare its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' or 'designated waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq., and 'designated waste' is as defined in Title 27.

2. The Discharger shall comply with all applicable Standard Prohibitions listed in Section C of the SPRRs.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs.

2. The Discharger shall only discharge the wastes listed or allowed under the Waste Classification and Unit Classification section in Finding No. 17 of this Order.

3. The Discharger may not use any material as alternative daily cover that is not listed as approved alternative daily cover in the Findings of these WDRs unless and until the Discharger has demonstrated it meets the requirements in Title 27, section 20705, and the Discharger has received approval from the Executive Officer that it may begin using the material as alternative daily cover.

4. The Discharger shall use approved alternative daily cover only in internal areas of the landfill that do not drain outside of the limits of the contiguous landfill units unless the Discharger demonstrates that runoff from the particular alternative daily cover is not a threat to surface water quality and the demonstration has been approved by the Executive Officer. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs.

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval either prior to, or concurrent with, submission of the construction quality assurance plan as per Construction Specification D.2.a., below, a design report for each expansion of Unit II that includes detailed plans, specifications, and descriptions for the liner components and leachate collection and removal system components. The design report shall incorporate design rationale, with supporting calculations, for all components of the proposed containment system, and shall describe design details

that allow for annual integrity testing of the leachate collection and removal system to demonstrate whether the leachate collection and removal system was designed and is operating to function without clogging, pursuant to Title 27 CCR Section 20340(d).

2. The Discharger shall submit for Executive Officer review and approval **a minimum of 120 days prior** to construction, design plans and specifications for Unit II cells that include the following:

   a. A construction quality assurance plan meeting the requirements of §20324 of Title 27;

   b. A geotechnical evaluation of the area soils, evaluating their use as the base layer; and

   c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and postclosure maintenance periods of Unit II, which shall be installed beneath the composite liner system in accordance with §20415(d) of Title 27.

3. The liner system (both base and slopes) of each expansion cell of Unit II shall be constructed in accordance with the following composite liner design:

   a. An engineered alternative composite liner system that is comprised, in ascending order, of the following:

      1) A minimum six-inch thick engineered soil foundation layer that shall be constructed of select soil materials, in accordance with the approved construction quality assurance plan that meet the following criteria:

         (1) A maximum size of 1/2-inch, subrounded or rounded clasts;

         (2) A gradation series (e.g., well-graded) that is amenable to compaction; and

         (3) Recompacted and rolled smooth to at least 90% of maximum dry density and within 3% of optimum moisture content.

      2) A secondary geosynthetic clay layer consisting of a minimum five mm-thick layer of sodium bentonite sandwiched between two nonwoven geotextiles.

      3) A secondary 60-mil thick double-textured synthetic flexible membrane of high-density polyethylene (HDPE).

      4) A tri-planar geocomposite secondary LCRS.

5) A one-foot thick protective clean soil layer.

6) A primary nonwoven geosynthetic clay layer.

7) A primary 60-mil thick double-textured HDPE synthetic flexible membrane.

8) A tri-planar geocomposite drainage layer (primary LCRS).

9) A two-foot thick operations layer.

4. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board.

5. The primary LCRS shall be designed and operated so that there is no buildup of hydraulic head on the base or side slope liner systems.

6. Construction shall proceed only after all applicable construction design plans, specifications, and quality assurance plans have been approved by the Executive Officer.

7. Following the completion of construction of each new cell of Unit II, and **at least 60 days prior to discharge** onto the newly constructed liner system, the final documentation required in Title 27 CCR Section 20324(d)(1)(C) shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.

8. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.

9. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of 126 gallons per acre per day acre (see Finding No. 69) by an expansion cell of Unit II, such that the depth of fluid on any portion of the leachate collection and removal system (excluding the leachate removal pump sump) exceeds 30 cm, the Discharger shall immediately notify the Central Valley Water Board in writing within seven days. The notification shall

include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.

E. LANDFILL CLOSURE AND POSTCLOSURE MAINTENANCE

1. **By 1 October 2013**, the Discharger shall submit a time schedule for Executive Officer approval that specifies the dates for final closure implementation and completion of closure activities of Unit I. The approved date for Unit I final closure implementation and completion shall be made a part of this Order.

2. The Discharger shall submit for Executive Officer approval at least **90 days prior to** proposed construction, design plans and specifications for a final cover system that includes a CQA plan meeting the requirements of §20324 of Title 27.

3. Initiation of closure activities shall begin within **30 days** of final waste receipt, or within **one year** of receipt of most recent waste if additional capacity remains.

4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer.

5. In accordance with the Executive Officer approved time schedule, the final cover system shall be constructed with an engineered alternative design known as an evapotranspiration or monolithic design. The soil layer shall be placed in such a manner that vegetative growth is assured while structural integrity is maintained.

6. One or more pan lysimeters shall be constructed on the upper deck of the Unit beneath the vegetated soil layer to monitor the effectiveness of the final cover in accordance with a plan approved by the Executive Officer.

7. The Discharger may propose changes to the final cover system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed final cover system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board.

8. Construction shall proceed only after all applicable construction plans, specifications, and all applicable construction quality assurance plans have been approved by Executive Officer.

9. **Within 180 days** following the completion of construction of the final cover system, the final documentation required in §20324(d)(1)(C) of Title 27 shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain

sufficient information and test results to verify that construction was in accordance with the design plans and specifications, with this Order, and with the standards and performance goals of Title 27.

10. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance plan monitoring and testing during the construction of the final cover system. The construction quality assurance plan program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the construction quality assurance plan officer.

11. The Discharger shall maintain the active leachate collection and removal system extraction system for Unit II during closure. Landfill gas shall be extracted from the closed unit until such time that the unit no longer poses a threat to water quality as documented by the Discharger and approved by the Executive Officer.

12. The Discharger shall ensure that the vegetation on the evapotranspiration final cover receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed units during the period the vegetation is being established.

13. The Discharger shall comply with all Standard Closure and Postclosure Maintenance Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and postclosure maintenance for the landfill in at least the amounts described in Finding Nos. 83 and 84, adjusted for inflation annually. A report regarding financial assurances for closure and postclosure maintenance shall be submitted to the Central Valley Water Board by **1 October of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

2. The Discharger shall update the final closure and postclosure maintenance plan any time there is a change that will increase the amount of the closure and/or postclosure maintenance cost estimate. The updated final closure and postclosure maintenance plan shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The final closure and postclosure maintenance plan shall meet the requirements of Title 27, section 21769(b), and

include a lump sum estimate of the cost of carrying out all actions necessary to close each unit, to prepare detailed design specifications, to develop the final closure and postclosure maintenance plan, and to carry out the first thirty years of postclosure maintenance. Reports regarding financial assurance required in Financial Assurance Specification F.1 above shall reflect the updated cost estimate.

3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding No. 85. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 October of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the provisions of Title 27**,** in accordance with Monitoring and Reporting Program R5-2013-0059 and the Standard Monitoring Specifications listed in Section I of the SPRRs, for the groundwater detection, unsaturated zone, and corrective action monitoring.

2. The Discharger shall comply with the water quality protection standard as specified in this Order, Monitoring and Reporting Program R5-2013-0059, and the SPRRs.

3. The concentrations of the COCs in waters passing the point of compliance (defined pursuant to Title 27, Section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program R5-2013-0059.

4. For each monitoring event, the Discharger shall determine whether the facility is in compliance using procedures specified in Monitoring and Reporting Program R5-2013-0059 and the Standard Monitoring Specifications in Section I of the SPRRs.

5. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs.

H. CORRECTIVE ACTION SPECIFICATIONS

1. The Discharger shall conduct corrective action measures in accordance with the corrective action program Central Valley Water Board staff concurred with on 26 May 2005 (see Finding No. 48). The corrective action program includes groundwater extraction and treatment by air-stripping (pump and treat) along the western point of compliance of Unit I (see Finding No. 45) and in-situ bioremediation product injections along the southern point of compliance of Unit I (see Finding No. 47).

2. Any modifications to the corrective action program, or a proposal for an alternative for a corrective action program, needs to be approved by the Executive Officer. A proposal to modify the corrective action program or a proposal for an alternative corrective action program shall be submitted **90 days prior to** the proposed modification of a corrective action program or an alternative corrective action program.

3. **By 28 February 2014**, the Discharger shall submit a report for Executive Officer review and approval that identifies by-products of bioremediation, proposes the inclusion of bioremediation by-products monitoring within Monitoring and Reporting Program R5-2013-0059, proposes analyses for the bioremediation by-products, and the frequency of monitoring of the bioremediation by-products.

4. **By 28 February of each year**, the Discharger shall submit an assessment report that evaluates the:

    a. Bioremediation by-product impacts to groundwater;

    b. Efficacy of bioremediation in remediating VOCs in groundwater along the southern point of compliance of Unit I;

    c. Need for replenishment of bioremediation products in groundwater injection wells EW-5 through EW-7 along the southern point of compliance of Unit I;

    d. Operational status of the groundwater extraction and treatment system along the western point of compliance of Unit I; and

    e. Efficacy of the groundwater extraction and treatment system in remediating waste constituents at the western point of compliance and hydraulically downgradient of the western point of compliance.

    The assessment report can be submitted as a part of the Annual Monitoring Report.

5. **By 28 February 2015 and every five years thereafter,** the Discharger shall submit a technical report with statistical analyses of groundwater monitoring data that summarizes the results of waste constituent remediation in the upper and lower

alluvial groundwater zones and determines whether corrective action methods can cease, continue, be modified, or an alternative corrective action method needs to be implemented to remediate waste constituents.

6. **By 28 February 2018**, the Discharger shall submit an amended report of waste discharge for Executive Officer approval, to make appropriate modifications to the corrective action program and/or propose alternative correction action methods to remediate waste constituents if it is determined in the technical report (see Corrective Action Specification H.5), that the corrective action methods described in Corrective Action Specification H.1 are unsuccessful.

7. The Discharger shall operate and maintain a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the waste constituent release, including bioremediation by-products, and the progress of corrective action. Sample collection and analysis shall coincide with Corrective Action Monitoring A.1 of Monitoring and Reporting Program R5-2013-0059.

8. Corrective action measures may be terminated when the Discharger demonstrates to the satisfaction of the Executive Officer that the concentrations of all waste constituents are reduced to levels below their respective concentration limits throughout the entire zone affected by the release.

9. After suspending the corrective action measures, the Discharger shall demonstrate that the concentration of each waste constituent in each sample from each monitoring point remained at or below its concentration limit for at least three consecutive years, beginning immediately after the suspension of corrective action measures.

10. Upon completion of corrective action, the Discharger shall certify, in writing, that corrective action has been completed in compliance with Title 27 and the WDRs. The certification shall be signed by a California Registered Civil Engineer or Professional Geologist.

11. If at any time, either the Discharger or the Executive Officer determines that the corrective action program is unsuccessful in remediating waste constituents, is exacerbating groundwater degradation by bioremediation by-product generation resulting from injections, or that natural attenuation of VOCs in groundwater is unsuccessful (i.e. does not satisfy the provisions of Section 20430 of Title 27), the Discharger shall, **within 90 days of making the determination**, **or of receiving written notification from the Central Valley Water Board of such determination**, submit an amended report of waste discharge for Executive Officer approval, to make appropriate modifications to the corrective action program that includes a detailed work plan, and/or proposes other alternative correction action methods to remediate COCs in groundwater.

At a minimum, a determination that the corrective action program is unsuccessful in remediating waste constituents may result if one of the following conditions is met:

a. Waste constituent concentrations in point of compliance groundwater monitoring wells exhibit an increasing trend not originally predicted after implementation of corrective action; or

b. Point of Compliance groundwater monitoring wells exhibit significant waste constituent concentration increases indicative of a new or renewed release; or

c. Significant waste constituent concentrations are identified in corrective action groundwater monitoring wells, or off-site agricultural or domestic supply wells; or

d. Waste constituent concentrations are not decreasing at a sufficient rate to meet the remediation objectives; or

e. Bioremediation by-products exacerbate groundwater degradation.

The amended report of waste discharge shall include the following:

a. A discussion as to why existing corrective action measures have been ineffective or insufficient;

b. A revised evaluation monitoring plan, if necessary, to further assess the nature and extent of the release;

c. A discussion of corrective action needs and alternatives;

d. A discussion of the potential impacts to groundwater that may occur as a result of by-products from bioremediation product injections, or another in-situ remediation method;

e. Proposed alternative corrective action measures, as necessary, for:

    1) Source control;

    2) Groundwater cleanup; and/or

    3) Landfill gas control.

f. A plan to monitor the progress of corrective action measures consistent with Monitoring and Reporting Program R5-2013-0059; and

g. Cost estimates for implementing additional and/or alternative corrective action measures, including monitoring.

12. **Within one year** of Executive Officer approval of the amended report of waste discharge that determines that the corrective action program is unsuccessful in remediating waste constituents in groundwater and/or that natural attenuation is unsuccessful in remediating VOCs in groundwater (see Corrective action specification H.6) the Discharger needs to implement a modified or alternative corrective action program to remediate waste constituents in groundwater.

I. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the offices of the Tulare County Resource Management Agency, including Monitoring and Reporting Program R5-2013-0059 and the SPRRs, and make it available at all times to facility maintenance 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 Subtitle D that are not specifically referred to in this Order.

3. The Discharger shall comply with the applicable portions of the SPRRs.

4. If there is any conflicting or contradictory language between the WDRs, Monitoring and Reporting Program R5-2013-0059, or the SPRRs, then language in the WDRs shall supersede either Monitoring and Reporting Program R5-2013-0059 or the SPRRs, and language in Monitoring and Reporting Program R5-2013-0059 shall supersede the SPRRs.

5. All reports required by this Order shall be submitted pursuant to Water Code Section 13267.

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

Task	Compliance Date
A. Construction Plan for Unit II Cells	
Submit for Executive Officer approval of construction and design plans for cells. (see Construction Specification D.2)	**A minimum of 120 days prior construction**
B. Construction Report	
Submit a construction report upon completion demonstrating construction was in accordance with approved construction plans for Executive	**At least 60 days prior to discharge**

Officer approval.
(see Construction Specification D.7)

C. Landfill Closure

1. Submit a time schedule for Executive Officer approval specifying the dates for final closure implementation and completion of closure of Unit I. (see Landfill Closure and Postclosure Maintenance Specification E.1)	**By 1 October 2013**
2. Submit for Executive Officer approval, proposed construction, design plans and specifications for a final cover system, including a construction quality assurance plan. (see Landfill Closure and Postclosure Maintenance Specification E.2)	**90 days prior to construction**
3. Submit, following the completion of construction of the final cover system, a final documentation report to verify that construction was in accordance with the design plans and specifications. (see Landfill Closure and Postclosure Maintenance Specification E.9)	**Within 180 days following completion of construction of the final cover system**

D. Annual Review of Financial Assurances

1. Landfill Closure and Postclosure Maintenance (see Provision Financial Assurance Specification F.1)	**By 1 October of each year**
2. Initiating and Completing Corrective Action (see Financial Assurance Specification F.3)	**By 1 October of each year**

E. Corrective Action

1. Modifications to the corrective action program or a proposal for an alternative corrective action program, needs to be approved by the Executive Officer. (see Corrective Action Specification H.2)	**90 days prior to proposed modification of, or proposal of alternative corrective action program**

2. Submit a report for Executive Officer approval identifying by-products of bioremediation, includes bioremediation of by-products monitoring within Monitoring and Reporting Program R5-2013-0059, proposes analyses for the bio-remediation by-products, and the frequency of monitoring the bioremediation by-products. (see Corrective Action Specification H.3)	**By 28 February 2014**
3. Submit an assessment report of the efficacy and operational status of the corrective action program. (see Corrective Action Specification H.4)	**By 28 February of each year**
4. Submit a technical report that summarizes the results of waste constituent remediation in the upper and lower alluvial groundwater zones. (see Corrective Action Specification H.5)	**By 28 February 2015 and every five years thereafter**
5. Submit an amended report of waste discharge for Executive Officer approval, to make appropriate modifications to the corrective action program and/or propose alternative correction action methods to remediate waste constituents if it is determined in the technical report (see Corrective Action Specification H.5), that the corrective action methods described in Corrective Action Specification H.1 are unsuccessful. (see Corrective Action Specification H.6)	**By 28 February 2018**
6. Submit an amended report of waste discharge for Executive Officer approval, to make appropriate modifications to the corrective action program, and/or propose alternative correction action methods to remediate waste constituents if it is determined at any time by either the Discharger or the Executive Officer, that the corrective action methods described in Corrective Action Specification H.1 are unsuccessful. (see Corrective Action Specification H.11)	**Within 90 days of a determination or receiving written notification from the Central Valley Water Board of such a determination**

7. Implement a modified or alternative corrective action program to remediate waste constituents in groundwater (see Corrective Action Specification H.12)	**Within one year of Executive Officer approval of the amended RWD to make appropriate changes to the CAP**

F. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 31 May 2013.

Original signed by:

_____

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0059
FOR
COUNTY OF TULARE
FOR
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE, AND CORRECTIVE ACTION
VISALIA MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code Section 13267 and incorporates requirements for: groundwater monitoring and reporting; leachate seep monitoring and reporting; unsaturated zone monitoring and reporting; facility monitoring; maintenance and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, Section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements Order R5-2013-0059 (WDRs), and the Standard Provisions and Reporting Requirements dated January 2012 (SPRRs). Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the approved July 2000 detection monitoring program plan, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater water quality protection standard (WQPS). All detection monitoring program groundwater monitoring wells shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I, IV, and V.

The Discharger may use alternative analytical test methods, including new United States Environmental Protection Agency (USEPA) approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this MRP, are approved by the Executive Officer, and are incorporated into the detection monitoring program plan.

The monitoring program of this MRP includes:

Section	Monitoring Program
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Seep, Primary and Secondary Leachate Collection and Removal Systems (LCRS)
A.4	Facility Monitoring
A.5	Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Sections 20415 and 20420 of Title 27. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system meets the applicable requirements of Title 27.

The current groundwater monitoring network shall consist of the following:

Well	Status
M-6A, M-6B, M-7A, M-7B, M-7C, M-19S, M-19A, M-19B	Upper Alluvial Groundwater Background
M-1, M-2A, M-2B, M-3A, M-3B, M-4A, M-4B, M-12, M-16A, M-16B, M-18S, M-18A, M-18B	Upper Alluvial Groundwater Detection
M-5, M-11S, M-11A, M-11B, M-13S, M-13A, M-13B, M-14S, M-14A, M-14B, M-15S, M-15A, M-15B, M-17S, M-17A, M-17B, M-20S, M-20A, M-20C	Upper Alluvial Groundwater Corrective Action
M-6C, M-7Cz, M-19C	Lower Alluvial Groundwater Background
M-11C, M-13C, M-14C, M-17C, M-20C	Lower Alluvial Groundwater Corrective Action
Van Grouw North and South wells, AG-8, AG-9, Ag-15R	Domestic and Agricultural Groundwater Supply Wells (when accessible)

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected

samples from the background wells, detection monitoring wells, and corrective action wells, shall be analyzed for the monitoring parameters and COCs listed in Table I in accordance with the specified methods and frequencies. Private domestic and agricultural wells shall be monitored on a monthly and/or quarterly sampling basis, providing the Discharger or another authorized agency (e.g., County of Tulare Environmental Quality Control Division) has access to such wells, and samples from these wells shall be analyzed for VOCs in accordance with Executive Officer approval of the analytical methods. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved detection monitoring program plan. The results of groundwater monitoring shall be reported semiannually as required in Section B.1 of this MRP, below.

Once per quarter, including the times of expected highest and lowest elevations of the water levels in the wells, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost groundwater zone and in any zones of perched water and in any additional portions of the zone of saturation monitored pursuant to Section 20415(e)(15) of Title 27. The results shall be reported semiannually as required in Section B.1 of this MRP, below.

Samples collected for COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table V every five years. Five-year COCs were last monitored in 2009 and shall be monitored again in 2014. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected (see B.2 of Reporting of this MRP below).

2. Unsaturated Zone Monitoring

Unit I was permitted and in operation before 1 July 1991; therefore, it qualifies for exemption of unsaturated zone monitoring pursuant to Section 20415(d) of Title 27. The Discharger demonstrated that there is no monitoring device or method designed to operate under the existing subsurface conditions to collect liquids migrating from the base of Unit I to the unsaturated zone and that the installation of an unsaturated zone detection monitoring system would require unreasonable dismantling or relocating of permanent structures. Unsaturated zone monitoring for Unit I is not required.

Unit II, Cells I, 2, 6, and 7 were each constructed with a pan lysimeter consisting of a 60-mil thick high-density polyethylene (HDPE) geomembrane overlain by a geonet composite under the primary and secondary LCRS sumps and extending approximately 70 feet under the central leachate collection pipe. Leachate collected by the pan lysimeters are removed by a submersible pump through a riser pipe.

The Discharger shall operate and maintain an unsaturated zone detection monitoring system for Unit II that complies with the applicable provisions of Sections 20415 and 20420 of Title 27. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27. The Discharger shall install unsaturated zone detection monitoring systems (after approval by Central Valley Water Board staff) each time the landfill constructs a new cell.

The unsaturated zone detection monitoring system shall consist of:

Monitoring Point	Status	Units Being Monitored
Pan Lysimeter	Detection	Beneath Unit II Cell Primary and Secondary LCRS Sumps

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the field parameters, monitoring parameters and COCs listed in Table II in accordance with the specified methods and frequencies (pan lysimeters need only be sampled when liquid is present). Pan lysimeters shall be inspected for the presence of liquid monthly. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within seven days and shall immediately sample and test the liquid for field and monitoring parameters listed in Table II. Samples for the five-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table V every five years.

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved sample collection and analysis plan.

Monitoring results for the unsaturated zone shall be included in semiannual monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the WQPS.

3. Leachate Monitoring, Seep Monitoring, and Annual Primary and Secondary LCRS Testing

Leachate Monitoring: The Discharger shall operate and maintain leachate system sumps, conduct monitoring of any detected leachate seeps, and conduct annual testing of each LCRS in accordance with Title 27 and this monitoring program.

The current leachate system sump monitoring points are:

Monitoring Point	Unit Where Sump is Located
Primary LCRS Sump	West-Central Margin of Cell 1, Unit II
Secondary LCRS Sump	West-Central Margin of Cell 1, Unit II
Primary LCRS Sump	West-Central Margin of Cell 2, Unit II
Secondary LCRS Sump	West-Central Margin of Cell 2, Unit II
Primary LCRS Sump	East-Central Margin of Cell 6, Unit II
Secondary LCRS Sump	East-Central Margin of Cell 6, Unit II
Primary LCRS Sump	East-Central Margin of Cell 7, Unit II
Secondary LCRS Sump	East-Central Margin of Cell 7, Unit II

All LCRS sumps shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with Table III. If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for field and monitoring parameters listed in Table III. Leachate in the LCRS system sump shall then be sampled for all monitoring parameters in accordance with the frequencies listed in Table III whenever liquid is present. All LCRS sump samples shall be analyzed for the five-year COCs specified in Table III every five years.

Seep Monitoring: Leachate that seeps to the surface from a waste management unit (Unit) shall be sampled and analyzed for the field and monitoring parameters listed in Table III upon detection. The quantity of leachate shall be estimated and reported as leachate flow rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

Annual Leachate System Testing: The primary and secondary LCRS shall be tested annually pursuant to Section 20340(d) of Title 27 to demonstrate proper operation. The results of these tests shall be reported to the Central Valley

Water Board in the Annual Monitoring Report and shall include comparisons with earlier tests made under comparable conditions.

4. Facility Monitoring

a. Annual 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 repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problem areas before and after repairs. Any necessary construction, maintenance, or repairs **shall be completed by 31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all unit side slopes for damage **within 7 days** following major storm events (i.e., a storm that causes continuous runoff for at least one hour). The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

c. Five-Year Iso-Settlement Survey for Closed Units

For closed units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of the engineered alternative composite final cover system. For each portion of the unit, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Section 21090(e)(1 & 2) of Title 27]. Results of Standard Reporting shall be in accordance with Section B.6 of this MRP.

d. Standard Observations

The Discharger shall conduct Standard Observations at the facility in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule:

Frequency	Season
Monthly	Wet: 1 October to 30 April
Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

1) For the unit:

   a) Evidence of ponded water at any point on the unit outside of any contact storm water/leachate diversion structures on the active face (show affected area on map); and

   b) Evidence of erosion and/or of day-lighted refuse.

2) Along the perimeter of the unit:

   a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and

   b) Evidence of erosion and/or of day-lighted refuse.

Results of Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 of this MRP below.

5. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Section 20430 of Title 27 and this MRP. Groundwater monitoring wells that are in a corrective action program shall be monitored in accordance with the groundwater monitoring requirements in part A.1 of this MRP.

Corrective action monitoring data analysis shall include the following:

a. Nature and Extent:
   1) Comparisons with concentration limits to identify any new or previously undetected constituents at a monitoring point.

b. Effectiveness of Corrective Action:
   1) Preparation of time series plots for representative waste constituents.
   2) Trend analysis for each waste constituent.
   3) The need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual monitoring report and summarized in the Annual Report, as specified under reporting Section B.1 and B.2 of this MRP below. The semiannual monitoring reports shall also include a discussion of the

progress of corrective action toward returning to compliance with the WQPS, as specified in Section 20430(h) of Title 27.

B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

Reporting Schedule

Section	Report	End of Reporting Period	Due Date
B.1	Semiannual Monitoring Report	30 June, 31 December	**31 August, 28 February**
B.2	Annual Monitoring Report	31 December	**28 February of each year**
B.3	Seep Reporting	Continuous	**Immediately & 7 Days**
B.4	Annual Facility	31 October	**15 November each year**
B.5	Major Storm Event Reporting	Continuous	**7 days from damage discovery**
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	**Every Five Years Following Closure of a Unit and thereafter**
B.7	Financial Assurances Report	31 December	**1 October each year**

Reporting Requirements

The Discharger shall submit monitoring reports in accordance with the reporting schedule above and include the data and information as required in this MRP and as required in WDRs Order R5-2013-0059 and the SPRRs (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). 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, such as a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above reporting schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27.

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

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the postclosure maintenance period. Such records shall be legible and 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. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **31 August** and **28 February**. Each semiannual monitoring report shall contain at least the following:

   a) For each groundwater 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 used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;

      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 detection monitoring program plan.

   b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.

   c) The estimated quarterly groundwater flow rate and direction in the uppermost groundwater zone, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Section 20415(e)(15) of Title 27].

   d) Tabulated monitoring data detected during the reporting period for all monitoring points and constituents for groundwater, unsaturated zone, and leachate seeps. Concentrations below the laboratory reporting limit shall not be reported as “ND” unless the reporting limit is also given in the table. Otherwise they shall be reported “<” the reporting limit (e.g., <0.10). Units shall be as required in Tables I through III unless specific justification is given to report in other units. Refer to the SPRRs Section I “Standard Monitoring Specifications” for requirements regarding MDLs and PQLs.

   e) Laboratory statements of results of all analyses evaluating compliance with requirements.

   f) An evaluation of the concentration of each monitoring parameter or five-year COC when five-year COC sampling is conducted, as compared to the current concentration limits, and the results of any required verification testing for

constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedences of a concentration limit.

g) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.

h) A summary of inspection, leak search, and repair of final covers on any closed units in accordance with an approved final postclosure maintenance plan as required by Standard Closure and Postclosure Maintenance Specifications G.26 through G.29 of the SPRRs.

2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **28 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semiannual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a five-year COC event was performed, then these monitoring parameters shall also be graphically presented. 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. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.

c) All historical monitoring data for which there are detectable results and data for the previous year shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Section 20420(h) of Title 27], that facilitates periodic review by the Central Valley Water Board.

d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.

e) 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.

f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.

g) Every fifth year, update concentration limits for each monitoring parameter at each monitoring well based on the new data set.

h) A comprehensive discussion of any corrective action monitoring required by this MRP under Section A.5.

3. **Seep Reporting:** 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 Central Valley 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 field parameters and monitoring parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and

   e) Corrective action measures underway or proposed, and corresponding time schedule.

4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.4.a of this MRP, above.

5. **Major Storm Event Reporting:** Following major storm events, the Discharger shall report 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 containment facilities and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs. Minor damage and subsequent repairs shall be reported in the next self-monitoring report. Refer to Section A.4.b of this MRP, above.

6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for the unit every fifth year

after final closure of the landfill, or a unit of the landfill pursuant to Section 21090(e) of Title 27. Refer to Section A.4.c of this MRP, above.

7. **Financial Assurances Report:** By **1 October** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for postclosure maintenance and corrective action. Refer to Financial Assurances Specifications F.1 through F.4 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For the unit, the WQPS shall consist of all COCs, the concentration limit for each COC, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The WQPS for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the WQPS other than annual update of the concentration limits shall be submitted in a report for review and approval.
The report shall:

a. Identify all distinct bodies of surface and ground water that could be affected in the event of a release from the unit or portion of the 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 groundwater monitoring program. The map shall include the point of compliance in accordance with Section 20405 of Title 27.

c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and COCs that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Section 20415(e)(8)(A-D)] or Section 20415(e)(8)(E) of Title 27.

e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Section 20415(e)(8)(E) and Section 20420(j)(1-3) of Title 27.

The WQPS shall be certified by a California-registered civil engineer or professional 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 facility, the Discharger may request modification of the WQPS.

The Discharger proposed methods for calculating concentration limits in its 2002 water quality protection standard report. Pursuant to Section 20415(e)(10)(B) of Title 27, for each naturally occurring inorganic COC, the concentration limit (applicable suite of background data) for that constituent shall be redetermined each semiannual monitoring period according to the following "moving window" formula, and the Discharger shall use the resulting concentration limit to apply the parametric Interwell Upper Prediction Limit analysis method featured in the Sanitas™ for Groundwater statistical software package, unless the software indicates that a different method (e.g., the nonparametric version of the same method) is more appropriate. Sanitas™ Batch Mode is performed on the entire monitoring well network for all constituents. Constituents that indicate an exceedence under Batch Mode are further analyzed under Sanitas™ Interactive Mode to verify or refute whether the prediction limit established for the constituent was appropriate for the background data set. For each reporting period subsequent to the initial reporting period, the Discharger shall create the new concentration limit, for that constituent, by taking the prior reporting period's background data, adding the newest datum, for that constituent, from background monitoring wells and removing the oldest datum. Background monitoring wells for the upper and lower alluvial groundwater zones are listed in Groundwater Monitoring A.1. (above).

The WQPS shall be updated, at a minimum, every five years; or as required by natural changes in background water quality.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, hazardous constituents, and physical parameters that provide a reliable indication of a release from a unit. The monitoring parameters for the unit are those listed in Tables I and III for the specified monitored medium, and Table IV.

3. Constituents of Concern

The COCs include a larger group of waste constituents and hazardous constituents that are reasonably expected to be in or derived from waste contained in the unit, and are required to be monitored every five years [Sections 20395 and 20420(g) of Title 27]. The COCs for the unit at the facility are those listed in Tables I through III for the specified monitored medium, and Table V. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a CAP. The last five-year COC report was submitted to the Central Valley Water Board in the October 2009 annual monitoring report, and five-year COCs **are due to be monitored again in 2014.**

4. 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 Section 20415(e)(8) of Title 27; or

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

5. Retesting Procedures for Confirming Evidence of a Release

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.45 of the SPRRs, then:

a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.

b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

6. Point of Compliance

The point of compliance for the water standard at each unit is a vertical surface located at the hydraulically down gradient limit of the unit that extends through the uppermost groundwater zone underlying the unit.

7. 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 [Section 20410 of Title 27].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, at which monitoring is conducted and at which the WQPS applies. The monitoring points for each monitored medium are listed in Section A.1 of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

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 whether the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate, and complete.

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

Ordered by: *Original signed by:*
PAMELA C. CREEDON, Executive Officer

31 May 2013
(Date)

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Units	Sampling Frequency	Reporting Frequency
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	^{o}F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L[1]	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L[2]	Semiannual	Semiannual
Five-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	5 years
Inorganics (dissolved)	ug/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	5 years
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	5 years

[1] Milligrams per liter

[2] Micrograms per liter

TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

PAN LYSIMETERS[1] (or other unsaturated zone detection monitoring device)

Parameter	Units	Sampling Frequency	Reporting Frequency
Field Parameters			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Monthly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L	Semiannual	Semiannual
Five-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	5 Years
Inorganics (dissolved)	ug/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A) (USEPA Method 8141B)	ug/L	5 years	5 years

---

1 Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

TABLE III

LEACHATE MONITORING[1], SEEP MONITORING[2], PRIMARY AND SECONDARY LCRS TESTING[3]

Parameter	Units	Sampling Frequency	Reporting Frequency
Field Parameters			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	5 years
Inorganics (dissolved)	ug/L	5 years	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	5 years
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	5 years
Leachate Collection System Testing [3]	---	Annually	Annually

[1] If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in a leachate collection sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present.

[2] Leachate seeps shall be sampled and analyzed for the field and monitoring parameters in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

[3] The Discharger shall test each LCRS annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions.

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

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)
Hexachlorobutadiene
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1.2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE V

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Inorganics (dissolved):	**USEPA Method**
Aluminum	200.8
Antimony	200.8
Barium	200.8
Beryllium	200.8
Cadmium	200.8
Chromium	200.8
Cobalt	200.8
Copper	200.8
Silver	200.8
Tin	200.8
Vanadium	200.8
Zinc	200.8
Iron	200.8
Manganese	200.7
Arsenic	200.8
Lead	200.8
Mercury	245.1
Nickel	200.8
Selenium	200.8
Thallium	200.8
Cyanide	SM[1] 4500-CN
Sulfide	SM 4500-SF

Volatile Organic Compounds, extended list:

USEPA Method 8260B

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)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)

TABLE V

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene
1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)

TABLE V

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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
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

TABLE V

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone

TABLE V

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

Chlorophenoxy Herbicides:

USEPA Method 8151
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)

TABLE V

FIVE-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Organophosphorus Compounds:

USEPA Method 8141

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

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[1] Standard Methods

INFORMATION SHEET

ORDER R5-2013-0059
COUNTY OF TULARE
CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE, AND CORRECTIVE ACTION
VISALIA MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

The County of Tulare (hereafter Discharger) owns and operates a municipal solid waste landfill (facility) at the intersection of Road 80 and Avenue 328 about seven miles northwest of the City of Visalia.

The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements Order R5-2003-0146 (Order R5-2003-0146) on 5 September 2003, which classified waste management units I and II (Units I and II) as a Class III landfill as defined in Title 27, California Code of Regulations, Section 20005 et seq. (hereafter Title 27), that accepts or accepted municipal solid waste. The proposed Order revises the existing WDRs to provide for operation, construction of Unit II with an engineered alternative composite liner system, closure of Unit I with an evapotranspiration (ET) final cover system, postclosure maintenance, and the implementation of a corrective action program. Additionally, the proposed Order will rescind Order R5-2003-0146.

The 631-acre facility contains one existing unlined Unit that covers 127 acres (Unit I) and one 115-acre expansion unit (Unit II), east and adjacent to Unit I.

The facility is located on the westward dipping, eastern limb of the asymmetrical trough of the San Joaquin Valley. Of significance to the facility are the unconsolidated alluvial fan deposits of the Kaweah River. The unconsolidated alluvial fan deposits consist of approximately 330 to 350 feet of interbedded clayey-silt, silt, and fine-to-medium-grain fluvial and flood basin sands. A 30-foot thick, low resistivity, hard clay and silt zone that may possibly represent the regionally extensive E-Clay, occurs between 180 and 210 feet below ground surface (bgs) beneath the western margin of Unit I and areas west of Unit I. The low-resistivity layer is laterally continuous and serves as an aquitard that separates groundwater into an unconfined upper alluvial groundwater zone (above 180 feet bgs) and a lower alluvial groundwater zone (below 210 feet bgs).

The first encountered groundwater occurs between 40 and 50 feet below the native ground surface (bgs) depending on location. Groundwater elevations range between 235 and 250 feet mean sea level (MSL). The first encountered groundwater is unconfined. The depth to the first encountered groundwater fluctuates seasonally as much as 15 feet. Four distinct hydrostratigraphic units have been identified beneath the facility. The uppermost unit is termed the upper alluvial groundwater zone, which is unconfined and extends from the water table to about 180 feet below ground surface (bgs). Directly beneath the upper alluvial groundwater zone is a 30-foot thick, low resistivity, hard-clay and silt zone that the Discharger considers being the E-clay. According to the Discharger, the low resistivity zone extends from 180 to 210 feet bgs and is laterally continuous. Directly beneath the low resistivity layer is what the

Discharger terms the lower alluvial groundwater zone, which is confined or semi-confined. The lower alluvial groundwater zone extends from the base of the E-clay (about 210 feet bgs) downward to the top of oxidized continental deposits (about 340 feet bgs). Underlying the lower alluvial groundwater zone is what the Discharger terms the deep groundwater zone.

The existing groundwater monitoring network for the facility consists of 52 wells (42 on-site and ten off-site). There are eight upper alluvial groundwater zone background monitoring wells, 14 point of compliance monitoring wells, and 19 corrective action monitoring wells. There are three lower alluvial groundwater zone background monitoring wells and five corrective action monitoring wells. Additionally, the Discharger collects and analyzes groundwater samples from off-site private domestic and agricultural water supply wells.

There is no unsaturated zone detection system beneath Unit I to monitor liquids released from the unit. Unit I was permitted and in operation before 1 July 1991; therefore, it qualifies for exemption of unsaturated zone monitoring pursuant to Section 20415(d) of Title 27. The Discharger demonstrated that there is no monitoring device or method designed to operate under the existing subsurface conditions to collect liquids migrating from the base of Unit I to the unsaturated zone, the installation of an unsaturated zone detection monitoring system would require unreasonable dismantling or relocating of permanent structures, and Unit I has already leaked waste constituents to groundwater. The unsaturated zone detection monitoring system for Unit II is a pan lysimeter under the sumps for the primary and secondary leachate collection and removal system (LCRS) sumps, and extends approximately 70 feet under the central leachate collection pipe.

Volatile organic compounds (VOCs) that are not naturally occurring have been detected in the upper and lower alluvial groundwater zones along the southern and western points of compliance and in off-site locations west and southwest of Unit I. The VOCs detected in groundwater are tetrachloroethylene (PCE); trichloroethylene (TCE); 1,1,1- trichloroethane (1,1,1-TCA); cis-1,2-dichloroethylene (cis-1,2-DCE); trans-1,2-dichloroethylene (trans-1,2-DCE); 1,1-dichloroethylene (1,1-DCE); 1,1-dichloroethane (1,1-DCA); 1,2-dichlorethane (1,2-DCA); vinyl chloride; and chloroethane) to groundwater. The First Semiannual Monitoring Report, 2012 (1st semiannual 2012 SMR) stated that 1,1-DCA, chloroform, cis-1,2-DCE, dichlorodifluoromethane, methylene chloride, PCE, TCE, and trichlorofluoromethane were detected in the upper alluvial groundwater zone point of compliance groundwater monitoring wells. Volatile organic compounds detected in the upper alluvial groundwater zone corrective action or non-point of compliance groundwater monitoring wells, included 1,1-DCA,chloroform, cis-1,2-DCE, dichlorodifluoromethane, vinyl acetate, PCE, trans-1,2-DCE, TCE, and trichlorofluoromethane. Additionally, the 1st semiannual 2012 SMR stated that dichlorodifluoromethane, PCE, TCE, and trichlorofluoromethane were detected in off-site lower alluvial groundwater zone monitoring wells. The VOCs migrated from the upper alluvial groundwater zone into the lower alluvial groundwater zone as a result of two agricultural supply wells and the landfill supply well that were screened across the E-Clay and into both groundwater zones. The aforementioned agricultural supply wells and the landfill supply wells have been properly destroyed.

Statistical analysis indicates that arsenic; barium; chloride, potassium; TDS; bicarbonate; chromium; cobalt; iron; sodium; sulfide; calcium; manganese; magnesium; total organic carbon; and EC have exceeded their respective background concentration limits on one or more occasions in one or more upper alluvial groundwater zone Point of Compliance monitoring wells. The 1st semiannual 2012 SMR stated that calcium, chromium, cobalt, iron, magnesium, manganese, and sodium possibly exceeded their respective background concentration in the upper alluvial groundwater zone along the southern Point of Compliance of Unit I and are comingled with the VOC plume.

Cleanup and Abatement Order 99-718, directed the Discharger to complete an evaluation monitoring program and establish a corrective action program in accordance with a time schedule. An evaluation monitoring program was completed in November 2002. The lateral extent of the VOC plume in the upper alluvial groundwater zone was determined to extend approximately 3,300 feet to the southwest of the southwestern corner of Unit I; approximately 750 feet north of the northwestern corner of Unit I; approximately 350 feet north of the northern boundary of Unit I; and approximately 450 east of the southeastern corner of Unit I. The lateral extent of the VOC plume in the lower alluvial groundwater zone was determined to extend approximately 2,300 feet southwest of the southwestern corner of Unit I to the Van Grouw Dairy South Well; possibly as much as 850 feet south of the southwestern corner of Unit I; and along the northwestern boundary of Unit I. Volatile organic compound degradation in the deep groundwater zone was determined to be localized around the Van Grouw Dairy South Well, the landfill's former supply well at the southwest corner of Unit I, and destroyed wells AG-13 and AG-15. The vertical extent of the VOC plume was determined to extend to the deep zone in the vicinity of the Van Grouw Dairy South Well (screened from 300 feet to 400 feet bgs), destroyed well AG-13 (screened from 153 feet to 360 feet bgs), and possibly in the vicinity of destroyed well AG-15 (screened from 201 feet to 371 feet bgs).

The vertical and lateral extents of inorganic waste constituent releases from Unit I fall within the upper alluvial groundwater zone VOC plume boundaries.

A final engineering feasibility study for a corrective action program was submitted by the Discharger on 14 April 2005. In a 26 May 2005 letter and memorandum, Central Valley Water Board staff, concurred with the Discharger's engineering feasibility study for a corrective action program. The corrective action program consists in part, of four groundwater extraction wells (EW-1 through EW-4) constructed within the upper alluvial groundwater zone along the western Point of Compliance of Unit I where total VOC concentrations of 100 micrograms per liter (µg/l) and above (target zone) were detected. Extracted groundwater treatment consists of air stripping with treated effluent water discharged to a borrow pit north and hydraulically upgradient of Unit I. Additionally, the Discharger proposed monitored natural attenuation of VOCs not captured by the groundwater extraction system and the injection of 3D Microemulsion Hydrogen Release Compound into injection wells along the Unit I southern Point of Compliance to accelerate in-situ biodegradation rates of VOCs in the upper alluvial groundwater zone.

Section 20080(b) of Title 27 allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard liner design. In order to approve an engineered alternative in accordance with Sections 20080(c)(1) or (2) of Title 27, the Discharger was required to demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Section 20080(b) of Title 27 or would be impractical and would not promote attainment of applicable performance standards.

The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design and would cost substantially more than the alternative design.

The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of Section 20310(c) of Title 27, and affords at least equivalent protection against water quality impairment.

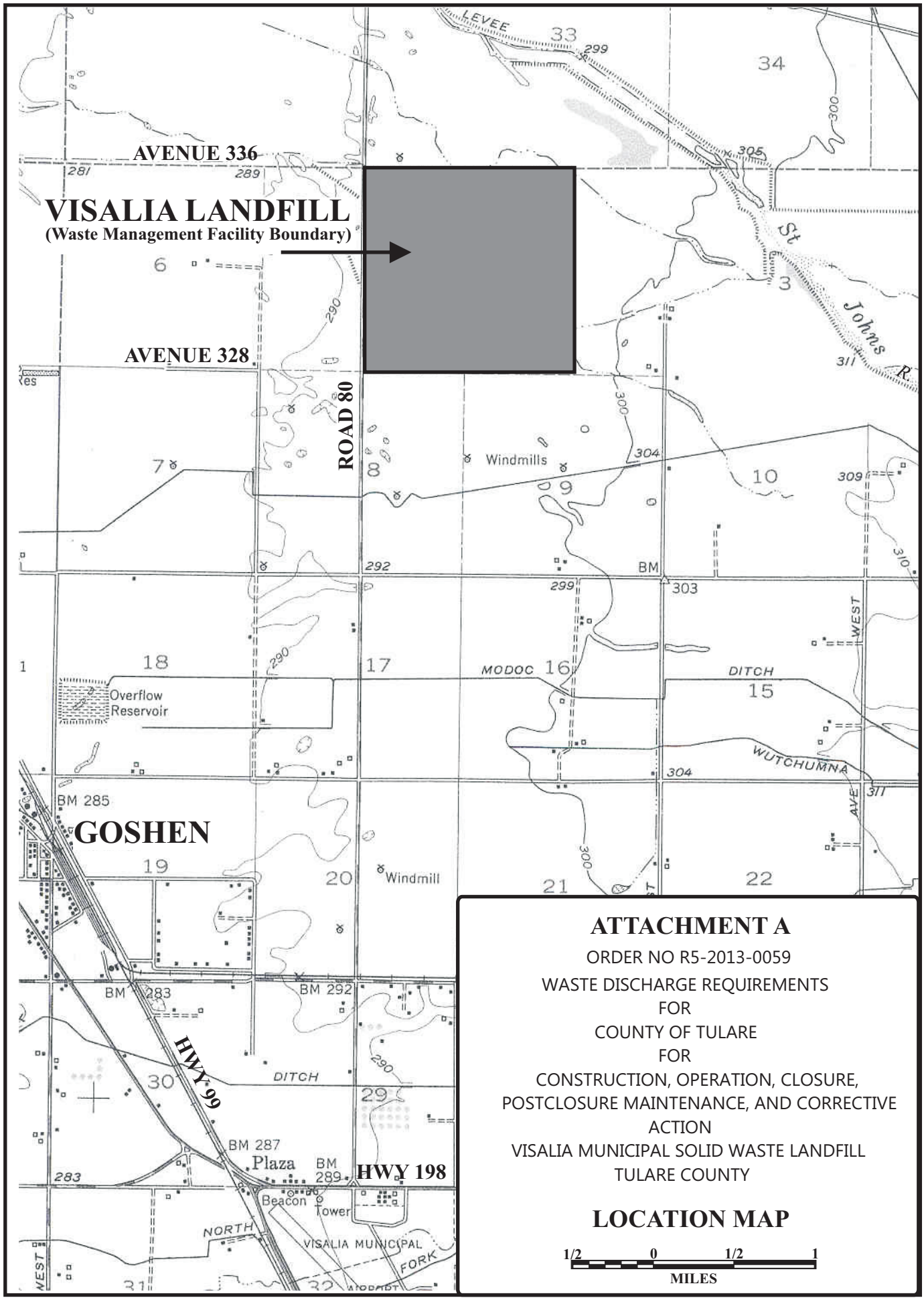
The engineered alternative liner system for the bottom of Unit II consists of, in ascending order: 1) a six-inch thick engineered subgrade that meets specific gradation and compaction criteria; 2) a secondary double non-woven geosynthetic clay liner (GCL); a secondary double-textured 60-mil thick high-density polyethylene (HDPE) geomembrane; 4) a tri-planar geocomposite LCRS (secondary LCRS); 5) a one-foot thick protective clean soil layer; 6) a primary double nonwoven GCL; and 7) a primary double-textured 60-mil HDPE geomembrane. A primary LCRS is placed atop the primary geomembrane consisting of a tri-planar geocomposite drainage layer on which will be placed an HDPE geopipe network nestled in a gravel layer exhibiting a permeability of one centimeter per second or greater and wrapped by a non-woven geotextile filter fabric. A two-foot thick clean soil operations layer is placed over the primary LCRS.

The side slope liners are constructed of the same materials and in the same sequence and manner as the bottom liner system. A two-foot thick operation soil layer is placed over the side slope liner system for protection from refuse and landfill equipment.

A final closure and postclosure maintenance plan for the proposed ET final cover system for Unit I was submitted on 7 May 2012. An addendum to the final closure and postclosure maintenance plan containing additional information was subsequently submitted. The final closure and postclosure maintenance plan proposed, in part, a six and one-half feet thick ET final cover system for Unit I that would meet the equivalency design criteria of a percolation rate of less than ten millimeters per year. In addition, a pan lysimeter is proposed to be constructed beneath the ET final cover system at the top deck of Unit I where storm water percolation will be at a maximum and runoff at a minimum. The pan lysimeter will be used to monitor the performance of the ET final cover. Central Valley Water Board staff determined that the final closure and postclosure maintenance plan is consistent with the provisions of Section 21090 of Title 27 and that the final closure and postclosure maintenance plan was adequate.

The Tulare County Resource Management Agency certified the final environmental impact report for expansion Unit II on 26 September 2001. The Tulare County Resource Management Agency filed a Notice of Determination on 25 September 2001 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and California Environmental Quality Act guidelines (14 CCR Section 15000 et seq.). The Central Valley Water Board considered the environmental impact report and incorporated mitigation measures from the environmental impact report into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality.

This order requires full containment of wastes and does not permit degradation of surface water or groundwater. Further, antidegradation analysis is therefore not needed. The discharge is consistent with the antidegradation provisions of State Water Resources Control Board Resolution 68-16.



ATTACHMENT A

ORDER NO R5-2013-0059

WASTE DISCHARGE REQUIREMENTS

FOR

COUNTY OF TULARE

FOR

CONSTRUCTION, OPERATION, CLOSURE, POSTCLOSURE MAINTENANCE, AND CORRECTIVE ACTION

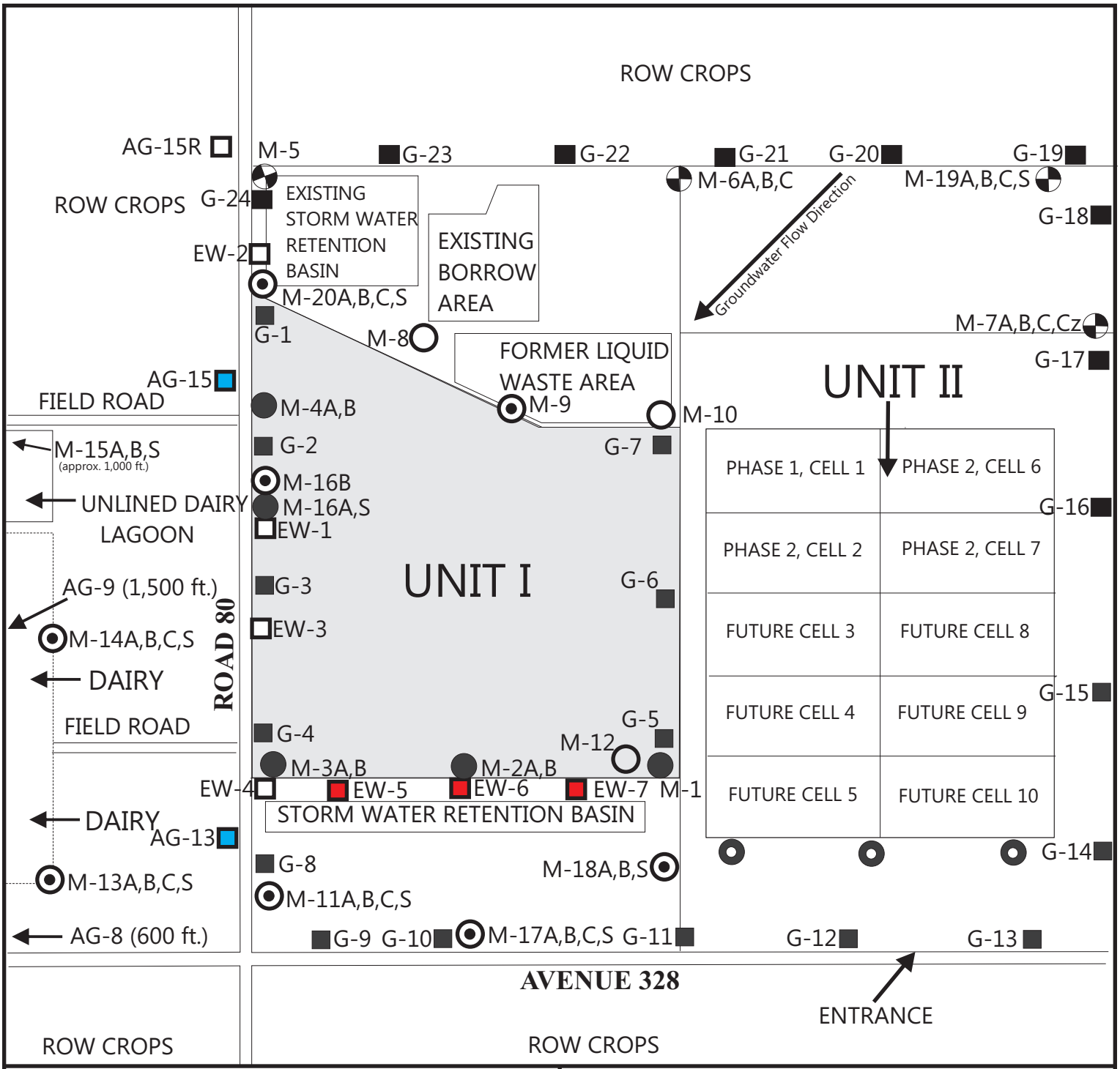
VISALIA MUNICIPAL SOLID WASTE LANDFILL

TULARE COUNTY

LOCATION MAP

1/2 0 1/2 1

MILES



NOT TO SCALE

N

- Detection Monitoring Well
- Proposed Detection Monitoring Well
- Background Monitoring Well
- Corrective Action Monitoring Well
- Other Monitoring Well
- Landfill Gas Monitoring Well
- Groundwater Extraction Well
- Injection Well for Bioremediation
- Abandoned Agricultural Well

ATTACHMENT B

ORDER NO. R5-2013-0059

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF TULARE
FOR
CONSTRUCTION, OPERATION, CLOSURE AND POSTCLOSURE MAINTENACE, AND CORRECTIVE ACTION
VISALIA MUNICIPAL SOLID WASTE LANDFILL
TULARE COUNTY

SITE MAP