

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-0107

WASTE DISCHARGE REQUIREMENTS
FOR
L AND D LANDFILL LIMITED PARTNERSHIP
FRUITRIDGE ROAD LAND COMPANY
L AND D LANDFILL
LIMITED CLASS III LANDFILL
OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
SACRAMENTO COUNTY

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

1. L and D Landfill Limited Partnership (facility owner and operator) and Fruitridge Road Land Company (landowner), hereinafter referred to jointly as “Discharger”, own and operate the L and D Landfill (facility) in Sacramento, in Section 24, T8S, R5E, MDB&M and Section 24, T8N, R6E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a solid waste landfill that accepts limited types of municipal solid waste (MSW), and is regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 (“Title 27”), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (a.k.a, “Subtitle D”) in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The facility area is 177 acres and is located at 8635 Fruitridge Road in Sacramento. The landfill waste disposal units have been excavated from former gravel quarry pits. The landfill area (limits of waste) is approximately 157 acres and no additional landfill units are to be constructed. The landfill units consist of unlined Landfill No. 1 (LF-1) covering about 92 acres (west pit and east pit) and lined Landfill No. 2 (LF-2) expansion area covering about 64 acres, as shown in Attachments B and C, which are incorporated herein and made part of this Order by reference. The facility is comprised of Assessor’s Parcel Numbers (APN) 061-180-004, 061-180-007, 061-180-015, 061-180-016, 061-180-024, and portions of APN 061-180-003, 061-180-017, and 061-180-025. All landfill liner systems for the landfill have been constructed and no additional landfill modules are proposed or approved by this Order.
3. On 23 November 2011, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill, and additional amendments dated 2 March 2012, 21 May 2012, and 15 June 2012 were submitted in response to agency comments. The ROWD/JTD also included an October 2011 *Preliminary Partial Final Closure and Post-Closure Maintenance Plan* that was revised on 22 February 2012, 21 May 2012, and 12 June 2012 in response to agency

comments, and a 23 November 2011 *Solid Waste Facility Permit Revision Application*. The information in the ROWD/JTD has been used in revising these waste discharge requirements (WDRs). The ROWD contains the applicable information required in Title 27. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including:

- a. An engineered alternative final cover system that is contained in the preliminary partial final closure plan.
 - b. A 12-foot increase in the final height of the landfill from 85 feet above mean sea level (MSL) to 97 feet MSL.
4. On 26 April 2002, the Central Valley Water Board issued Order No. R5-2002-0082 in which the landfill waste management units at the facility were classified as a Class III units for the discharge of non-hazardous solid waste and limited types of municipal solid waste including green waste. This Order continues to classify the landfill units as Class III units in accordance with Title 27.
5. The existing landfill units authorized by this Order are described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner¹/LCRS² Components</u>	<u>Unit Classification & Status</u>
LF-1, West Pit	43 acres	Unlined	Class III, Active. Has operations soil stockpiled over portions of it.
LF-1, East Pit	49 acres	Unlined	Class III, Active. Last took waste in 1996. Has 10 to 40 feet of operations soil stockpiled over it.
LF-2, Module 1	4.1 acres	One-foot operations layer (shredded tires), geotextile filter layer, 12-inch gravel leachate collection layer, 60-mil high-density poly ethylene (HDPE) geomembrane (80-mil on interior side slopes), geosynthetic clay liner (GCL), foundation layer.	Class III, Active
LF-2, Module 2	10.6 acres	Same as LF-2, Module 1	Class III, Active
LF-2, Module 3	10.2 acres	Same as LF-2, Module 1	Class III, Active
LF-2, Module 4	10.9 acres	Same as LF-2, Module 1	Class III, Active
LF-2, Module 5	11.0 acres	Two-foot operations layer (shredded tires), geotextile filter layer, 12-inch gravel leachate collection layer, 60-mil HDPE geomembrane (80-mil on interior side slopes), primary GCL layer, 12-inch soil layer, secondary	Class III, Active

<u>Unit</u>	<u>Area</u>	<u>Liner¹/LCRS² Components</u>	<u>Unit Classification & Status</u>
		GCL layer, foundation layer.	
LF-2, Module 6	11.8 acres	Same as LF-2, Module 5	Class III, Active
LF-2, Module 7	5.7 acres	Same as LF-2, Module 5	Class III, Active

¹ All liner systems are composite liner systems unless otherwise noted

² LCRS – Leachate collection and removal system. All LF-2 modules drain to one common sump that is located at the southwest corner of LF-2, Module 2.

6. On-site facilities at the L and D Landfill include: the landfill areas, a runoff infiltration pond, a lined storm water pond in west pit landfill area, an active landfill gas extraction system, a landfill gas flare, an air stripper for treatment of impacted groundwater, a construction and demolition (C&D) recycling facility, and a green waste transfer station.

7. 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 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.

8. 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 H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2012-0107 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 H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.

9. 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. Title 27, section 20012 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.

10. The landfill is a former gravel quarry and is subject to the provisions of Government Code section 66758 that prohibits a regional board from permitting a new landfill or lateral expansion of an existing landfill at sites that were used to mine gravel or sand unless the regional board finds that discharges to a new facility or expansion of an existing facility will not pollute or threaten to pollute the waters of the state. In 1996, the Discharger proposed lateral expansion of the landfill into the LF-2 area and requested a variance based on the relatively low threat composition of the waste stream (mostly inert construction and demolition debris), the declining percentage of green waste in the waste stream due to recycling efforts, and the fact that the expansion landfill would be compositely lined. The Central Valley Water Board granted the Discharger's request by issuing WDRs Order 96-177 that included requirements for the composite-lined LF-2 expansion area.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

11. The Discharger proposes to continue to discharge nonhazardous solid waste, including limited types of municipal solid waste. The types of waste (as listed in the 23 November 2011 ROWD) that are allowed to be discharged at the landfill include: construction and demolition debris; paper; concrete; clean dirt; asphalt; green waste; wood; shredded tires; plastic; non-friable asbestos; and miscellaneous materials such as furniture; carpeting; and similar non-petrescible material from commercial refuse collectors, building contractors, and others. Other wastes discharged at the landfill include non-friable asbestos as described in Finding 13, and wastes used as alternative daily cover (ADC) as described in Finding 15. The wastes are discharged to lined and unlined Class III landfill units at the facility. These wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order. The landfill is classified as a "Limited Class III" facility because it is limited to only certain types of MSW wastes as listed in these Findings under "Waste Classification and Unit Classification." The landfill does not accept putrescible MSW other than green waste and the discharge of putrescible MSW other than green waste is prohibited by this Order.

12. Active unlined landfill units at the facility are "existing units" under Title 27 that were permitted before 27 November 1984 and may continue to accept waste in the "Existing Footprint" until ready for closure unless waste receipts do not meet the timeframes and amounts in Title 27, section 21110, or they are required to close sooner to address environmental impacts or other regulatory concerns. The "Existing Footprint" as defined in Title 27, section 20164 is the area that was covered by waste as of the date that the landfill unit became subject to Subtitle D.

13. The Discharger proposes to continue to discharge non-friable asbestos to the landfill units. These wastes are classified as 'hazardous' under California Code of Regulations, title 22 (Title 22). However, these wastes do not pose a threat to groundwater quality and California Health and Safety Code, section 25143.7 permits their disposal in any landfill that has WDRs that specifically permit the discharge, provided that the wastes are handled and disposed of in accordance with applicable statutes and regulations.

14. Title 27, section 20690 allows the use of 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, that 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.
15. The Discharger uses the following materials for ADC: imported recycled soils, construction and demolition inert wastes, shredded tires, material recycling facility unders, processed green material, and geosynthetic fabric. The JTD lists each of these materials as ADC and states that they have been accepted by the Sacramento County Environmental Management Department who is the Local Enforcement Agency (LEA). The JTD also includes ADC placement procedures for each of these ADC materials with the exception of compost materials and sediment/dredge spoils that are not currently used as ADC. The JTD states that additional information will be submitted prior to use of compost materials or sediment/dredge spoils as ADC.
16. Requirements for use of shredded tires as ADC are given under the CalRecycle portion of the Title 27 regulations in section 20690(b)(10). This section of Title 27 requires that shredded tires used as ADC without admixed soil not be applied when there is precipitation or when there is a local forecast of greater than 40% chance of precipitation within 8 hours of application time in the vicinity of the landfill. This Order includes a requirement to enforce Title 27, section 20690(b)(10) since the use of shredded tires as ADC without admixed soil would not "minimize percolation of liquids through the waste" as required in Title 27, section 20705.
17. The Discharger proposes to use water treatment plant sludge as an ADC either alone or blended with soils. The source of the water treatment plant sludge would be local water treatment plants. The sludge consists of materials that are filtered from the raw source water as part of the treatment process prior to distribution to the public drinking water systems. The sludge therefore contains primarily suspended sediments and organic material present in the raw source water and is a soil-like material with properties similar to what would be used as normal daily cover at most landfills. The Discharger submitted sludge samples from Placer County and the City of Folsom water treatment plants for laboratory analysis. The samples were tested for total and extractable metals and the sample from the City of Folsom was additionally analyzed for organic constituents including chlorinated herbicides, extractable petroleum hydrocarbons, organochlorine pesticides, polychlorinated biphenyls, semi-volatile organic compounds, and volatile organic compounds. None of the organic constituents were detected in the City of Folsom sample. Various metals were detected in the totals analyses for the samples, but

only one metal (barium) was detected in the extractable metals analysis for the Placer County sample. Each of the detected metals is included in the water quality protection standard for the landfill contained in the MRP. The proposed use of water treatment plant sludge complies with the requirements of Title 27, section 20705 and it can therefore be used as ADC in compliance with the requirements of this Order.

18. 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. The approved ADC materials should then be listed in the facility's WDRs during the next regular update or revision with information about the Discharger's demonstration. 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 either surface water or groundwater quality (since surface water at the facility is routed to an infiltration pond).
19. The ROWD/JTD does not list ash as a waste proposed to be accepted at the landfill. Fly ash from a cogeneration plant was discharged at the facility prior to a November 2010 Notice of Violation from Central Valley Water Board staff. Ash wastes are not allowed for discharge at the landfill unless the Discharger demonstrates to the satisfaction of Central Valley Water Board staff it is not a designated waste, that the discharge and/or use as ADC at the landfill is in compliance with Title 27, and it is listed in the ROWD/JTD.
20. Title 27, section 20340(g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. This section of Title 27 also references State Water Board Resolution 93-62 regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills. 40 C.F.R. section 258.28 states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the landfill unit and it is designed with a composite liner and an LCRS. Therefore, leachate from composite lined units with an LCRS may be returned to the unit from which they came.
21. From 1 May through 31 October, the Discharger returns leachate to the surface of interior portions of the composite-lined landfill units by applying it to the surface of the units for dust control. From 1 November through 30 April, the Discharger stores the leachate in a tanker truck for offsite disposal at the Sacramento Regional Wastewater Treatment Plant. In the future, the Discharger may also propose to construct a leachate recirculation system to return leachate to the composite-lined LF-2 landfill within the waste mass. Such a proposal would be reviewed and approved by Central Valley Water Board staff to ensure it complies with this Order before it could be implemented. This Order includes requirements for returning leachate back to composite-lined units such that the liquid waste is not exposed to surface water runoff, will not cause instability of the landfill, and

will not seep from the edges of the units. Therefore, leachate used for dust control may only be discharged to the surface of the lined landfill units in interior areas of the composite-lined landfill units where surface water cannot runoff during rainfall events.

22. The Discharger extracts groundwater from several groundwater extraction wells as part of corrective action for groundwater that is impacted with volatile organic compounds (VOCs). The groundwater is routed to an air stripper treatment system where the VOCs are removed, and the treated groundwater is discharged to a 3.5-acre infiltration pond. Landfill gas condensate from the landfill gas extraction system is also routed to the air stripper treatment system, treated, and discharged to the infiltration pond along with the treated groundwater. The monitoring and reporting program includes requirements for sampling and analysis of the treated groundwater to ensure the VOCs are treated to below laboratory detection limits. The infiltration pond also receives all storm water from the site and water from the pond is sometimes used for dust control at the landfill.

SITE DESCRIPTION

23. The landfill is located at the site of a former gravel quarry and the landfill units have been excavated from the former gravel pits at the site. Waste disposal operations in LF-1 began in the west pit area in 1976 and continued into the east pit area in the 1980s and early 1990s and were filled above ground surface elevation. The landfill was expanded into the LF-2 area in 1996 that has liner systems described in Finding 5. None of the landfill areas are yet at final grade and they are therefore all considered to be "active"; however, the east pit area has not received waste since LF-2 became active during 1996.

24. Land uses within 1,000 feet of the facility include industrial and commercial buildings to the north, south, east, and west, and farming to north and east. Other features within 1,000 feet of the facility include electrical transmission lines and railroad tracks. There are approximately 45 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the facility.

25. The site is in an alluvial plain which slopes gently (6 to 8 feet per thousand feet) toward the Sacramento River to the west. The alluvial plain is part of the larger Victor Alluvial Plain. The site is underlain by the Victor Formation, which consists of sands, silts, and clay with lenses of gravel and hardpan. The Victor Formation, which extends throughout most of Sacramento County, ranges from 90 to 150 feet in thickness.

26. There are no known Holocene faults in the landfill area. Based on a site-specific seismic analysis, the controlling maximum probable earthquake (MPE) for the site is a moment of magnitude 7.0 event along the Coast Range-Sierran Block boundary zone at a closest rupture distance of 33 miles from the site and the Sierra Nevada Mountain Range (Bear Mountains and Melones fault zones) approximately 30 miles from the site. It is estimated that a MPE event would produce a peak ground acceleration of 0.115 g at the site.

27. The ROWD states that the average annual precipitation at the facility is 18 inches, the mean annual pan evaporation is 46.1 inches, and the 100-year, 24-hour precipitation event for the facility is 4.09 inches.
28. The ROWD states that the waste management facility is not within a 100-year floodplain based on a 1996 floodplain map.
29. The ROWD states that under current operations and under the long-term drainage plan for after the landfill is closed, that storm water runoff is and will be prevented from leaving the site by a perimeter drainage system that conducts all runoff to a 3.5-acre infiltration pond at the northeast corner of the site. The infiltration pond will ultimately be expanded to approximately 4.9 acres.

SURFACE WATER AND GROUNDWATER CONDITIONS

30. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
31. All surface water drainage from the site is routed to an onsite infiltration pond, and the Discharger states that no surface water from the landfill drains off-site. Drainage from the western portion of the west pit area is temporarily stored in a lined pond located in the western portion of the west pit, and then pumped out to the western perimeter channel that flows to the infiltration pond. The infiltration pond receives storm water runoff flows from the perimeter conveyances and storm water run-on from 30-acres of undeveloped land north of the site per an agreement with the property owner. The infiltration pond was designed based on the Title 27-required 100-year, 24-hour storm event. The pond design also accounts for discharges from the onsite groundwater treatment system, flows from a 100-year wet season, and losses due to evaporation, infiltration, and onsite usage (i.e., dust control). Discharge of surface water drainage from the facility to surface waters of the United States is prohibited by this Order. The MRP requires monitoring of the runoff to the infiltration pond to protect groundwater.
32. Local surface drainage outside of the facility is to Morrison Creek about one-half mile south of the landfill. Morrison Creek is a seasonal tributary to the Sacramento River. The designated beneficial uses of the Sacramento River are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.
33. The first encountered groundwater ranges from about 65 feet to 73 feet below the native ground surface using Fruitridge Road as the reference elevation. Groundwater flow direction is generally from north to south with the lined LF-2 area being upgradient of the unlined LF-1 area. Groundwater elevations range from about -20 feet MSL in upgradient areas of the site to -28 feet MSL in downgradient areas of the site. The capillary fringe is estimated to be about two feet based on soil type. The groundwater table at the site is

influenced by groundwater extraction and recharge associated with corrective action activities described in later Findings below.

34. Based on information submitted by the Discharger in the 1996 ROWD, the highest anticipated groundwater elevation at beneath the unlined landfill LF-1 is about -22 feet MSL. The lowest elevation of wastes in LF-1, which is in the east pit area, is -15 feet MSL. The separation from highest anticipated groundwater and lowest elevation of waste in the unlined area is therefore about 7 feet.
35. Monitoring data indicate background groundwater quality for first encountered groundwater (based on background monitoring wells MW-12, MW-13, and MW-29) has total dissolved solids (TDS) typically ranging between about 250 and 800 milligrams per liter (mg/L).
36. The local groundwater gradient beyond the influence of the extraction wells is about 2.2 feet per 1,000 feet (0.0022) to the southwest. The average groundwater velocity is about 250 feet per year.
37. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

38. The existing groundwater monitoring network for the landfill units includes background wells, detection monitoring wells, and corrective action monitoring wells for both the upper and lower water-bearing zones, as follows:

Background Wells: For both LF-1 and LF-2, the background wells for the upper water-bearing zone are MW-12, MW-13, and MW-29, and the background well for the lower water-bearing zone is MW-14.

Detection Monitoring Wells: For LF-1, monitoring well MW-15 is a detection monitoring wells for the upper water-bearing zone and monitoring wells MW-8, MW-9, and MW-17 are detection monitoring wells for the lower water-bearing zone. All other wells monitoring this unlined landfill unit are currently corrective action monitoring wells due to one or more VOC constituents detected in the wells. For LF-2, the detection monitoring wells are MW-30R and MW-31R; however, MW-30R has VOC impacts so is in corrective action monitoring.

Corrective Action Monitoring Wells: For LF-1, monitoring wells that are in the corrective action program are MW-2A, 4, 5, 16, 18 through 24, and 32 for the upper water-bearing zone and MW-11 for the lower water-bearing zone. For LF-2, monitoring well MW-30R is in corrective action monitoring.

39. The Discharger's detection monitoring program for groundwater at the landfill satisfies the requirements contained in Title 27.
40. The unsaturated zone monitoring system at the landfill consists of a pan lysimeter (LYS-1) beneath the common LCRS sump located in the southwest corner of LF-2, Module 2 and consists of one foot of pea gravel underlain by a 60-mil HDPE geomembrane. No unsaturated zone monitoring is conducted at the unlined landfill modules in LF-1; however, there are perimeter landfill gas probes in the unsaturated zone around LF-1 where monitoring for landfill gas (methane) is conducted and monitoring of the soil-pore gas for contaminants such as VOCs can be conducted.
41. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) 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 Title 27, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
42. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). 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.
43. 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 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.
44. For a naturally occurring constituent of concern, the 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 Title 27, section 20415(e)(8)(A-D); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

45. The Discharger submitted a 27 February 2012 *Revised Water Quality Protection Standard Report* to update the Water Quality Protection Standard (WQPS) for the landfill. The WQPS provides the methods for calculating concentration limits for the monitoring parameters and constituents of concern as required by Title 27. The approved WQPS including the concentration limits and/or data evaluation methods are included in MRP No. R5-2012-0107.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

46. The shallow water-bearing zone has been impacted by volatile organic compounds (VOCs) from the unlined landfill units in LF-1. In 1991, prior to the initiation of groundwater extraction, total VOCs in excess of 80 micrograms per liter (ug/L) (at the highest well) were detected in groundwater at the downgradient perimeter of the landfill, including trichloroethylene (TCE) up to 10 ug/L, tetrachloroethylene (PCE) up to 5 ug/L, 1,1-dichloroethane (1,1-DCA) up to 10 ug/L, 1,2-dichloroethylene (1,2-DCE) up to 55 ug/L, and vinyl chloride up to 8 ug/L.
47. In 1993, the Discharger installed a groundwater extraction and treatment system to help contain the VOC plume and remove VOCs from the groundwater. The system included four shallow extraction wells (MW-2A, 4, 7 and 10) and an air stripper tower with a treatment capacity of 16 gallons per minute (gpm). Subsequent monitoring data, however, indicated that portions of the VOC plume were escaping capture and that the air stripper was not providing reliable treatment. A groundwater flow model indicated the need for higher extraction rates and additional extraction wells.
48. In 1999 through 2000, the Discharger installed seven new extraction wells in the shallow aquifer along the down gradient perimeter of the site (MW-18 through MW-24). Four of these new wells (MW-20, 22, 23, and 24) were replacement extraction wells for MW-2a, 4, 7 and 10, which were not sufficiently screened in the shallow aquifer to sustain higher flow rates. The Discharger also installed a new air stripper treatment system with a higher treatment capacity of 99 gpm to handle the higher extraction rates. Treated groundwater from the air stripper is discharged to the infiltration pond in the northeastern corner of the site that also captures the site's storm water. The Discharger developed an Operation and Maintenance Plan for the air stripper treatment system in 2003. The Discharger has proposed to review the plan annually and update it as necessary with the next planned update during 2012.
49. The facility also has a landfill gas extraction system consisting of an in-fill landfill gas extraction system for removing landfill gas from the unlined landfill units and a perimeter

landfill gas extraction system for controlling the lateral migration of landfill gas at the perimeter of the landfill. These landfill gas extraction systems are as follows:

- a. The in-fill landfill gas extraction system was installed in 2005 and 2007 and extracts landfill gas directly from the unlined LF-1 (east pit and west pit) landfill units and the LF-2 LCRS. This system currently (as of the date of adoption of this Order) includes 14 double-completion extraction wells and 10 single-completion extraction wells in LF-1, and four LCRS laterals in LF-2. The double-completion wells are screened with one well drawing landfill gas from the refuse and one well drawing landfill gas from the unsaturated zone under the landfill. The system is designed to control methane and VOCs within the landfill gas. The landfill gas extraction system is connected to a 2,000 cubic foot per minute (cfm) blower and a landfill gas flare (under the local air permit). Prior to May 2010, the system was connected to a 1,000 cfm blower and a 2,000 pound carbon adsorption unit which is still onsite as a backup for the flare. The landfill gas extraction system is currently operated at an average flow rate of 350 cfm to the flare, and the Discharger states that the well field is tuned to maximize the collection of landfill gas from the refuse and from the vadose zone outside and under the landfill. Condensate from the landfill gas system collected in sumps throughout the system and is routed to the groundwater treatment system to remove VOCs and commingled with treated groundwater effluent for discharge to the infiltration pond.
- b. The perimeter landfill gas system was first installed in the early 1990s as required by the LEA due to methane concentrations that exceeded the regulatory limits. The perimeter extraction system currently includes a total of 29 single-completion extraction wells which are still connected to the extraction system but are now used primarily to monitor gas at the perimeter and little if any vacuum is applied to them. The perimeter system is connected to the in-fill system that goes to the flare.

Landfill gas extraction well locations are shown on Attachment D, which is incorporated herein and made part of this Order by reference. Changes may be made to the landfill gas system in the future to comply with regulatory agency requirements.

50. During 2011, total VOCs in groundwater at the downgradient perimeter of the landfill were detected at concentrations up to 14 ug/L (at MW-20). Comparing with the 1991 concentrations in Finding 46, the highest concentrations at the downgradient perimeter of the landfill during 2011 were: TCE up to 0.38 ug/L, PCE up to 1.2 ug/L, 1,1-DCA up to 1.6 ug/L, 1,2-DCE up to 0.20 ug/L, and vinyl chloride was not detected. Current monitoring data indicate significant reductions in the concentration of these VOCs at the downgradient perimeter of the landfill since corrective action began.
51. Groundwater downgradient from the landfill shows VOC impacts at off-site groundwater monitoring wells MW-16 and MW-32. As of the second half of 2011, detectable concentrations of VOCs included (but were not limited to) TCE at 1.2 ug/L in MW-16 and TCE at 1.1 ug/L, PCE at 1.4 ug/L, and 1,1-DCA at 4.3 ug/L in MW-32. Central Valley Water Board staff noted upon review of the 2011 Annual Monitoring Report that the quarterly groundwater contour and flow direction maps indicated that there may have

been areas along the downgradient perimeter of the landfill where groundwater was not being captured by the groundwater extraction system and that an additional monitoring well or extraction well may be needed at the southeast site boundary.

52. On 1 March 2012, Central Valley Water Board staff issued a letter requiring the Discharger to submit a report by 15 April 2012 discussing steps taken to achieve a higher efficiency of the extraction system and a report by 1 June 2012 with a capture zone analysis for the current groundwater extraction system at both the current extraction rate and at the maximum rate the wells were designed for in order to determine if the system is capturing or is capable of capturing the VOC-impacted groundwater. The Discharger submitted the reports by the required dates showing that all extraction wells had been redeveloped, the pumps had been cleaned or replaced, and that the extraction and treatment system had been cleaned to remove deposits in the piping caused by manganese fouling. The maintenance work resulted in the overall extraction rate increasing from about 64 gpm to about 90 gpm. The 1 June 2012 report also included a capture zone analysis using the MODFLOW computer model that indicated VOC-impacted groundwater could be sufficiently captured at flow rates between 80 and 90 gpm, and that the system should be inspected, cleaned, and maintained if the average overall flow rate falls below 80 gpm. The report further recommended that individual wells receive maintenance when pumping rates fall the following levels:

Well	Minimum Flow Rate ¹
MW-18	13.7 gpm
MW-19	13.5 gpm
MW-20	13.3 gpm
MW-21	7.7 gpm
MW-22	13.4 gpm
MW-23	7.2 gpm
MW-24	7.4 gpm

¹ Minimum flow rate is 85% of the flow achieved after April/May 2012 maintenance.

The 1 June 2012 report also recommended quarterly inspection of all system components and semiannual cleaning of all system components and that an updated Operation and Maintenance (O&M) Plan for the groundwater extraction and treatment system be submitted. This Order requires that the Discharger conduct groundwater extraction and treatment system maintenance and update the O&M Plan in accordance with the recommendations.

53. During 2010, the Discharger replaced former monitoring wells MW-30 and MW-31 with monitoring wells MW-30R and MW-31R due to damage to the wells from landfill operations. These wells were installed as the detection monitoring wells for the lined LF-2 area and are located immediately upgradient from the unlined landfill LF-1 and immediately downgradient from LF-2 (see Attachment B). Monitoring well MW-30R is currently impacted with VOCs. The 2011 data show three VOCs detected at concentrations up to 1.1 ug/L. The source of the VOCs in this well is currently unknown and could be from landfill gas migration from the unlined landfill that is immediately

downgradient from the well. MW-30R is located upgradient from the groundwater extraction wells and groundwater contour maps from 2011 indicate that groundwater at MW-30R flows toward extraction well MW-22.

54. Elevated concentrations of inorganic constituents (TDS, chloride, and sulfate) were detected downgradient of the west pit area of the landfill prior to corrective action activities. More recent data indicate the concentrations of these inorganic constituents are similar to background groundwater concentrations. The concentration of inorganic constituents in the air stripper effluent is typically lower than the average background groundwater concentration. The discharge of air stripper effluent to the infiltration pond will therefore not cause groundwater degradation.
55. Corrective action efforts have reduced the concentration of VOCs in groundwater and the concentrations of inorganic constituents are now similar to background levels at the downgradient perimeter of the landfill. When operated as designed, corrective action has also been effective in controlling the migration of landfill gas at the site perimeter and to groundwater. Pursuant to Title 27, section 20430, corrective action must continue until groundwater throughout the zone affected by the release is returned to background conditions (constituents achieve their respective concentration limits) and the Discharger demonstrates completion of the corrective action program pursuant to Title 27, section 20430(g) to the satisfaction of the Executive Officer.

LINER PERFORMANCE DEMONSTRATION

56. 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, the Central Valley Water Board “should require a more stringent design in a case where it determines that the minimum design will not provide adequate protection to a given body of groundwater.”

In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that “the 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.”

57. The Discharger submitted a liner performance demonstration for landfill modules starting with LF-2, Module 5. The liner performance demonstration was approved by the Central Valley Water Board in the previous WDRs Order No. R5-2002-0082. LF-2, Module 5 has since been constructed as have LF-2, Modules 6 and 7. The demonstration included an evaluation as to the amount of leachate expected to be generated each year and the corresponding hydraulic head on the liner. The evaluation indicated that the maximum

amount of leachate and maximum hydraulic head on the liner would occur during the first year of operation. The evaluation further included calculations as to the amount of expected leakage through the liner based on the average hydraulic head during the first year of operation and an assumption of a one square millimeter pinhole and a one square centimeter defect per acre of liner. The results indicated that there would be no significant groundwater impact from a leachate release under these conditions, but that for larger leaks, such as defect of six inches or greater, could result in significant impacts from a leachate release. To help ensure that any liner leaks would be small, the Discharger proposed to conduct an electronic leak location survey as part of construction quality assurance (CQA). The previous WDRs required the leak survey as part of the liner CQA and also required that the Discharger install an additional clay or GCL layer beneath the single composite liner for additional water quality protection. The WDRs also required that the proposed shredded tire operations layer be increased from one foot to two feet thick to help reduce the potential for liner puncture from landfill equipment during waste filling. The Discharger installed an additional GCL layer beneath the composite liner system and installed a two-foot thick shredded tire operations layer for LF-2, Modules 5, 6, and 7.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

58. On 17 June 1993, the State Water Board adopted Resolution 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 40 Code of Federal Regulations section 258 (a.k.a, Subtitle D). 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. 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.
59. Title 27, section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27, section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080(b)(2).
60. Water Code section 13360(a)(1) allows the Central Valley Water 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.

61. The Discharger proposed liner systems which were designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Board Resolution 93-62 for municipal solid wastes.
62. The Central Valley Water Board approved an engineered alternative liner design for the LF-2 landfill in previous WDR Order 96-177. The approved liner system was constructed in LF-2, Modules 1 through 4 with the components listed in Finding 5. In Order 96-177, the Central Valley Water Board found that the engineered alternative liner design would provide equivalent protection of beneficial uses of groundwater from wastes during operation, closure, and post-closure maintenance periods (compared to the prescriptive liner requirements). All landfill liner systems for the landfill have been constructed and no additional landfill modules are proposed or approved by this Order.
63. The Discharger also proposed and the Central Valley Water Board approved (in previous WDRs Orders 96-177 and R5-2002-0082) an engineered alternative to the minimum five feet of separation between the highest anticipated groundwater level (including capillary rise) and waste (including leachate in the LCRS). The Discharger had estimated that capillary rise during highest anticipated groundwater could come within less than five feet of the bottom of the liner system in certain areas, primarily near the common LCRS sump located at the southwest corner of LF-2, Module 2 where all LF-2 modules drain. LF-2, Modules 1 and 2 were both constructed with a gravel capillary break layer one foot beneath the base of the liner system over the entire area of those modules (except beneath the LCRS sump where the capillary break is 1.5 feet beneath the liner system and just below the pan lysimeter geomembrane and a geotextile cushion) to prevent capillary rise during periods of high groundwater from contacting the base of the liner system. The Discharger also proposed (and previous WDRs required) an additional layer of 60-mil HDPE geomembrane beneath the LCRS sump and leachate collection main for each module to provide additional groundwater protection. All lined modules at the landfill have been constructed with the additional 60-mil HDPE geomembrane beneath the sumps and collection mains.
64. WDRs Order R5-2002-0082 also that required an increase in the thickness of the shredded tire operations layer and an additional layer of GCL beneath the liner system. This liner system design was constructed in LF-2, Modules 5 through 7 with the components listed in Finding 5. Additional details about the liner system designs can be found in previous WDRs Order 96-177 and Order R5-2002-0082. These additional details are not included in the Findings of this Order since the units have already been constructed and no further landfill modules are proposed for construction at the facility.
65. The leachate collection and removal system for LF-2, Modules 1 through 7 consists of a 12-inch layer of gravel. The shredded tire operations layer in these modules provides additional drainage capacity. All modules are sloped at least 0.5 percent to drain to one common LCRS sump in Module 2. The LCRS design maximum flow rate is 115 gpm,

and the maximum anticipated daily leachate flow is 46 gpm. The pump in the LCRS sump has a maximum flow rate of 100 gpm. Leachate from the LCRS sump is pumped either to the sanitary sewer or is used for dust control in the interior areas of the lined landfill units. The LCRS sump is required to be monitored in accordance with the MRP. The Discharger developed an Operation and Maintenance Plan for the LCRS and sump in 2003 that includes plans for the required annual LCRS testing. The Discharger has proposed to review the plan annually and update it as necessary with the next planned update during 2012.

66. 40 C.F.R. part 258.40(a)(2) requires that the depth of fluid on a landfill liner not exceed 30 centimeters (cm). The elevation at which leachate would exceed 30 cm on the LF-2 liner system is -16.25 feet MSL. The Discharger proposed to operate the LCRS such that the elevation of leachate on the liner system is to be maintained below -16.75 feet MSL which provides a 15 centimeter (0.5 foot) buffer. This Order requires that liquid in the LCRS sump for LF-2 be maintained at an elevation below -16.75 feet MSL as proposed by the Discharger, but states that a violation does not occur unless the depth of leachate is above an elevation of -16.25 feet MSL (the depth at which leachate on the liner would exceed 30 cm).

67. In 1996, the Discharger submitted (as part of the ROWD/JTD) a geotechnical evaluation of the foundation soils beneath the landfill and stability analysis pursuant to Title 27, section 21750(f) for the seismic stability of the excavation side slopes, waste mass, bottom liner, and all of the final cover configurations that were being proposed in 1996. The Discharger has proposed a different final cover design in the November 2011 ROWD which is described in later Findings of this Order under "Landfill Closure", including the stability analysis for the proposed final cover. The Discharger's stability analysis includes components to demonstrate the integrity of the landfill foundation and containment systems under both static and dynamic conditions. The stability analysis demonstrates that the structural components of LF-2 will withstand the forces of the Maximum Probable Earthquake (peak ground acceleration of 0.115 g) without failure of the containment systems or environmental controls.

LANDFILL CLOSURE

68. The Discharger submitted an October 2011 (revised 22 February 2012 and 12 June 2012) *Preliminary/Partial Final Closure and Postclosure Maintenance Plan* for closure and post-closure maintenance of all the unlined and composite-lined landfill units at the facility. The Discharger proposes to close the landfill in twelve phases, with the first phase of closure being conducted in 2013 and the final phase of closure being conducted in 2023. The dates are estimates and may change based on a number of factors such as higher or lower than expected waste receipts. The proposed dates of these phases of closure as presented in Table 3 of the preliminary closure plan are as follows:

Closure Phase	Last Waste	Complete Closure
1	30 April 2012	31 October 2013
2	31 October 2013	31 October 2015

Closure Phase	Last Waste	Complete Closure
3	31 December 2014	31 October 2016
4	31 January 2016	31 October 2017
5	31 March 2016	31 October 2017
6	31 August 2016	31 October 2018
7	28 February 2017	31 October 2018
8	30 September 2017	31 October 2019
9	31 January 2019	31 October 2020
10	31 August 2019	31 October 2021
11	30 April 2020	31 October 2021
12	30 June 2021	31 October 2023

Closure phases 1 through 6 correspond to LF-2 and closure phases 7 through 12 correspond to LF-1. The closure phases are also shown on Attachment E, which is incorporated herein and made part of this Order by reference.

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

- a. Two-foot soil foundation layer.
- b. One-foot soil low flow-hydraulic conductivity layer, less than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system.
- c. Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
- d. One-foot soil erosion resistant/vegetative layer.

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

70. The Discharger proposes an engineered alternative final cover for the unlined landfill LF-1 (closure phases 7 through 12) consisting of, in ascending, the following layers:

- a. One-foot soil foundation layer.
- b. A 40-mil linear low-density poly ethylene (LLDPE) geomembrane layer, textured on both sides.
- c. A geocomposite drainage layer (on side slopes steeper than 4H:1V).
- d. One-foot soil erosion resistant soil layer, with vegetation.

71. The Discharger proposes an engineered alternative final cover for the composite-lined landfill LF-2 (closure phases 1 through 6) consisting of, in ascending, the following layers:

- a. One-foot soil foundation layer.
- b. A geosynthetic clay liner (GCL).
- c. A 40-mil LLDPE geomembrane layer, textured on both sides.
- d. A geocomposite drainage layer (on side slopes steeper than 4H:1V).

- e. One-foot soil erosion resistant soil layer, with vegetation (closure phases 1, 2, 3, and 5 will receive a two-foot erosion resistant soil layer, with vegetation).

The proposed landfill final cover profiles are also shown on Attachment F, which is incorporated herein and made part of this Order by reference.

- 72. The Discharger included an infiltration analysis of the proposed engineered alternative final cover systems in Appendix D of the October 2011 (revised 22 February 2012 and 12 June 2012) *Preliminary/Partial Final Closure and Postclosure Maintenance Plan*. The infiltration analysis uses the Hydrologic Evaluation of Landfill Performance (HELP) computer model (model version 3.07) that was developed for USEPA by the US Army Corps of Engineers. The infiltration analysis compares the vertical flow through the engineered alternative final cover systems with the corresponding prescriptive final cover system. The infiltration analysis uses a 30-year simulation period using synthetically generated data for precipitation, temperature, and evapotranspiration based on local weather data. The analysis also assumes good geomembrane placement quality, one 1 millimeter pinhole per acre, and five 1 square centimeter holes per acre. The results of the infiltration analysis for the unlined LF-1 landfill indicate that the engineered alternative final cover will allow infiltration of 1,550 gallons per acre per year compared with 92,753 gallons per acre per year for the corresponding prescriptive cover. The results of the infiltration analysis for the composite-lined LF-2 landfill indicate that the engineered alternative final cover will allow infiltration of 15 gallons per acre per year compared with 75 gallons per acre per year for the corresponding prescriptive cover. In addition, the engineered alternative liners will prevent the need for importing clay soils from offsite to construct the compacted clay components of the prescriptive final cover systems.
- 73. The Discharger has demonstrated that the engineered alternative final cover systems described in Findings 70 and 71 meet or exceed the performance goals of Title 27 and that they are equivalent to or better than the corresponding prescriptive final cover system described in Finding 69.
- 74. Side slopes for the closed landfill will be sloped at 3H:1V or less and the top deck will be sloped a minimum of 3% as required by Title 27. Title 27, section 21090(a) requires closed landfills to be designed with a 15-foot wide bench every 50 vertical feet in height. The tallest portion of the closed landfill will be along the north side of the LF-2 area where the vertical rise from the toe of the slope to the crest (top of the landfill) is about 55 feet. As shown on Attachment E, the side slope steepness in this area is about 5H:1V, and the vertical distance of the side slope is about 50 feet at the point where the 5H:1V side slope becomes the flatter top deck. Other areas of the closed landfill are less than 50 feet high from the toe of the slope to the crest. Therefore, no benches have been proposed as part of the closure design; however, a 15-foot wide access road will be included for the closed landfill to access the top deck of the landfill.
- 75. The Discharger performed a slope stability analysis for the proposed final cover that is included in Appendix B of the October 2011 (revised 22 February 2012 and 12 June

2012) *Preliminary/Partial Final Closure and Postclosure Maintenance Plan*. The Discharger performed both static and seismic stability analyses as required by Title 27. For critical sections, the results for veneer stability under static conditions show a factor of safety greater than 1.5 as required by Title 27. Under seismic conditions using the MPE peak ground acceleration of 0.115g, the lowest factor of safety is 1.38. This factor of safety is greater than 1.0 and the Discharger states that no deformation of the final cover will occur. The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.

76. The Discharger submitted a construction quality assurance plan (CQA Plan) for evaluating the construction of the final cover for both LF-1 and LF-2. The CQA Plan is included in Appendix F of the October 2011 *Preliminary/Partial Final Closure and Postclosure Maintenance Plan*, and is entitled *Quality Assurance and Inspection Plan*, including revisions dated 12 June 2012. The CQA Plan provides the construction quality assurance oversight and testing requirements for the closure activities and includes specifications and testing requirements for each layer of the proposed final cover systems. The CQA Plan meets the requirements in Title 27, section 20324.
77. The Discharger submitted a 22 February 2012 *Partial Final Closure Plan* (revised on 16 June 2012) for closure phases 1, 2, 3, and 5 proposing a final cover as described in Finding 71. The plan is located in Appendix H of the *Preliminary/Partial Final Closure and Postclosure Maintenance Plan*. Closure activities are anticipated to begin with Phase 1 in 2013. Closure CQA will be conducted in accordance with the CQA Plan in Appendix F (see Finding 76). The partial final closure plan meets the requirements of Title 27 and is approved by this Order.
78. The Discharger proposes (in section 3.6 of the post-closure maintenance plan) to conduct a photogrammetric survey of the landfill once the entire area of the landfill is closed (LF-1 and LF-2) and to conduct the five-year iso-settlement surveys every five years thereafter. Title 27, section 21090(e)(1) requires an initial survey and the five-year surveys for landfills undergoing incremental closure after each phase of closure. However, Title 27, section 21090(e)(2) requires iso-settlement maps only for closed landfills which the regional board finds are likely to undergo differential settlement of such magnitude as to impair the final cover. Since this landfill is prohibited from accepting putrescible MSW (other than green waste), it is not likely to settle as much as an MSW landfill that takes all types of putrescible waste. Also, requiring an initial survey after each of the proposed closure phases listed in Finding 68 (that occur in a seven year period) for comparison with a survey to be conducted every five years thereafter (beginning five years after the initial survey for the first phase of closure) would be logistically difficult. Therefore, this Order only requires a survey of the final cover following all proposed phases of closure and iso-settlement surveys every five years thereafter as proposed by the Discharger.
79. This Order approves the proposed final covers for the unlined and composite-lined areas of the landfill, approves the Preliminary Partial Final Closure and Post Closure

Maintenance Plan (Findings 68 through 75), approves the CQA Plan (Finding 76), approves the Partial Final Closure Plan for phases 1, 2, 3, and 5 (Finding 77). Any revisions to these plans can be approved by Central Valley Water Board staff provided they meet the requirements of this Order. Construction plans and specifications for each closure phase (including phases 1, 2, 3, and 5) must be submitted for review and approval prior to closure. This Order requires that Partial Final Closure Plans for closure phases after phases 1, 2, 3, and 5 be submitted for review and approval at least 180 days prior to actual closure.

LANDFILL POST-CLOSURE MAINTENANCE

80. The Discharger's October 2011 *Preliminary/Partial Final Closure and Postclosure Maintenance Plan* (and subsequent revisions) includes the plans for post-closure maintenance of LF-1 and LF-2, and is approved per Finding 79. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, groundwater corrective action system, and site security. Post-closure inspection procedures are listed in section 3.4 of the post-closure maintenance plan and are proposed to be performed quarterly. The Discharger must also conduct any post-closure maintenance required by this Order including the MRP and the SPRRs. The completed final cover is required to be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A). Defects must be repaired and tested for adequacy based on the closure CQA Plan which includes a section for final cover repair. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.
81. Once every five years during the post-closure maintenance period after closure of all area of the landfill, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years after all areas of the landfill are closed (see Finding 78 and the MRP).

FINANCIAL ASSURANCES

82. Title 27, sections 21820 and 22206 require 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. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's October 2011

Preliminary/Partial Final Closure and Postclosure Maintenance Plan (and subsequent revisions) includes a cost estimate for landfill closure and a cost estimate for post-closure maintenance. The closure cost estimate is a lump sum estimate for the cost to close the entire landfill area (LF-1 and LF-2). The total amount of the closure cost estimate in 2011 dollars is \$8,909,500. The amount of the cost estimate for post-closure maintenance in 2011 dollars is \$3,648,000. As of March 2012, the balance of the combined closure and post-closure maintenance fund was \$6,249,890 and consists of a trust fund. The minimum amounts required for the closure and post-closure maintenance funds are given in Title 27, section 22225 and are based on the permitted capacity, capacity filled, and capacity remaining for the landfill. As of March 2012, California Department of Resources Recycling and Recovery (CalRecycle) financial assurances staff reported that the landfill is above the minimum requirement. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the minimum amounts required by Title 27, section 22225.

83. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 6 September 2002 cost estimate totaling \$1,339,800 for corrective action of all known or reasonably foreseeable releases that was approved by the Executive Officer on 10 October 2002. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation. As of 2011, the balance of the corrective action fund was \$2,289,241 according to financial assurance staff at CalRecycle.
84. Title 27, sections 22101 and 22102 require a non-water release corrective action cost estimate. The Discharger submitted an 11 May 2012 cost estimate that included a site-specific cost estimate pursuant to Title 27, sections 22101(b)(2) and 22102. The Discharger's site-specific estimate included costs for releases associated with seismic induced slope failure, failure due to excessive precipitation, and fire. The highest of the costs estimates for these events was \$310,560 for seismic induced slope failure of a section of the steepest portion of the final cover. Title 27, section 22221(b) requires the Discharger to demonstrate financial responsibility for the greater of the cost estimates for the water release and non-water release corrective action costs. The greater of these is the water release cost estimate in Finding 83, above.

CEQA AND OTHER CONSIDERATIONS

85. On 25 April 1996, Sacramento County certified the final negative declaration for the expansion of the landfill facility for LF-2 in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (Title 14, section 15000 et seq.). The negative declaration proposed mitigation measures for potential environmental impacts to water quality due and the Central Valley Water Board considered these potential impacts and provided requirements in previous WDRs 96-177 in order to protect water quality in accordance with regulations now contained in

Title 27. Previous WDRs Order R5-2002-0082 provided additional liner requirements for LF-2, Modules 5 through 7 constructed after 2002.

86. On 19 July 2012, the Sacramento County Environmental Management Department (Local Enforcement Agency [LEA]) adopted a Negative Declaration for the proposed 12-foot vertical expansion of the landfill in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) and CEQA guidelines (Title 14, section 15000 et seq.). On 25 July 2012, the LEA transmitted the permit package to CalRecycle for a revised Solid Waste Facilities Permit that included the changes from the amended JTD.

87. This order implements:

- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*;
- b. The prescriptive standards and performance goals of 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.
- 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.

88. Based on the threat and complexity of the discharge, the facility is determined to be classified 2-B as defined below:

- a. Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."
- 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."

89. 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 discharge 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.

90. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2012-0107" 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

91. 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.

92. 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.

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

94. 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 No. R5-2002-0082 is rescinded except for purposes of enforcement, and that L and D Landfill Limited Partnership and Fruitridge Road Land Company, their 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 discharge of putrescible wastes other than those listed under the Waste Classification and Unit Classification section in the Findings of this Order is prohibited.
3. The discharge of surface water drainage from the facility to surface waters of the United States is prohibited.
4. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge the wastes listed or allowed under the Waste Classification and Unit Classification section in the Findings of this Order.
2. The Discharger may not use any material as alternative daily cover (ADC) that is not listed as approved ADC in the Findings of these WDRs unless and until the Discharger has demonstrated that it meets the requirements in Title 27, section 20705, and the Discharger has received approval that it may begin using the material as ADC.
3. The Discharger shall use approved ADC 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 ADC is not a threat to surface water quality and the demonstration has been approved. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
4. The Discharger shall not apply shredded tires as ADC without admixed soil when there is precipitation or when there is a local forecast of greater than 40% chance of precipitation within 8 hours of application time in the vicinity of the landfill [pursuant to Title 27, section 20690(b)(10)].
5. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control and the Central Valley Water Board.
6. Leachate may be returned only to LF-2, Modules 1 through 7 in accordance with Standard Discharge Specifications D.2 through D.4 of the SPRRs. Leachate used for

dust control may only be applied to interior areas of LF-2, Modules 1 through 7 that cannot drain to surface water outside of the modules, and may only be applied to these interior surface areas for dust control from 1 May to 31 October.

7. The concentration of VOCs and other non-naturally occurring organic compounds in the air stripper effluent discharge to the infiltration pond shall be non-detect. The method detection limit for VOC analysis shall not exceed 0.5 ug/L or the lowest detection limit for a VOC using EPA Method 8260B. See Monitoring and Reporting Program No. R5-2012-0107 for required air stripper effluent monitoring and reporting.
8. The Discharger shall implement, and update as necessary, a periodic load-checking program to ensure that unauthorized wastes are not discharged to the landfills. A copy of this program shall be kept at the facility office.
9. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. The Discharger shall operate the sump pump in the LF-2 LCRS sump such that the liquid elevation is maintained at an elevation below -16.75 feet MSL and shall be in violation of this specification if the liquid elevation is above -16.25 feet MSL (the depth at which liquid on the liner system exceeds 30 centimeters).
2. The infiltration pond shall be designed, constructed, and operated to retain the total volume of precipitation from a wet season with a 100-year return period.
3. Freeboard of at least two feet shall be maintained in the infiltration pond at all times.
4. The infiltration pond, including associated facilities, shall be operated and maintained in accordance with the currently-approved O&M Plan for the infiltration pond.
5. The groundwater treatment system, including associated facilities, shall be operated and maintained in accordance with the currently-approved O&M Plan for the groundwater treatment system.
6. The Discharger shall inspect all components of the groundwater extraction and treatment system at least quarterly and shall clean all system components at least semiannually. Additionally, the system shall be inspected and cleaned if the average weekly flow rate falls below 80 gpm, and individual extraction wells shall be inspected, cleaned, and maintained if the average weekly flow rates fall below those shown in Finding 52.
7. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated January 2012 which are part of this Order.

D. CONSTRUCTION SPECIFICATIONS

1. All landfill liner systems at the landfill have already been constructed as described in the Findings of this Order. The Discharger shall not construct new liner systems for landfilling in any other areas of the facility without Central Valley Water Board approval in revised WDRs. Closure construction specifications are given in section E below.
2. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
3. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least two years prior to proposed closure of any portion of the landfill in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the SPRRs.
2. The Discharger shall close landfill units with a final cover as listed in Finding 70 for LF-1 and Finding 71 for LF-2.
3. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order.
4. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
5. The Discharger shall install an active landfill gas extraction system for the closed landfill unit during landfill closure, and landfill gas shall be extracted from closed landfill units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.
6. The Discharger shall seal the edges of the final cover for LF-2 by connecting the cover geomembrane to the liner geomembrane.
7. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.
8. The Discharger shall ensure that the vegetative/erosion resistant layer 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 landfill during the period the vegetation is being established.

9. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Finding 82, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June 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 preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The PCPCMP 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 post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in 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 83. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June 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 dated January 2012 which are attached hereto and made part of this Order by reference.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2012-0107, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2012-0107, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2012-0107, and the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
4. The concentrations of the constituents of concern 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 MRP No. R5-2012-0107.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2012-0107 and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
6. The Discharger shall continuously operate the groundwater extraction and treatment system and the in-fill landfill gas extraction system in LF-1 for corrective action of releases of VOCs to groundwater until groundwater throughout the zone affected by the release is returned to background conditions (constituents achieve their respective concentration limits) pursuant to Title 27, section 20430, and the Discharger demonstrates completion of the corrective action program pursuant to Title 27, section 20430(g) to the satisfaction of the Executive Officer
7. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP No. R5-2012-0107 and the SPRRs dated January 2012 which are part of this Order,

and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.

2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP No. R5-2012-0107, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated January 2012, which are attached hereto and made part of this Order by reference.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
6. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
7. By **1 November 2012**, the Discharger shall submit an updated Operation and Maintenance Plan for the groundwater extraction and treatment system that complies with the requirements of this Order and the MRP including the frequency of system monitoring, maintenance, inspections, and a list of components in the system.
8. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs dated January 2012 which are part of this Order.

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 4 October 2012.

Original signed by

PAMELA C. CREEDON, Executive Officer

WLB

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2012-0107
FOR
L AND D LANDFILL LIMITED PARTNERSHIP
FRUITRIDGE ROAD LAND COMPANY
L AND D LANDFILL
LIMITED CLASS III LANDFILL
OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
SACRAMENTO COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, and 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 (WDRs) Order No. R5-2012-0107, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. 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 Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone in accordance with 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 10 January 2003 *Site Specific Sampling and Analysis Plan* and the 11 February 2003 *Addendum to the Sampling and Analysis Plan* (hereafter "Sample Collection and Analysis Plan") or any revised sample collection and analysis plan approved by Central Valley Water Board staff, 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. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through VI.

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

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Monitoring, Seep Monitoring, and LCRS Testing
A.4	Surface Water Monitoring
A.5	Facility Monitoring
A.6	Solid Waste Monitoring
A.7	Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. 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:

Upper Water-Bearing Zone Network:

<u>Well</u>	<u>Status</u>	<u>Units Being Monitored</u>
MW-12	Background	LF-1 and LF-2
MW-13	Background	LF-1 and LF-2
MW-29	Background	LF-1 and LF-2
MW-30R	Corrective Action	LF-2
MW-31R	Detection	LF-2
MW-2A	Corrective Action	LF-1
MW-4	Corrective Action	LF-1
MW-5	Corrective Action	LF-1
MW-15	Detection	LF-1
MW-16	Corrective Action	LF-1
MW-18	Corrective Action (E) ¹	LF-1
MW-19	Corrective Action (E)	LF-1
MW-20	Corrective Action (E)	LF-1
MW-21	Corrective Action (E)	LF-1
MW-22	Corrective Action (E)	LF-1
MW-23	Corrective Action (E)	LF-1
MW-24	Corrective Action (E)	LF-1
MW-32	Corrective Action	LF-1

¹ (E) = Groundwater Extraction Well (monitoring and extraction)

Lower Water-Bearing Zone Network:

<u>Well</u>	<u>Status</u>	<u>Units Being Monitored</u>
MW-14	Background	LF-1 and LF-2
MW-8	Detection	LF-1
MW-9	Detection	LF-1
MW-11	Corrective Action	LF-1
MW-17	Detection	LF-1

Any monitoring wells installed after the adoption of this Order shall become part of the monitoring network and are subject to the requirements of this Order.

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 shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in 2007 and shall be monitored again in **2012**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15). Additional monitoring wells MW-3, 6, 7, 10, 25, 26, and 28 at the facility are not currently required to be sampled, but shall be included in the quarterly groundwater elevation measurements.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27.

The current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Units Being Monitored</u>
LYS-1	Detection	LF-2, Modules 1 through 7

Unsaturated zone samples shall be collected from pan lysimeter LYS-1 and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies (the pan lysimeter need only be sampled when liquid is present). The LYS-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. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning again in **2012**.

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 monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

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

Leachate Monitoring: The Discharger shall operate and maintain leachate collection and removal system (LCRS) 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 LCRS leachate sump monitoring points are:

<u>Mon Pt.</u>	<u>Unit Where Sump is Located</u>
LCRS	LF-2, Module 2 (Sump for Modules 1 through 7)

The LCRS sump 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 sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present. All LCRS sump samples shall be analyzed for the 5-year COCs specified in Table III every five years, beginning again in **2012**.

Seep Monitoring: Leachate that seeps to the surface from a landfill 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 LCRS Testing: The LCRS shall be tested annually pursuant to Title 27, section 20340(d) 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. **Surface Water Monitoring**

The Discharger shall operate a surface water detection monitoring system for the landfill to monitor the water in the infiltration pond (to where all facility surface water flows) for contaminants that could percolate to groundwater. The surface water monitoring program is not required to meet the applicable requirements of Title 27 since there is no discharge to surface waters of the United States and such discharge is prohibited by this Order.

The surface water monitoring point for the landfill is:

<u>Mon Pt.</u>	<u>Status</u>
Infiltration Pond	Detection Monitoring to Protect Underlying Groundwater

The Discharger shall measure the freeboard level in the infiltration pond at least monthly. For surface water detection monitoring, a sample shall be collected from a representative location within the infiltration pond and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the 5-year COCs specified in Table IV every five years, beginning again in **2012**.

5. **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 problems 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 landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problem 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 After Closure**

After closure of the entire landfill facility (last phase of closure is completed), the Discharger shall conduct an initial survey and then conduct iso-settlement surveys every five years thereafter. Five-year surveys shall be used to produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP. The next iso-settlement survey shall be conducted five years after the final phase of closure is completed (closure is currently predicted to be completed in 2023 which would make the first iso-settlement survey in 2028).

d. **Standard Observations**

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

<u>Landfill Unit Type</u>	<u>Frequency</u>	<u>Season</u>
Active	Weekly	Wet: 1 October to 30 April
Active	Monthly	Dry: 1 May to 30 September
Inactive/Closed	Monthly	Wet: 1 October to 30 April
Inactive/Closed	Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

- 1) For the landfill units:

- a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions 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 landfill units:
- 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.
- 3) For receiving waters:
- a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 - b) Discoloration and turbidity - description of color, source, and size of affected area.

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

6. Solid Waste Monitoring

The Discharger shall conduct solid waste monitoring as follows:

<u>Parameter</u>	<u>Units</u>	<u>Reporting Frequency</u>
Solid Waste		
Source(s) of material discharged	---	Semi-annually
Results of Load Checking Program ¹	---	Semi-annually
Quantity discharged	cubic yards or tons	Semi-annually
Type of material discharged ²	---	Semi-annually
Minimum discharge elevation	MSL feet	Semi-annually
Capacity of landfill/module remaining	Percent	Annually
Alternate Daily Cover (ADC)		
Quantity discharged	cubic yards or tons	Semi-annually
Type of material discharged	---	Semi-annually

1. The WDRs require that the discharger maintain an updated load checking program.
2. The description should include waste classification (i.e. nonhazardous or inert).

7. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of the Corrective Action Program in accordance with Title 27, section 20430 and this MRP. The Discharger shall operate and maintain the

groundwater extraction and treatment system to remove volatile organic compounds (VOCs) from the groundwater and prevent migration of the plume. Groundwater monitoring wells that are in a corrective action monitoring program shall be monitored in accordance with the groundwater monitoring requirements in Section A.1 of this MRP, except as modified in this section of the MRP. Each corrective action monitoring point (well) listed below shall be monitored **quarterly** for a period of two years beginning in **2013** through **2015** for the parameters listed in Table I of this MRP that have “semiannual” sampling frequency.

The corrective action monitoring points shall be as follows:

Zone	Onsite		Offsite
	Monitoring Only	Monitoring & Groundwater Extraction	Monitoring Only
Upper	MW-2A, 4, 5, 30R	MW-18, 19, 20, 21, 22, 23, 24	MW-16, 32
Lower	MW-11	---	---

Additional wells may be installed or added as corrective action monitoring points after the adoption of this Order.

Groundwater Extraction and Treatment System. The Discharger shall record and monitor the following for the groundwater extraction and treatment system:

- a. Hours of operation for the treatment system and any periods of non-operation for each extraction well.
- b. Volume of groundwater extracted and average weekly flow rate for each extraction well.
- c. Volume of groundwater extracted and average weekly flow rate for the groundwater treatment system.
- d. Monitoring of the **influent** and **effluent** of the groundwater treatment system for VOCs by EPA Method 8260B (to be conducted **quarterly**).
- e. Quarterly and semiannual inspection and maintenance of the groundwater extraction and treatment system as required by the WDRs and the most recently approved Operation and Maintenance Plan.
- f. A description of the maintenance work conducted on each well and the treatment system during the monitoring period.

Landfill Gas Extraction Systems. The Discharger shall record and monitor the following for the landfill gas extraction systems (in-fill and perimeter systems):

- a. Hours of operation and percentage of time operating since the last monitoring period for each system.
- b. Average flow rate for the system since the last monitoring period for each system.
- c. Highest, lowest, and average methane and carbon dioxide concentrations since the last monitoring period for each system.
- d. Methane concentration for each landfill gas extraction well and probe (minimum semi-annually).

The Discharger shall report all recorded data and conduct a comprehensive evaluation of the effectiveness of the Corrective Action Program in the Annual Monitoring Report required in Section B.2.j) of this MRP.

B. REPORTING

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

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
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	At Closure Completion and Every Five Years
B.7	Financial Assurances Report	31 December	1 June

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2012-0107 and the Standard Provisions and Reporting Requirements (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 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 post-closure 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 **1 August** and **1 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 Sample Collection and Analysis 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 aquifer, 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 [Title 27, section 20415(e)(15)].
 - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water. 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 IV 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. Surface water reporting shall include the monthly freeboard measurements in the infiltration pond required in Section A.4 of this MRP.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter (or 5-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 exceedances of a concentration limit.

- g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.
 - h) A summary of all Standard Observations for the reporting period required in Section A.5.d of this MRP.
 - i) A summary of the solid waste monitoring program from Section A.6 of this MRP.
 - j) The results of the corrective action monitoring from Section A.7 of this MRP including a discussion about the performance, inspection, and maintenance of the groundwater extraction and treatment system and results of the influent and effluent monitoring. The discussion shall include a comparison of the effluent concentration of VOCs with the effluent limits in the discharge specifications in section B of the WDRs, including any exceedances and actions taken to prevent recurrence of any exceedances.
 - k) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure 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 **1 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 semi-annual 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 5-year COC event was performed, than these 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, including 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 [Title 27, section 20420(h)], 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 map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the year in which each discrete landfill module will be filled and the percent capacity remaining in each landfill or module from Section A.6 of this MRP.
- g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
- h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
- i) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
- j) A comprehensive discussion of the Corrective Action Program required by this MRP under Section A.7, including the following:
 - i. Cumulative tabulated data for the corrective action system including extracted volumes and flow rates for each groundwater extraction well; hours of operation and average flow rate for the groundwater treatment system and landfill gas extraction systems; high, low and average methane concentration for each landfill gas extraction system; methane concentrations for each landfill gas extraction well and probe; and the monitoring data for the influent and effluent for the groundwater treatment system.
 - ii. Trend analysis for VOCs and any inorganic constituents detected above the concentration limits in each corrective action well.

- iii. Whether the groundwater extraction system is containing and preventing further migration of the VOC plume.
 - iv. Whether any portion of the VOC plume has spread since the previous monitoring period.
 - v. Any adjustments made to the pumping rates or any proposals to add additional extraction wells.
 - vi. Whether any monitoring wells have been impacted by any new VOCs.
 - vii. Whether the concentration of any VOCs, including total VOCs, has increased, decreased, or remained constant.
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 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.5.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfill:** The Discharger shall conduct a survey and submit an iso-settlement map for the closed landfill every

five years pursuant to Title 27, section 21090(e) in accordance with Section A.5.c of this MRP, above.

7. **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.3 of the WDRs.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, 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 Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water Quality Protection Standard 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 a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- 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 constituents of concern that are detected in 10% or greater of the background data (naturally-occurring

constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).

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

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard. The Discharger's Water Quality Protection Standard is provided under "Concentration Limits" in Section C.2.4 of this MRP, below.

The Water Quality Protection Standard shall be updated **annually** in the Annual Monitoring Report using new and historical monitoring data.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through V for the specified monitored medium.

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2007 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2012**.

4. Concentration Limits

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

- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

The Discharger submitted a 27 February 2012 *Revised Water Quality Protection Standard Report* (WQPS Report). The revised Water Quality Protection Standard (WQPS) represents a substantial update to the detection monitoring program at the landfill and closely follows the procedures in the 2009 USEPA guidance document *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*. This MRP approves the proposed WQPS and summarizes the methods the Discharger shall use for analyzing the data and calculating concentration limits. Details of the approved methods are included in the 27 February 2012 WPQS Report.

The Discharger shall use interwell statistics for naturally-occurring constituents. The background data set shall be current and historical data from the designated background monitoring wells MW-12, MW-13, and MW-29 for both LF-1 and LF-2. Non-naturally occurring constituents shall have a concentration limit set at the laboratory method detection limit. For wells in the corrective action program, the concentration limits represent cleanup levels to achieve background concentrations. The WQPS shall be updated annually and the updated concentration limits shall be included in the Annual Monitoring Reports.

Outlier Testing: Prior to statistical analysis, the Discharger shall perform outlier testing on the background data using Rosner's Test for data sets with 25 or greater data points and Dixon's Test for data sets with less than 25 data points and remove outliers from the data set for purposes of statistical analysis.

Normality Testing: The Discharger shall then test the data (with outliers removed) for normality using the Shapiro-Wilks Test for data sets with 50 or fewer background data points and using the Shapiro-Francia Test for data sets with greater than 50 background data points.

Non-Normally Distributed Data Sets: For non-normally distributed background data sets with at least 19 background data points, the Discharger shall calculate the concentration limit using the non-parametric tolerance interval method with 95% coverage and 95% confidence. The concentration limit in this case shall be the upper tolerance limit except in the case of pH where both upper and lower tolerance limits shall be calculated. At least 19 background data points are needed for this method in order to produce at least 95% confidence and 95% coverage and to prevent an unacceptable level of false-positives.

Normally Distributed Data Sets: For normally distributed or transformed normally distributed background data sets, the Discharger shall calculate the concentration limit using the parametric tolerance interval method with 95% confidence. The concentration limit shall be the upper tolerance limit except in the case of pH where both the upper and lower tolerance limits shall be calculated.

Other Data Sets and Non-Naturally Occurring Constituents : Methods for non-naturally occurring constituents, non-detect background data, data with fewer than 19 data points, and non-normally distributed data sets are also required. The Discharger shall calculate concentration limits using the following methods that include each of the possible constituent or data instances:

Constituent/Detection/Data Distribution	Method for Conc. Limit
Non-naturally occurring constituents ¹	Method Detection Limit
Naturally occurring ² , non-detect in all background data	Practical Quantitation Limit (PQL)
Naturally occurring, less than 19 data points, at least one detection in background	Greater of the PQL and maximum background concentration
Naturally occurring, at least 19 data points, greater than 50% non-detects in background data (but at least one detection in background)	Greater of the PQL and maximum background concentration
Naturally occurring, at least 19 data points, fewer than 50% non-detects in background data, data set not normally distributed	Non-parametric tolerance interval method at 95% coverage and 95% confidence
Naturally occurring, at least 19 data points, data set normally distributed	Parametric interwell tolerance interval method with 95% coverage and 95% confidence

¹ Non-naturally occurring include: VOCs, SVOCs, Pesticides, Herbicides, PCBs.

² Naturally occurring include: inorganic constituents, TDS, EC, metals, pH.

The concentration limits calculated in the WQPS Report using the above methods are presented in the tables below, but may change based on new background data as the concentration limits are required to be updated annually with the updated limits to be presented in the Annual Monitoring Report.

Parameter	Current Concentration Limit	Basis
pH	6.64-7.75	Parametric Tolerance Limit
Electrical Conductivity	1,270 umhos/cm	Parametric Tolerance Limit
Total Dissolved Solids	1,020 mg/L	Non-Parametric Tolerance Limit
Chloride	69 mg/L	Non-Parametric Tolerance Limit
Nitrate as N	17 mg/L	Non-Parametric Tolerance Limit
Bicarbonate	750 mg/L	Non-Parametric Tolerance Limit
Sulfate	81 mg/L	Non-Parametric Tolerance Limit
Calcium	157 m/L	Non-Parametric Tolerance Limit
Magnesium	79 mg/L	Non-Parametric Tolerance Limit

Parameter	Current Concentration Limit	Basis
Sodium	40 mg/L	Non-Parametric Tolerance Limit
Potassium	7.8 mg/L	Non-Parametric Tolerance Limit
Carbonate	70 mg/L	Highest of PQL and Max Concentration
Aluminum	1,900 ug/L	Highest of PQL and Max Concentration
Antimony	110 ug/L	Highest of PQL and Max Concentration
Arsenic	48 ug/L	Highest of PQL and Max Concentration
Barium	300 ug/L	Highest of PQL and Max Concentration
Beryllium	10 ug/L	Highest of PQL and Max Concentration
Cadmium	10 ug/L	PQL
Chromium	10 ug/L	PQL
Cobalt	50 ug/L	PQL
Copper	10 ug/L	PQL
Cyanide	7 ug/L	Highest of PQL and Max Concentration
Iron	1,400 ug/L	Highest of PQL and Max Concentration
Lead	16 ug/L	Highest of PQL and Max Concentration
Manganese	160 ug/L	Highest of PQL and Max Concentration
Mercury	0.20 ug/L	PQL
Nickel	5.2 ug/L	PQL
Selenium	4 ug/L	Highest of PQL and Max Concentration
Silver	10 ug/L	PQL
Sulfide	20 ug/L	PQL
Thallium	2.0 ug/L	PQL
Tin	50 ug/L	PQL
Vandium	10 ug/L	PQL
Zinc	37 ug/L	PQL
Total Organic Carbon	New 5-yr COC	To be proposed after 2012 sampling
Volatile Organic Compounds	MDL	Non-Statistical
Semi-Volatile Organic Compounds	MDL	Non-Statistical
Organophosphorus Compounds	MDL	Non-Statistical
Chlorophenoxy Herbicides	MDL	Non-Statistical

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 waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit. The following are monitoring locations at the point of compliance:

<u>Cell or Module</u>	<u>Point of Compliance Monitoring Wells</u>
LF-1	MW-2A, 4, 5, 18, 19, 20, 21, 22, 23, 24 for the upper water-bearing zone
LF-1	MW-8, 9, and 11 for lower water-bearing zone
LF-2	MW-30R and MW-31R

The point of compliance for surface water monitoring is the infiltration pond.

7. Compliance Period

The compliance period for each waste management 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 waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium are listed in Section A 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 if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. 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: _____
PAMELA C. CREEDON, Executive Officer

_____ 4 October 2012
(Date)

wlb

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual ¹	Semiannual
Electrical Conductivity	umhos/cm	Semiannual ¹	Semiannual
pH	pH units	Semiannual ¹	Semiannual
Turbidity	Turbidity units	Semiannual ¹	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ²	Semiannual ¹	Semiannual
Chloride	mg/L	Semiannual ¹	Semiannual
Carbonate	mg/L	Semiannual ¹	Semiannual
Bicarbonate	mg/L	Semiannual ¹	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual ¹	Semiannual
Sulfate	mg/L	Semiannual ¹	Semiannual
Calcium	mg/L	Semiannual ¹	Semiannual
Magnesium	mg/L	Semiannual ¹	Semiannual
Potassium	mg/L	Semiannual ¹	Semiannual
Sodium	mg/L	Semiannual ¹	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L ³	Semiannual ¹	Semiannual
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2013
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Corrective action wells MW-2A, 4, 5, 11, 16, 18 through 24, and 30R shall be sampled **quarterly** for two years during 2013 to 2015 as required under Section A.7 of this MRP.

² Milligrams per liter

³ Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

Pan Lysimeter LYS-1¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
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 V)	ug/L	Semiannual	Semiannual
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2013
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Pan lysimeter LYS-1 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, AND LCRS TESTING ³

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Liquid Elevation in Sump ¹	Feet and Hundredths	Daily	Semiannual
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 V)	ug/L	Annually	Annually
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2013
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "
LCRS Testing ³	---	Annually	Annually

¹ Leachate liquid levels in the LF-2 sump shall be measured daily except on weekends or holidays. Leachate in the LCRS 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
SURFACE WATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Field Parameters			
Freeboard in Infiltration Pond	Feet and tenths	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Flow to Waters of U.S.	Yes or No	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Chloride	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 V)	ug/L	Semiannual	Semiannual
5-Year Constituents of Concern (see Table VI)			
Total Organic Carbon	mg/L	5 years	1 February 2013
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Semiannual surface water monitoring is required twice per year when there is water present at the designated surface water monitoring point any time during the reporting period (1 January to 30 June or 1 July to 31 December). Reporting shall include whether there was flow from the facility to waters of the U.S. when the samples were collected.

TABLE V

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-1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC-12)
1,1-Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)
cis-1,2-Dichloroethylene (cis-1,2-Dichloroethene)
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)

TABLE V
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 VI
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

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

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)
o-Dichlorobenzene (1,2-Dichlorobenzene)

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

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

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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VI
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151A

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

Organophosphorus Compounds:

USEPA Method 8141B

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

INFORMATION SHEET

ORDER NO. R5-2012-0107
L AND D LANDFILL LIMITED PARTNERSHIP
FRUITRIDGE ROAD LAND COMPANY
L AND D LANDFILL, LIMITED CLASS III LANDFILL
OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
SACRAMENTO COUNTY

L and D Landfill Limited Partnership (facility owner and operator) and Fruitridge Road Land Company (landowner), hereinafter referred to jointly as “Discharger”, own and operate the L and D Landfill (facility) in Sacramento. The facility area is 177 acres and is located at 8635 Fruitridge Road in Sacramento. The landfill waste disposal units have been excavated from former gravel quarry pits. The landfill area is approximately 147 acres and no additional landfill units are to be constructed. The landfill units consist of unlined Landfill No. 1 (LF-1) covering about 92 acres (west pit and east pit) and lined Landfill No. 2 (LF-2) expansion area covering about 64 acres. The facility is a limited Class III landfill that primarily accepts construction and demolition debris, but also accepts paper, wood, shredded tires, plastic, non-friable asbestos, and similar non-petrescible materials. The landfill also accepts limited amounts of green waste but does not accept other municipal solid wastes. All landfill liner systems for the landfill have been constructed and no additional landfill modules are proposed or approved by this Order.

The landfill is located at the site of a former gravel quarry and the landfill units have been excavated from the former gravel pits at the site. Land uses within 1,000 feet of the facility include industrial and commercial buildings to the north, south, east, and west, and farming to north and east. On-site facilities at the facility include: the landfill areas, a runoff infiltration pond, a lined storm water pond in the east pit landfill area, a lined storm water pond in west pit landfill area, an active landfill gas extraction system, a landfill gas flare, an air stripper for treatment of impacted groundwater, a construction and demolition recycling facility, and a green waste transfer station.

The LF-2 area consists of seven composite-lined modules that drain to a common sump that is located in the southwest corner of Module 2. The composite liner systems for LF-2 Modules 1 through 7 include high-density poly ethylene (HDPE) geomembrane underlain by a geosynthetic clay liner (GCL). The leachate collection and removal system consists of one foot of gravel. LF-2 Modules 5, 6, and 7 include an additional GCL one foot below the primary liner and also include a thicker operations layer (two feet of shredded tires as opposed to the one-foot shredded tire operations layer for Modules 1 through 4). Additional liner system details are included in Finding 5 of the waste discharge requirements (WDRs).

The existing groundwater monitoring network for the landfill consists of three background wells, two detection monitoring wells for the lined LF-2 area, and several detection/corrective action monitoring wells downgradient from the unlined LF-1 landfills. Groundwater beneath and downgradient from the unlined LF-1 landfill is impacted with volatile organic compounds (VOCs). Corrective action began in 1993 and consists of groundwater extraction wells and a landfill gas extraction system. Ground water is extracted from 11 wells at up to a total of 99 gallons per minute total and is treated with an

air stripper and discharged to a percolation pond. Landfill gas is extracted from an in-fill and perimeter extraction system and routed to a landfill gas flare. The in-fill system consists of 14 double-completion extraction wells and 10 single-completion extraction wells in LF-1, and four LCRS laterals in LF-2. The perimeter system consists of 29 single-completion extraction wells.

Corrective action has resulted in significant decreases in the concentrations of VOCs in groundwater at the downgradient perimeter of the landfill; however, VOCs in groundwater at downgradient wells located off-site at monitoring wells MW-16 and MW-32 may require additional corrective action. Central Valley Water Board staff noted upon review of the 2011 Annual Monitoring Report that the quarterly groundwater contour and flow direction maps indicated that there may be areas along the downgradient perimeter of the landfill where groundwater is not being captured by the groundwater extraction system. On 1 March 2012, Central Valley Water Board staff issued a letter requiring the Discharger to submit a report with a capture zone analysis for the current groundwater extraction system at both the current extraction rate and at the maximum rate the wells were designed for in order to determine if the system is capturing or is capable of capturing the VOC-impacted groundwater. The Discharger submitted the reports by the required dates showing that all extraction wells had been redeveloped, the pumps had been cleaned or replaced, and that the extraction and treatment system had been cleaned to remove deposits in the piping caused by manganese fouling. The maintenance work resulted in the overall extraction rate increasing from about 64 gpm to about 90 gpm. The 1 June 2012 report also included a capture zone analysis using the MODFLOW computer model that indicated VOC-impacted groundwater could be sufficiently captured at a flow rates between 80 and 90 gpm, and that the system should be inspected, cleaned, and maintained if the average overall flow rate falls below 80 gpm. The 1 June 2012 report also recommended quarterly inspection of all system components and semiannual cleaning of all system components and that an updated Operation and Maintenance (O&M) Plan for the groundwater extraction and treatment system be submitted. This Order requires that the Discharger conduct groundwater extraction and treatment system maintenance and update the O&M Plan in accordance with the recommendations.

On 23 November 2011, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill, and additional amendments dated 2 March 2012, 21 May 2012, and 15 June 2012 were submitted in response to agency comments. The ROWD/JTD also included an October 2011 *Preliminary Partial Final Closure and Post-Closure Maintenance Plan* that was revised on 22 February 2012, 21 May 2012, and 12 June 2012 in response to agency comments, and a 23 November 2011 *Solid Waste Facility Permit Revision Application*. The information in the ROWD/JTD has been used in revising these waste discharge requirements (WDRs). The ROWD contains the applicable information required in Title 27. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including:

- a. An engineered alternative final cover system that is contained in the preliminary partial final closure plan.

- b. A 12-foot increase in the final height of the landfill from 85 feet above mean sea level (MSL) to 97 feet MSL.

The engineered alternative final cover for the unlined landfill LF-1 (closure phases 7 through 12) consisting of, in ascending, the following layers:

- a. One-foot soil foundation layer.
- b. A 40-mil linear low-density poly ethylene (LLDPE) geomembrane layer, textured on both sides.
- c. A geocomposite drainage layer (on side slopes steeper than 4H:1V).
- d. One-foot soil erosion resistant soil layer, with vegetation.

The engineered alternative final cover for the composite-lined landfill LF-2 (closure phases 1 through 6) consisting of, in ascending, the following layers:

- a. One-foot soil foundation layer.
- b. A geosynthetic clay liner (GCL).
- c. A 40-mil LLDPE geomembrane layer, textured on both sides.
- d. A geocomposite drainage layer (on side slopes steeper than 4H:1V).
- e. One-foot soil erosion resistant soil layer, with vegetation (closure phases 1, 2, 3, and 5 will receive a two-foot erosion resistant soil layer, with vegetation).

The Discharger included an infiltration analysis of the proposed engineered alternative final cover systems in Appendix D of the October 2011 (revised 22 February 2012 and 12 June 2012) *Preliminary/Partial Final Closure and Postclosure Maintenance Plan*. The infiltration analysis uses the Hydrologic Evaluation of Landfill Performance (HELP) computer model (model version 3.07) that was developed for USEPA by the US Army Corps of Engineers. The infiltration analysis compares the vertical flow through the engineered alternative final cover systems with the corresponding prescriptive final cover system. The infiltration analysis uses a 30-year simulation period using synthetically generated data for precipitation, temperature, and evapotranspiration based on local weather data. The analysis also assumes good geomembrane placement quality, one 1 millimeter pinhole per acre, and five 1 square centimeter holes per acre. The results of the infiltration analysis for the unlined LF-1 landfill indicate that the engineered alternative final cover will allow infiltration of 1,550 gallons per acre compared with 92,753 gallons per acre for the corresponding prescriptive cover. The results of the infiltration analysis for the composite-lined LF-2 landfill indicate that the engineered alternative final cover will allow infiltration of 15 gallons per acre compared with 75 gallons per acre for the corresponding prescriptive cover. In addition, the engineered alternative liners will prevent the need for importing clay soils from offsite to construct the compacted clay components of the prescriptive final cover systems. The Discharger has demonstrated that the engineered alternative final cover meets or exceeds the performance goals of Title 27 and that it is equivalent to or better than the prescriptive standard.

The Discharger performed a slope stability analysis for the proposed final cover that is included in Appendix B of the *Preliminary/Partial Final Closure and Postclosure Maintenance Plan*. The Discharger performed both static and seismic stability analyses

as required by Title 27. For critical sections, the results for veneer stability under static conditions show a factor of safety greater than 1.5 as required by Title 27. Under seismic conditions using the MPE peak ground acceleration of 0.115g, the lowest factor of safety is 1.38. This factor of safety is greater than 1.0 and the Discharger states that no deformation of the final cover will occur. The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.

Storm water runoff from the landfill is retained onsite (is routed to an infiltration pond). Local surface drainage is toward Morrison Creek about one-half mile south of the landfill. Morrison Creek is a seasonal tributary to the Sacramento River.

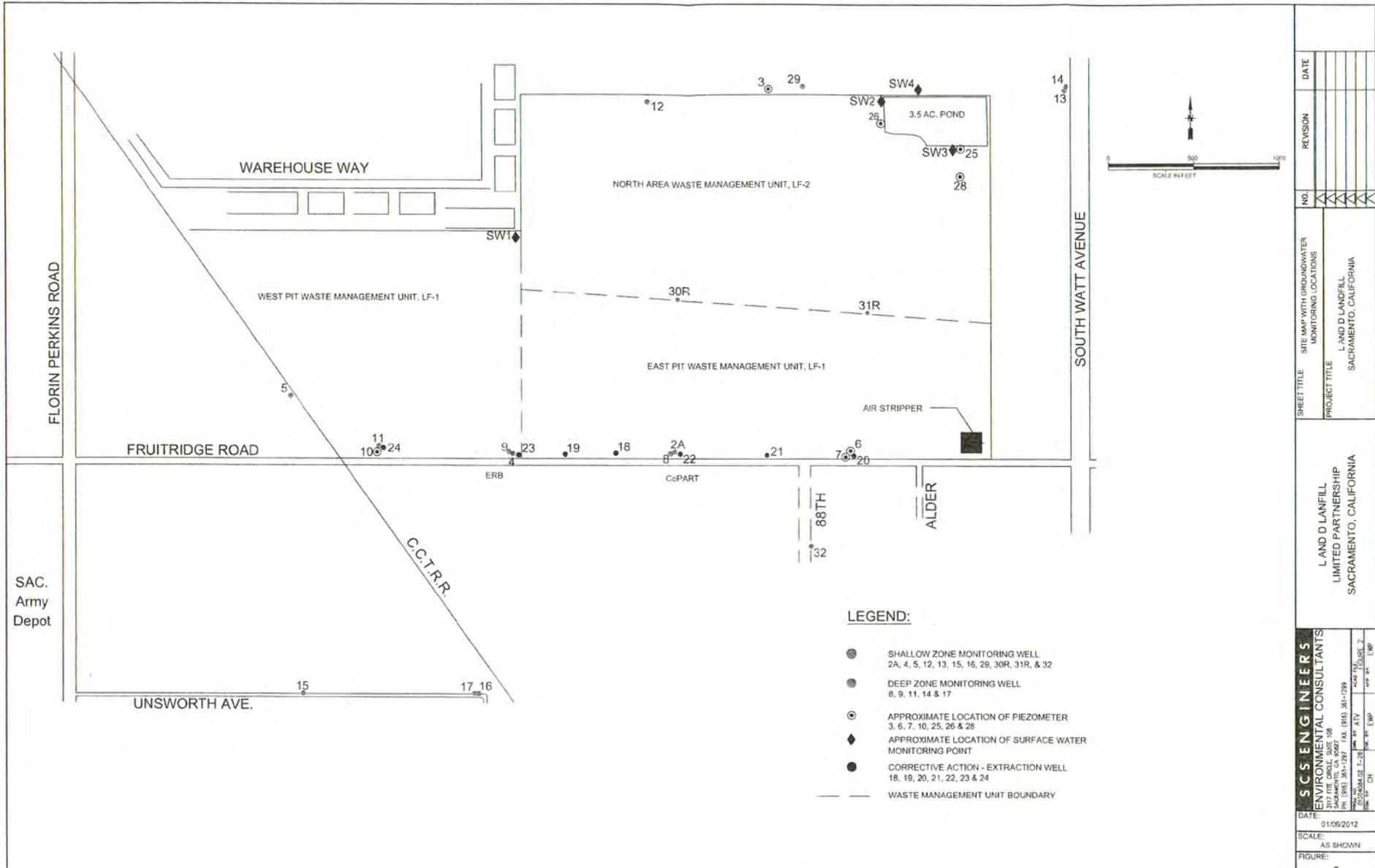
WLB



Drawing Reference:
SCS Engineers,
Preliminary/Partial Final
Closure Plan, Figure 1

SITE LOCATION MAP
L and D Landfill Limited Partnership
L and D Landfill
Sacramento County





NO.	REVISION	DATE

SHEET TITLE: SITE MAP WITH GROUNDWATER MONITORING LOCATIONS
 PROJECT TITLE: L AND D LANDFILL SACRAMENTO, CALIFORNIA

L AND D LANDFILL LIMITED PARTNERSHIP
 SACRAMENTO, CALIFORNIA

SCS ENGINEERS
 ENVIRONMENTAL CONSULTANTS
 1050 J ST. SACRAMENTO, CA 95811
 PH: (916) 361-1297 FAX: (916) 361-1299
 WWW: WWW.SCS-ENG.COM
 DATE: 01/05/2012
 SCALE: AS SHOWN
 FIGURE: 2



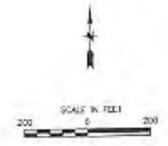
Drawing Reference:
 SCS Engineers, Second Semi-Annual and Annual 2011 Monitoring Report, Figure 2

SITE MAP AND MONITORING WELL LOCATIONS
 L and D Landfill Limited Partnership
 L and D Landfill
 Sacramento County

LEGEND:

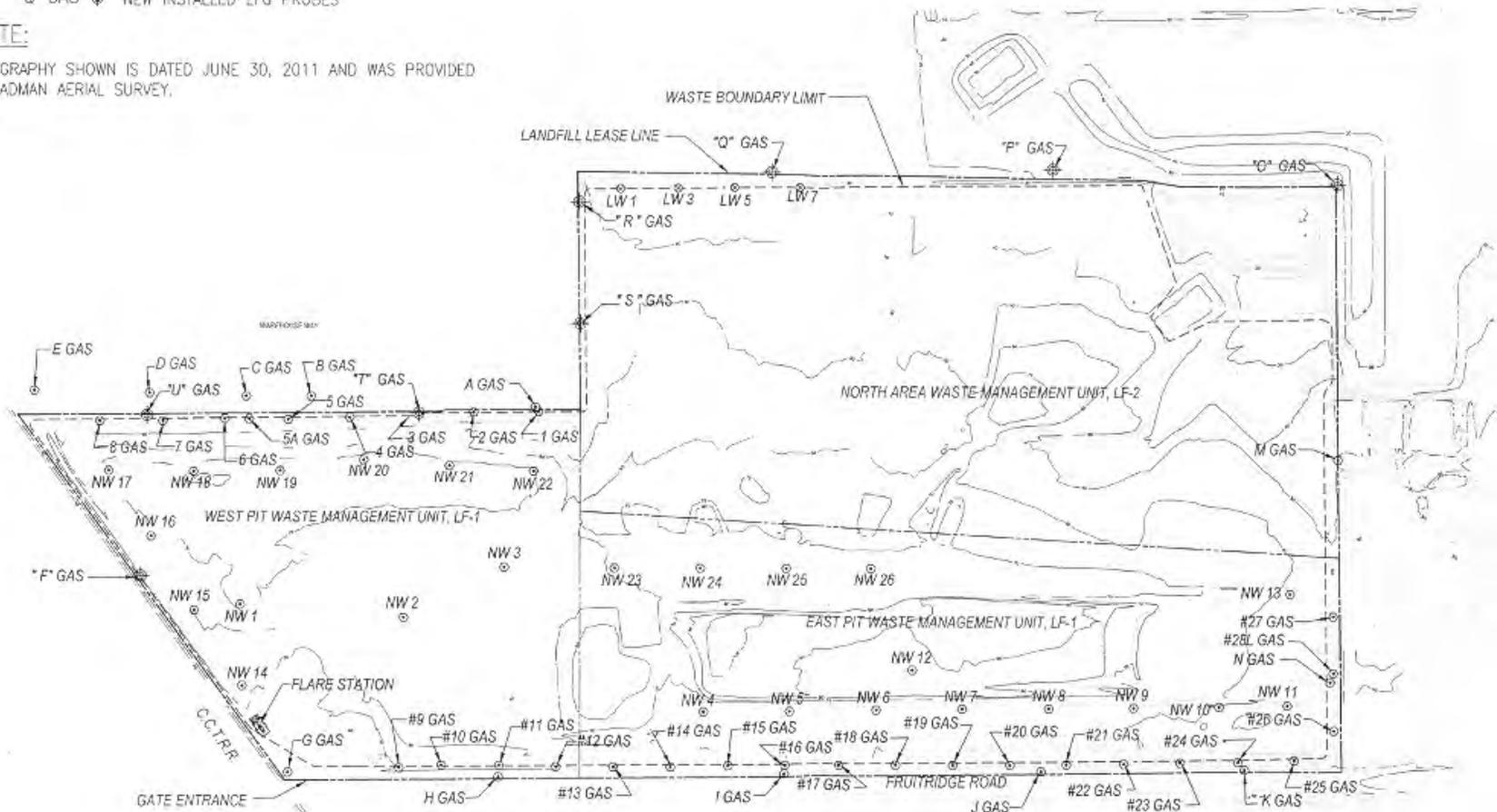
- APPROXIMATE PROPERTY LEASE BOUNDARY
- APPROXIMATE WASTE BOUNDARY
- A GAS ⊙ EXISTING LFG PROBES
- NW/LW GAS ⊙ EXISTING LFG EXTRACTION WELLS
- Q GAS ⊕ NEW INSTALLED LFG PROBES

DRAWING IS HALF-SIZE
AT 11X17



NOTE:

TOPOGRAPHY SHOWN IS DATED JUNE 30, 2011 AND WAS PROVIDED BY RADMAN AERIAL SURVEY.



Drawing Reference:
SCS Engineers, Preliminary/Partial Final
Closure Plan, Figure 10

LANDFILL GAS WELL & PROBE LOCATIONS
L and D Landfill Limited Partnership
L and D Landfill
Sacramento County

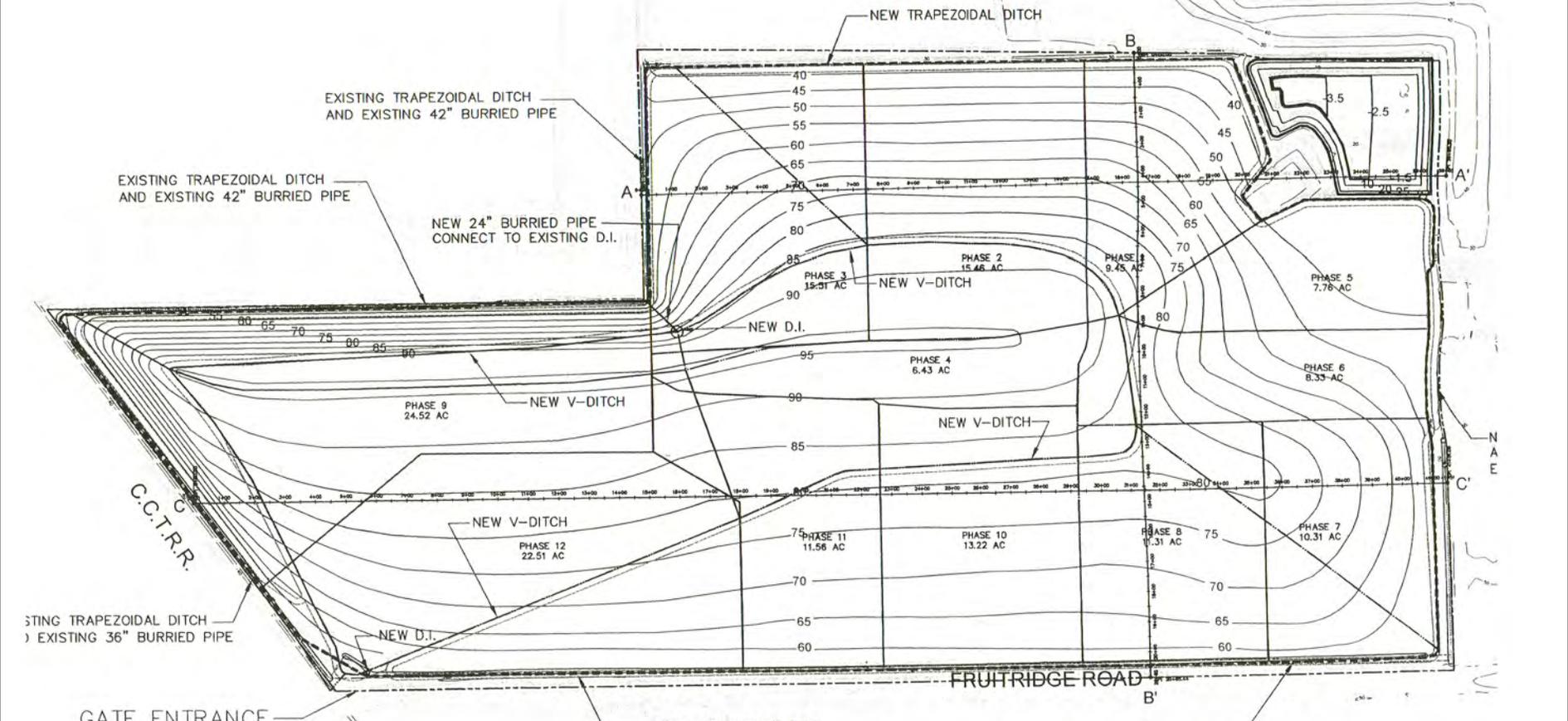
LEGEND:

- APPROXIMATE PROPERTY LEASE BOUNDARY
- APPROXIMATE WASTE BOUNDARY
- TOPO OF VEGETATIVE LAYER

DRAWING IS HALF
AT 11X17

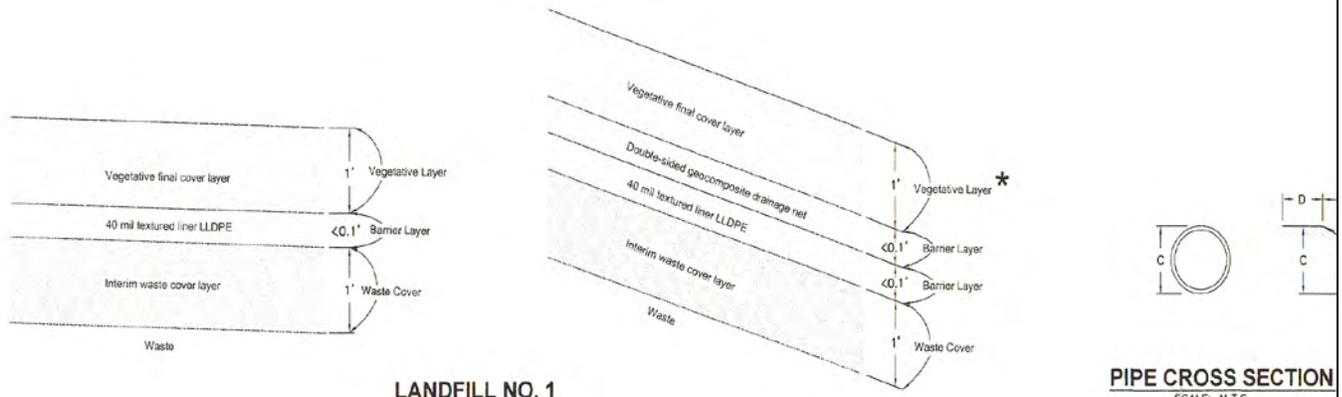
NOTE:

TOPOGRAPHY SHOWN IS DATED JUNE 30, 2011 AND WAS PROVIDED BY RADMAN AERIAL SURVEY.



Drawing Reference:
SCS Engineers, Preliminary/Partial Final
Closure Plan, Figure 6

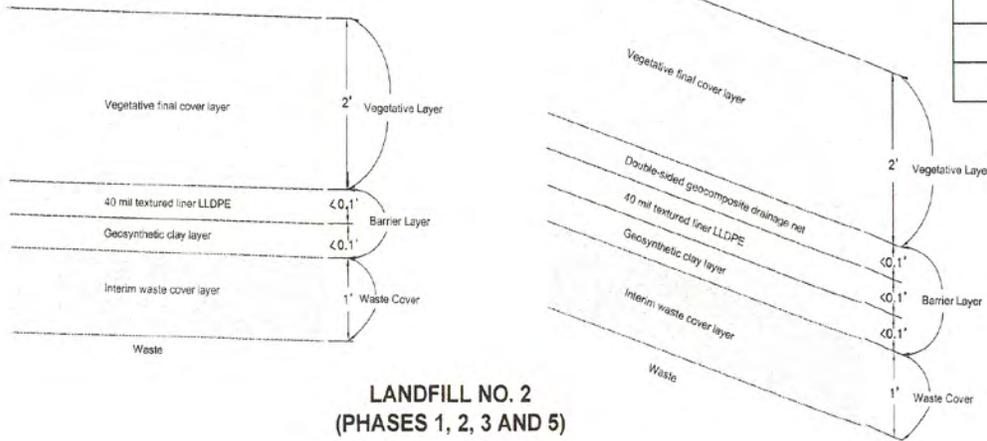
LANDFILL CLOSURE PHASES
L and D Landfill Limited Partnership
L and D Landfill
Sacramento County



LANDFILL NO. 1

PIPE CROSS SECTION
SCALE: N.T.S.

TYPE	TOP WIDTH (ft.) (A)	BOTTOM WIDTH (ft.) (B)	D
2R	N/A	N/A	
1R	N/A	N/A	
P1	N/A	N/A	
5R	9'-0"	0'-0"	
4R	9'-0"	0'-0"	
3R	N/A	N/A	
P2	N/A	N/A	
1W	13'-0"	3'-0"	



LANDFILL NO. 2
(PHASES 1, 2, 3 AND 5)

(PHASES 4 AND 6 HAVE 1 FOOT VEGETATIVE LAYER)

* GEOCOMPOSITE ON 4:1 SLOPES AND STEEPER

Drawing Reference:
SCS Engineers,
Preliminary/Partial Final
Closure Plan, Figure 13

FINAL COVER PROFILES
L and D Landfill Limited Partnership
L and D Landfill
Sacramento County

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
NONHAZARDOUS SOLID WASTE DISCHARGES
REGULATED BY SUBTITLE D AND/OR TITLE 27
(40 C.F.R. section 258 and Title 27, § 20005 et seq.)

JANUARY 2012

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to nonhazardous solid waste disposal sites that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq., and municipal solid waste (MSW) landfills that are subject to the Federal Subtitle D regulations contained in 40 Code of Federal Regulations section 258 (hereafter, "Subtitle D" or "40 C.F.R. § 258.XX") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Subtitle D regulations are only applicable to MSW landfills and therefore any requirements in these SPRRs that are referenced as coming from Subtitle D are not applicable to non-MSW waste management units such as Class II surface impoundments, Class II waste piles, and non-MSW landfill units. All Subtitle D requirements in these SPRRs are referenced with "[40 C.F.R. § 258.XX]" after the requirement.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular landfill facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. TERMS AND CONDITIONS

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or

- other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]
2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
 3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
 - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or
 - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
 4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].
8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

C. STANDARD PROHIBITIONS

1. The discharge of liquid or semi-solid waste (waste containing less than 50 percent solids) is prohibited, except for the following when proposed in the ROWD/JTD and approved by this Order:
 - a. Dewatered sewage or water treatment sludge as described in Title 27, section 20220(c) provided it is discharged above a composite liner with a leachate collection and removal system (LCRS) [Title 27, § 20200(d)(3)].
 - b. Leachate and/or landfill gas condensate that is returned to the composite-lined waste management unit (with an LCRS) from which it came [Title 27, § 20340(g) and 40 C.F.R. § 258.28].
2. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
 - a. require a higher level of containment than provided by the unit; or
 - b. are 'restricted wastes'; or
 - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].

3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste to a closed landfill unit is prohibited.
6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. STANDARD DISCHARGE SPECIFICATIONS

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate and landfill gas condensate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].
3. The discharge of leachate or landfill gas condensate is restricted to those portions of a waste management unit that has a composite liner system and LCRS meeting the Federal Subtitle D requirements [40 C.F.R. § 258.28].
4. Leachate and condensate returned to a composite-lined landfill unit (when approved by this Order) shall be discharged and managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS.
5. Any discharge of waste outside the portion of the landfill that was already covered with waste as of the landfill unit's respective Federal Deadline constitutes a "lateral expansion" and requires the installation of an approved composite liner system and LCRS [40 C.F.R. § 258.40(b)].

6. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
7. The discharge shall remain within the designated disposal area at all times.
8. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. STANDARD FACILITY SPECIFICATIONS

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. Interim cover is daily and intermediate cover [Title 27, § 20750(a)]. Interim cover over wastes discharged to a landfill shall be designed and constructed to minimize percolation of liquids through the wastes [Title 27, § 20705(b)].
4. Intermediate cover consisting of compacted earthen material of at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within **180 days** [Title 27, § 20700(a)].
5. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.
6. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
7. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
8. The Discharger shall limit water used for facility maintenance within landfill areas to the minimum amount necessary for dust control and construction.
9. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 97-03-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new landfill modules that include the following:
 - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, any proposed landfill gas monitoring and extraction points, and access to the LCRS for required annual testing.
 - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
 - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
 - d. Information about the seismic design of the proposed new module (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
 - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
 - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, section 21760(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].
4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class III landfill units shall be designed to withstand the maximum probable earthquake and Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period [Title 27, § 21750(f)(5)].
10. New waste management units and expansions of existing units shall not be located on a known Holocene fault [Title 27, § 20260(d)].
11. Liners shall be designed and constructed to contain the fluid, including landfill gas, waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].
13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].

14. A test pad for each barrier layer and final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control landfill gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [Title 27, § 20324(i)(1)].
16. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
17. The Discharger shall propose an electronic leak location survey of the top liner for any new landfill module in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
18. Leachate collection and removal systems are required for Class II landfills and surface impoundments, MSW landfills, and for Class III landfills which have a liner or which accept sewage or water treatment sludge [Title 27, § 20340(a)].
19. All new landfill units or lateral expansions of existing units that require a LCRS shall have a blanket-type LCRS that covers the bottom of the unit and extends as far up the sides as possible. The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit [Title 27, § 20340(e)].
20. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
21. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the landfill unit and during the post-closure maintenance period.
22. The LCRS shall be designed to maintain the depth of fluid over any portion of the LCRS of no greater than 30 cm [40 C.F.R. § 258.40(a)(2)], excluding the leachate sump. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].

23. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
24. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
25. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.
26. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new lined cell or module, construction of a final cover, or any other construction that requires Central Valley Water Board staff approval under this Order.
27. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new lined landfill module. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
28. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.
29. Prior to placement of waste in a new landfill unit, the Discharger shall monitor any pan lysimeter for the unit that has received enough rainfall to flood the LCRS sump. If liquid is detected in the pan lysimeter, the Discharger shall verify that the liquid is not from a leak in the primary liner system before waste can be accepted to the new module.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least **two years** prior to the anticipated date of closure [Title 27, § 21780(d)(1)].

2. The Discharger shall notify the Central Valley Water Board in writing that a landfill unit or portion of a unit is to be closed either at the same time that the California Department of Resources Recycling and Recovery (CalRecycle) is notified or **180 days** prior to beginning any final closure activities, whichever is sooner [Title 27, § 21710(c)(5)(A)]. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations [Title 27, § 21710(c)(5)(C)].
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 [40 C.F.R. § 258.60(f)].
4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer [40 C.F.R. § 258.60(g)].
5. The Discharger shall carry out both mandatory closure and normal closure of a waste management unit or a portion of a unit in accordance with a closure and post-closure maintenance plan approved by the Central Valley Water Board [Title 27, § 20950(a)(1)] through the issuance of closure waste discharge requirements.
6. The Discharger shall notify the Central Valley Water Board that a preliminary closure and post-closure maintenance plan has been prepared and placed in the operating record by the date of initial receipt of waste at any new MSW landfill unit or lateral expansion of any existing unit [40 C.F.R. § 258.60(d)]. This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.
7. In addition to the applicable provisions of Title 27, the preliminary closure and/or the post-closure maintenance plans for MSW landfill units shall include the following:
 - a. A description of the steps necessary to close all MSW landfill units at any point during their active life in accordance with the cover design requirements [40 C.F.R. § 258.60(c)];
 - b. An estimate of the largest area of the landfill unit(s) ever requiring a final cover at any time during the active life of the unit(s) [40 C.F.R. § 258.60(c)(2)];
 - c. An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility [40 C.F.R. § 258.60(c)(3)]; and
 - d. A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. section 258.60 [40 C.F.R. § 258.60(c)(4)].

8. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, federal requirements for a MSW facility, land use of the closed unit, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
9. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
10. The final cover of closed landfills shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
11. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
12. All final cover designs shall include a minimum 1-foot thick erosion resistant layer [Title 27, § 21090(a)(3)(A)].
13. The Discharger shall close the landfill with minimum 15-foot wide benches every 50 vertical feet [Title 27, § 21090(a)].
14. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one and designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required in Title 27, section 21750(f)(5) [Title 27, § 21090(a)].
15. For any portions of the final cover installed after July 18, 1997, for which the Central Valley Water Board has not approved a slope and foundation stability report on or before that date, the Discharger shall meet the requirements of Title 27, section 21750(f)(5) [Title 27, § 21090(a)(6)].
16. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
17. The Discharger shall design storm water conveyance systems for closed Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for closed Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
18. Closed landfill units shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment

structures, and monitoring facilities can be determined throughout the post-closure maintenance period [Title 27, § 20950(d)].

19. Following closure of any MSW landfill units, the Discharger shall notify the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the post-closure maintenance plan [Title 27, § 20515(a)(4) and §21170, and 40 C.F.R. § 258.60(i)].
20. Construction or repair of the final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
21. The Discharger shall incorporate into the closure and post-closure maintenance plan a cover-integrity monitoring and maintenance program which includes at least the following: a periodic leak search, periodic identification of other problem areas, prompt cover repair, and vegetation maintenance [Title 27, § 21090(a)(4)].
22. The Discharger shall complete a final cover survey upon completion of closure activities for that portion of the landfill. The final cover surveys shall include an initial survey and map [Title 27, § 21090(e)(1). Every **five years**, the Discharger shall conduct a survey of the closed landfill cover and submit an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer [Title 27, § 21090(e)(2)].
23. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].
25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

26. The Discharger shall conduct a periodic leak search to monitor of the integrity of the final cover in accordance with the schedule in the approved final post-closure maintenance plan [Title 27, § 21090(a)(4)(A)].
27. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, areas damaged by equipment operations, and localized areas identified in the required five-year iso-settlement survey [Title 27, § 21090(a)(4)(B)].
28. The Discharger shall repair the cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].
29. Throughout the post-closure maintenance period, the Discharger shall maintain the structural integrity and effectiveness of all containment structures, maintain the final cover as necessary to correct the effects of settlement and other adverse factors, continue to operate the LCRS as long as leachate is generated and detected, maintain the monitoring systems, prevent erosion and related damage of the final cover due to drainage, and protect and maintain surveyed monuments [Title 27, § 21090(c)].
30. Post-closure maintenance shall be conducted for a minimum period of **30 years** or until the waste no longer poses a threat to environmental quality, whichever is greater [Title 27, § 21180(a) and Title 27, § 21900(a)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

1. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified unit in accordance with an approved closure and post-closure maintenance plan [Title 27, § 20950(f) and § 22207(a)].
2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b), § 22221, and § 22222].

I. STANDARD MONITORING SPECIFICATIONS

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4) and 40 C.F.R. § 258.53(b)].

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].
3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].
4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].
5. A Detection Monitoring Program for a new landfill facility shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].
6. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).
7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;
 - c. Sample analytical methods and procedures;
 - d. Sample quality assurance/quality control (QA/QC) procedures;
 - e. Chain of Custody control; and
 - f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

If required by the Executive Officer, the Discharger shall modify the Sample Collection and Analysis Plan to conform with this Order.

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner

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

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries.** In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)]. Groundwater samples shall not be field-filtered prior to laboratory analysis [40 C.F.R. § 258.53(b)]. Groundwater samples needing filtering (e.g., samples to be analyzed for dissolved metals) shall be filtered by the laboratory prior to analysis.
19. Groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction [40 C.F.R. § 258.53(d)].
20. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to

design specifications throughout the life of the monitoring program [40 C.F.R. § 258.51(c)(2)]. Monitoring devices that cannot be operated and maintained to perform to design specifications shall be replaced after review and approval of a report (i.e., work plan) for the proposed replacement devices.

21. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
22. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].
23. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
24. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
25. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
26. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405].
27. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].
28. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
29. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of

groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].

30. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
31. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].
32. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
33. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
34. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
35. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
36. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 21415(e)(13)].
37. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
38. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
39. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for

determining “measurably significant” (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].

40. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.
41. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
42. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger’s technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a “trace” detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory’s concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of “ties”.
43. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall

be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).

44. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
45. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:
- a. Standard Monitoring Specification I.46 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
 - b. Standard Monitoring Specification I.47 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.
46. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples.** The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:
- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
 - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
 - 2) The data contains one or more analyte that equals or exceeds its PQL.

b. **Discrete Retest** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)]:

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.46.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:
 - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
 - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
 - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

47. **Verification Procedure for Analytes Detected in 10% or Greater of the Background Samples.** The Discharger shall use either a statistical or non-statistical method pursuant to Title 27, section 20415(e)(8)(E) for all analytes that are detected in 10% or greater of the background samples. The Discharger shall use one of the statistical methods required in Title 27, section 20415(e)(8)(E) unless another method has been proposed by the Discharger in a Water Quality Protection Standard Report (or equivalent report) and approved by the Central Valley Water Board in a Monitoring and Reporting Program pursuant to Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E). The method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds

the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].

b. **Retest Method** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)].

- 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.47.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests (i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.
- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.47.b.1, above and shall:
 - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
 - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
 - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

48. Physical Evidence of a Release. If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

1. Measurably Significant Evidence of a Release Has Been Confirmed. If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:

- a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
- b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].
- c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).
- d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program

necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

- e. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].
- f. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.c is approved (the date is it established), the Discharger shall complete and submit the following:
 - i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
 - ii) **Updated Engineering Feasibility Study.** An updated engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].
 - iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

- g. The Discharger shall (for releases from MSW landfill units) discuss the results of the updated engineering feasibility study, prior to the final selection of a remedy, in a public meeting with interested and affected parties [40 C.F.R. § 258.56(d)].

K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.
 - c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
 - d. A duly authorized representative of a person designated in a, b or c above if:
 - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
 - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - 3) The written authorization is submitted to the Central Valley Water Board.

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

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

3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of this Order.
6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].
7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].

8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. STORM WATER PROVISIONS

1. New and existing Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20260(c)].
2. New and existing Class II landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20250(c)].
3. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
4. MSW landfills located in a 100-year floodplain shall demonstrate that the landfill unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment [40 C.F.R. § 258.11(a)].

5. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].
6. Precipitation on landfills or waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].
7. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
 - a. accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit:
 - b. effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities;
 - c. prevent surface erosion;
 - d. control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste;
 - e. take into account:
 - i) for closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern;
 - ii) for operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time;
 - iii) the possible effects of the waste management unit's drainage pattern on and by the regional watershed;
 - iv) the design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility; and
 - f. preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

8. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].
9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
11. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].