

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-XXXX

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-XXXX 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-XXXX.

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-XXXX" 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-XXXX 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-XXXX, 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-XXXX, 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-XXXX, 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-XXXX.
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-XXXX 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-XXXX 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-XXXX, 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 _____.

PAMELA C. CREEDON, Executive Officer

WLB