

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2015-XXXX

WASTE DISCHARGE REQUIREMENTS  
FOR  
SAN JOAQUIN COUNTY DEPARTMENT OF PUBLIC WORKS  
FOOTHILL SANITARY LANDFILL, INC.  
FOOTHILL LANDFILL  
CLASS III LANDFILLS  
CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE  
MAINTENANCE, AND CORRECTIVE ACTION  
SAN JOAQUIN COUNTY

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

1. The San Joaquin County Department of Public Works (County) and Foothill Sanitary Landfill, Inc. (hereinafter jointly referred to as “Discharger”) respectively own and operate the Foothill Landfill facility in San Joaquin County. The facility is an active, municipal solid waste (MSW) landfill near Linden about 17 miles northeast of Stockton, as shown in Attachment A: Location Map (incorporated by reference under Finding 2 below). The facility is regulated under the California Water Code, section 13000 et seq.; California Code of Regulations, title 27, section 20005 et seq. (Title 27); and the Code of Federal Regulations, title 40, section 258, et seq. (40 CFR 258 or “Subtitle D”). Applicable Subtitle D regulations are implemented through State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
  - a. Attachment A – Location Map
  - b. Attachment B – Area Map
  - c. Attachment C – Site Map
  - d. Attachment D – Storm Water Controls & Monitoring
  - e. Attachment E – Landfill Gas Controls & Monitoring
  - f. Attachment F – Conceptual Landfill Development Plan
  - g. Information Sheet
  - h. January 2012 Standard Provisions and Reporting Requirements (SPRRs)

The attachment maps show the location of items described in the WDR findings (e.g., site, landfill units, monitoring and control systems, development areas) while the Information Sheet provides additional or supplementary landfill information. The SPRRs contain non-site specific requirements common to all MSW landfills referenced, as applicable, under various WDR specifications and provisions of this order. See Finding 14.

3. The facility is on an 800-acre site in Sections 12 and 13, T2N, R9E, MDB&M, corresponding to Assessor Parcel Number 093-44-01. The geographic coordinates

of the site are Latitude 38.036° north, Longitude -120.945 ° west. The facility address is 6484 North Waverly Road, Linden, CA 95326. See Attachment B: Area Map.

4. On 17 December 2014, the Discharger submitted an amended Joint Technical Document (JTD) describing/referencing significant changes associated with the facility since adoption of previous WDRs Order R5-2003-0020 in January 2003, including, but not limited to, the following:
  - a. Issuance of Cleanup and Abatement Order R5-2004-0706 on 18 May 2004 for corrective action relating to VOC impacted groundwater underlying Landfill 1;
  - b. Implementation of a Site Improvement Program, including, but not limited to, installation of a landfill gas collection system and partial final closure of unlined Landfill 1, Module I;
  - c. Installation of gas migration monitoring wells along the site perimeter;
  - d. Monitoring data indicating the continued presence of landfill gas in the unsaturated zone and low-level VOC impacts to groundwater;
  - e. A revised Preliminary Closure and Postclosure Maintenance Plan; and
  - f. Updated financial assurances information.

These revised waste discharge requirements (WDRs) include updated findings and requirements for the facility based on information in the amended JTD and in accordance with California Code of Regulations (CCR), title 27, division 2 (Title 27) regulations. Upon adoption of these revised WDRs, and except for enforcement, WDR R5-2003-0020 no longer applies and is rescinded by this Order.

5. The landfill has been in operation since 1965, accepting household, commercial, industrial, and agricultural wastes from the Cities of Stockton, Manteca, Tracy and surrounding areas. The landfill property was previously owned by Nomellini Construction, Inc. and then Waste Management of North America, Inc. In 1991, the County acquired the property in condemnation proceedings. Foothill Sanitary Landfill, Inc. has operated the landfill since start-up.
6. The facility includes the landfill and associated controls and monitoring systems (e.g., leachate, landfill gas, surface water, groundwater); storm water retention basins; access roads; office and maintenance buildings; a scale house; pump station; a white goods processing area; and undeveloped acreage for future module expansion; all as shown in Attachment C: Site Map.
7. The landfill consists of two classified waste management units referred to as Landfill 1 (LF-1) and Landfill 2 (LF-2). LF-1, the older of the two landfills, is an 85-acre, unlined landfill unit in the central portion of the site. LF-1 consists of a single, unlined Module I that was partially-closed in 2006 and no longer accepts waste. LF-2 is a lined, expansion landfill being constructed one module at a time around LF-1. Each LF-2 module will be constructed on an as-needed basis as existing modules are filled. Development of LF-2 around LF-1 will proceed in a clockwise sequence. At projected

landfill closure in the year 2082, LF-2 will consist of 10 waste disposal modules encircling and partially overlapping LF-1. See Attachment F: Conceptual Landfill Development Plan.

8. Each new expansion landfill module will be constructed in phases with initial phases typically consisting of footprint expansion and later phases consisting of vertical development, including LF-1 (Module I) overlap (i.e., filling in between the two landfill units as vertical development proceeds). The first LF-2 module, Module 1 (M-1) is being constructed/developed immediately south of LF-1. The first phase (M-1A) was constructed in 2003 and the second phase (M-1B), consisting of partial LF-1 overlap, was constructed in 2006. The next LF-2 module, M-2, will begin construction in the spring of 2015.
9. The landfill's operations and development status may summarized as follows:

Landfill	Module	T27 Classification	Area (acres)	Containment System	Operations / Development Status
LF-1	M-I	Existing Class III	80	Unlined, no LCRS <sup>1</sup>	Inactive/Partially Closed
LF-2	M-1	New Class III	40	Subtitle D Composite liner system & LCRS <sup>4</sup>	Active
	M-2 <sup>3</sup>		35 <sup>2</sup>		Pending construction
	M-3 -- M-10 <sup>5</sup>		519 <sup>2</sup>		Future development
Totals:	11 modules		674 <sup>2</sup>		

1. LCRS – leachate collection and recovery system
2. Areas estimated for pending and future modules.
3. First M-2 phase (M-2A) scheduled for construction in spring 2015.
4. Composite liner includes 60-mil HDPE geomembrane overlying geosynthetic clay liner (GCL). LCRS includes 9-inch gravel blanket layer with perforated collection piping to assist drainage to double-lined LCRS sump.
5. Future modules to be constructed on an as-needed basis.

See also Findings 70 et seq. herein; Attachment F; and the Information Sheet attached to this Order.

10. 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 (LEA) in charge of implementing CalRecycle's regulations.
11. On 9 October 1991, the United States Environmental Protection Agency (USEPA)

- promulgated MSW landfill regulations under the Resource Conservation and Recovery Act (RCRA) known as “Subtitle D” (Code of Federal Regulations, title 40, part 258). Subtitle D applies to all California unclassified, Class II and III landfills that ever accepted MSW and any waste on or after the effective date of Subtitle D (9 October 1991). Limited exceptions to the applicability of Subtitle D regulations include (but are not limited to)
- a. MSW landfills that ceased accepting wastes prior to the federal deadline may only be required to comply with the closure/postclosure requirements in Subpart F (40 CFR 258.60); and
  - b. MSW landfills constructed prior to the federal deadline may be exempt from the design requirements in Subpart D (40 CFR 258.40).
12. *State Water Resources Control Board Resolution 93-62 (as amended on 21 July 2005, Policy for Regulation of Municipal Solid Waste (Resolution 93-62)* requires the Central Valley Water Board WDRs for MSW landfills to implement 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. See Resolution 93-62, Provision I.A. Title 27 provisions applicable to MSW landfills that are equivalent to, or more stringent than, corresponding Subtitle D regulations are not affected by Resolution 93-62.
13. LF-1’s waste footprint was established prior to the Subtitle D federal deadline, so it was not required to be retrofitted with a Subtitle D composite base liner per the exemption described in Finding 11.b above. The landfill accepted waste after the effective date of Subtitle D, however, so it is subject to all other Subtitle D requirements, as referenced in Resolution 93-62, Attachment 1. LF-2, however, is subject to all of Subtitle D regulations because it accepted waste after the effective date of Subtitle D and is still active.
14. 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) for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27* dated January 2012 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) 2015-XXXX and in the SPRRs. In general, requirements that are either in regulations 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 (Sections A through H) of these WDRs, and such requirement in the WDRs supersedes the requirement in the SPRRs.

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

15. The landfill accepts wastes defined as “inert” and “nonhazardous” under Title 27,

sections 20230 and 20220, respectively. The landfill also accepts MSW as defined in Title 27, Section 20164. The landfill does not accept (and is not authorized to accept) hazardous or designated wastes, which are diverted from the landfill under the facility's waste exclusion program. Recyclable wastes are generally diverted from the landfill at offsite transfer stations.

16. The landfill is also not authorized to accept liquid or semi-solid wastes, except for leachate and landfill gas condensate generated from and returned to LF-2 (see Findings 63 and 64); nonhazardous de-watered sewage/septage sludge discharged in accordance with Title 27, sections 20200(d) and 20220(c); and certain inert wastes. The landfill does not currently accept sewage/septage wastes, but is considering a plan to do so in the future at M-1 and future expansion modules. See SPRR, Standard Prohibition C.1.b.

The County is also considering the use of dewatered sewage sludge as alternative daily cover (ADC). Any such proposal will include California Environmental Quality Act (CEQA) and other submittal documentation for review of the executive Officer. See Finding 61.

17. Approximately 600 tons per day (210,000 tons per year) of wastes, including MSW, agricultural, commercial, construction and demolition, and industrial wastes, were discharged to the landfill in 2014. About 12.8 million cubic yards (CY) of waste are estimated to be in place at the landfill corresponding to about 10% of the landfill's estimated capacity at build-out.
18. The lowest elevation of solid waste at the landfill is about 222 feet mean sea level (MSL), corresponding to the inlet to the LCRS sump in the southeast corner of M-1. The lowest elevation of leachate at the landfill is 216 feet MSL corresponding to the bottom of the LCRS sump at Module 1. The maximum height of the landfill waste column is approximately 180 feet MSL.
19. LF-1 is an "existing" unit under Title 27 because it was an operating landfill at the time former Chapter 15 (now Title 27) regulations came into effect (27 November 1984) and was not subsequently reconstructed (e.g., retrofitted with a base liner) to meet Chapter 15 standards. Similarly, LF-2 (i.e., Module 1 and future LF-2 modules) is a "new" unit under Title 27 because construction of LF-2 began on or after the effective date of Chapter 15 regulations and the unit was required to be lined. See Title 27, section 20080(d). Also, LF-1 is an "existing MSWLF unit" and LF-2 is a "lateral expansion" of an existing unit. See Title 27, section 20164 (Specific Definitions).
20. Previous WDRs Order 89-018 reclassified LF-1 from a Class II-2 landfill unit under former Subchapter 15 regulations to a Class III landfill unit under Chapter 15 regulations. The reclassification was based on a finding that the natural geologic materials underlying the unit were sufficiently protective of underlying groundwater beneficial uses to meet Class III unit containment standards in Title 27, sections 20240 and 20260. Monitoring data have since indicated, however, that waste

constituents from LF-1 have migrated into the unsaturated zone and groundwater, indicating that the natural geologic materials underlying the site do not meet Class III containment standards.<sup>1</sup> Instead of declassifying or reclassifying LF-1, these WDRs require that LF-1 be closed given that it can no longer accept wastes because it does not meet Class III containment standards. See Findings 21 and 104; Closure and Postclosure Specification E.2.

21. A landfill's containment system includes its base liner, and, after closure, its final cover. Given that LF-1 was constructed and subsequently developed without a base liner prior to the enactment of Chapter 15 regulations in 1984, retrofitting the unit with a Class III level base liner is infeasible. These WDRs therefore require that the Discharger complete closure of LF-1 in accordance with Title 27 performance standards (i.e., to provide the unit with that portion of a Class III level containment system that is feasible to construct on the top deck and side slopes). See Title 27, section 20950(a)(2)(A)(1).
22. Given that these WDRs classify LF-1 and LF-2 as separate landfill units (see Finding 18), the Closure and Postclosure Specifications of this Order require that the Discharger submit separate closure plans for each unit. A revised Partial Final Closure and Postclosure Maintenance Plan (Partial FCP/PCMP) is required for LF-1 to complete closure of that unit and a revised Preliminary Closure and Postclosure Maintenance Plan (PC/PCMP) is required for LF-2.

### **SITE DESCRIPTION**

23. The topography in the site area consists of low, rolling hills vegetated with native grass and areas of exposed soil/bedrock. Surface elevations at the site range from about 240 feet MSL in the southeast corner to about 360 feet MSL in the northeast corner of the site. The area grade is generally about 2% toward the west. One mile to the east the terrain becomes more hilly like foothill terrain.
24. Land uses within one mile of the site include agriculture, livestock grazing, dairies, industrial, and rural residential.
25. A 2014 Department of Water Resources (DWR) well survey identified at least 8 supply wells within a one-mile radius of the site, including one agricultural well and seven domestic wells. The wells ranged in depth from about 230 to 340 feet while static water levels measured in the wells ranged from 75 to 200 feet below ground surface (bgs). Estimated well pumping rates ranged from 35 to 200 gallons per minute (gpm). One offsite domestic well (Well No. 39-587) was identified within

---

<sup>1</sup>. Previous WDRs Order R5-2003-0020 (Finding 15), for example, stated, in part, "*The site characteristics where the Unit is located . . . are not suitable for a new Class III landfill contained in §20260(a) and (b)(1) of Title 27 without the construction of additional waste containment features in accordance with §20260(b)(2) of Title 27 and State Water Resources Control Board Resolution No. 93-62*".

1,000 feet of the landfill facility boundary. One onsite industrial supply well (LW-1) was also identified. See Attachment C: Site Map.

## GEOLOGY

26. The regional geology in the area represents a transition between the Cretaceous - Quaternary age alluvial deposits of the Great Valley flood plain and the Jurassic age metamorphic rocks of the Sierra Nevada foothills. Valley deposits thin out within about a mile east of the site beyond which the surface geology is dominated by dissected alluvial uplands and exposed, uplifted bedrock characteristic of foothill terrain.
27. Valley deposits in the vicinity of the site include mid-to-late Pleistocene Modesto and Riverbank, Pliocene and early Pleistocene Laguna, and Miocene Mehrten deposits. The Mehrten occurs at the surface throughout the landfill property, except for the northeast corner which is mapped as Laguna. The Laguna soils generally consist of sand and gravel with minor silt and are typically weakly cemented with low to moderate permeability. The Mehrten soils consist of reworked volcanic mudflow deposits containing moderately cemented agglomerate, conglomerate, tuffaceous sandstone, and siltstone. Permeability is generally low. The Mehrten Formation also contains some andesitic mudflow breccias, which are also known as lahars. Both the Laguna and Mehrten can also contain expansive clay soil at the surface. Modesto and Riverbank formation deposits are found at the surface north and west of the site and adjacent to Mormon Slough.
28. The results of soil boring investigations conducted in 1985 and 1990 confirm that the site is underlain by Laguna alluvial deposits and cemented to partially-cemented Mehrten deposits. Laguna soils generally consist of silty sand, clayey silt, and silty clay to approximately 10 feet bgs.<sup>2</sup> Underlying Mehrten deposits generally include clay/claystone, silt/siltstone, sand/sandstone, and conglomerates.
29. Laboratory analysis of soil samples obtained during soil boring investigations of the site have indicated in-place hydraulic conductivities ranging from  $1 \times 10^{-3}$  cm/sec (sand/sandstone) to  $1 \times 10^{-7}$  cm/sec (clay/claystone). Remolded laboratory samples had lower conductivities.
30. The nearest historically active fault systems to the site include the Foothills Fault System 11 miles to the northeast; the Great Valley Fault Zone 38 miles to the south-southwest; the Clayton-Marsh Creek-Greenville Fault System 60 miles to the west; and the Calaveras Fault Zone 60 miles to the SW.

---

<sup>2</sup>. Soil Conservation Service Survey descriptions indicate that surface soil at the site consists primarily of Peters Clay and various loam soils (i.e., Pentz sandy loam, Pentz-Bellota Complex, Keyes-Redding, Keyes-Bellota Complex, Lithic Xerorthents-Toomes Complex). The clay soils generally occur in flat areas.

- a. The Foothills Fault System trends NW-SE along the western foothills of the Sierra Nevada Mountains. The highest magnitude earthquake historically recorded along the Foothills Fault system was a 1975 earthquake along the Cleveland Hills Fault near Oroville, which registered 5.8 on the Richter scale.
- b. The Great Valley Thrust Zone is a submerged, NW-SE trending fault system along the eastern foothills of the Coast Range. In 1892, an earthquake registering 6.5 on the Richter scale occurred in Winters and Vacaville along the Vaca Fault in this fault zone. Similar magnitude earthquakes have occurred along other segments of the Great Valley Thrust Zone.
- c. The Clayton-Marsh Creek-Greenville Fault System is a NW-SE trending, near-surface fault system extending north about 60 miles from the San Antonio Valley to Concord. This fault system is on the east-southeast side of Mt. Diablo, which is west of Foothill LF. In 1980, a 5.8 magnitude earthquake causing minor surface rupture occurred along the Greenville Fault near Mount Diablo.
- d. The Calaveras Fault Zone is a NW-SE trending, strike-slip fault zone extending north about 100 miles from south of Hollister to Danville. It is part of the larger San Andreas Fault System. In 1911, a 6.5 magnitude earthquake occurred along the fault in the Morgan Hill area, and in 2014, a 6.0 magnitude earthquake occurred along a northern extension of the fault near Napa.

Quaternary faults in the above fault systems and other fault systems potentially relevant to the site are identified in the Information Sheet. There are no known Holocene faults within 1,000 feet of the facility.

31. The maximum probable earthquake (MPE) for the site is estimated to be about 6.5 on the Richter scale based on the 1892 Vacaville/Winters earthquake in the Great Valley Thrust Zone noted above. A maximum magnitude earthquake of 6.5, occurring a mean distance of 41 miles from the site was computed based on an aerially-distributed hazard in the Foothills Fault System.<sup>3</sup> The corresponding peak horizontal ground acceleration computed using this model was 0.14 g. Also see Information Sheet.

### **SURFACE WATER CONDITIONS**

32. The site is about 1.5 miles south of the Calaveras River and 4 miles east of Mormon Slough, which branches off from the Calaveras River near Bellota about 3.5 miles northwest of the site. Surface drainage from the site flows into a network of streams and creeks that meander toward the southwest, ultimately emptying into Mormon Slough at two points near Linden and east Stockton, respectively. Mormon Slough is partially tributary to the Stockton Diverting Canal, which drains into the Calaveras River, a tributary of the San Joaquin River. The remainder of Mormon Slough flows directly into the San Joaquin River in Stockton. The San Joaquin River discharges

---

<sup>3</sup>. Maximum magnitude earthquake derived from probabilistic seismic hazard (PSH) de-aggregation analysis assuming an earthquake in the Foothills Fault System with a 475-year return period (10% chance in 50 years).

- into the Sacramento-San Joaquin River Delta northwest of Stockton. See Attachment A: Location Map.
33. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition (hereafter Basin Plan) designates beneficial uses; establishes water quality objectives; contains implementation plans and policies for protecting waters of the basin; and incorporates by reference, plans and policies adopted by the State Water Resources Control Board.
  34. The existing and potential designated beneficial uses of surface water, as specified in the Basin Plan, are municipal and domestic supply, agriculture (stock watering and irrigation), industrial (processing and service supply), water contact recreation (REC-1) and non-contact water recreation (REC-2), warm and cold freshwater habitat, warm and cold water migration of aquatic organisms, warm and cold water spawning, wildlife habitat, preservation of rare, threatened and endangered species, and groundwater recharge.
  35. The landfill facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community - Panel Number 06077C0390F, effective date October 16, 2009.
  36. The site receives an average of about 18 inches per year of precipitation as determined from DWR Rainfall Depth Duration Frequency data for the Jenny Lind 3 SW Station about 4 miles northeast of the site. The average 24-hour precipitation event at this station is about 1.6 inches and the 100-year, 24-hour precipitation event for this station is about 3.3 inches. Weather conditions are statistically drier to the west and southwest of the site, where reported average annual rainfall is as low as 10 inches per year. The mean annual Pan A evaporation at the site is about 52.2 inches per year based on monthly average historical data from DWR's CIMIS Weather Station 70 (Manteca) about 22 miles southwest of the site.<sup>4</sup> Mean monthly evaporation is estimated to exceed mean monthly precipitation in all months of the year, except January, February, and December. Net average annual evaporation at the site is estimated to be about 33.4 inches.
  37. Storm water runoff captured by LF-1's precipitation and drainage controls is discharged via an unlined perimeter ditch to a large retention basin on the eastern side of the landfill. Runoff from LF-2, Module 1 is similarly conveyed to a small retention pond near the southwest corner of the module or to the borrow area immediately south of Module 1, which spills over toward an onsite stream discharging to a large stock pond in the southeast corner of the site. Water leaving the landfill property along this route is sampled under the State Water Board's General Industrial

---

<sup>4</sup> A "Class A Evaporation Pan" is a standard-sized evaporation pan per U.S. National Weather Service specifications. The pan is filled to a specified level at the beginning of each day and after 24 hours the amount of water needed to restore that level (i.e., evaporation) is measured. When daily precipitation exceeds evaporation, water is similarly removed from the pan.

Storm Water Permit, as required under Standard Facility Specification E.15, SPRR.<sup>5</sup> See also Finding 73, MRP Section A.4, and Attachment D: Drainage Controls & Monitoring.

38. All landfill drainage facilities, including overside drains, perimeter ditches, culverts, and sedimentation basins were designed to handle a 24-hour, 100-year storm event.

### **UNSATURATED ZONE CONDITIONS**

39. The maximum estimated capillary rise in the unsaturated zone is estimated to be about 3.3 feet based on soil type. The minimum separation from waste to groundwater, taking into account the estimated capillary rise, is about 170 feet. See Findings 18 and 46.<sup>6</sup>

### **Soil Gas**

40. In 2003, the Discharger installed 11 single-completion soil gas monitoring probes (SG-1 through SG-11) within 400 feet of the landfill unit to monitor for landfill gas migration. Ten of the probes, SG-2 through SG-11, are shallow probes completed to depths ranging from 25 to 68 feet bgs. The other probe, SG-1, is a deep probe completed to a depth of 255 feet bgs. SG-1 is also the closest probe to the landfill, installed 100 feet from the landfill unit. Probe SG-8 was abandoned in 2012 in preparation for construction of Module 2. The existing and former probe locations are shown in Attachment E: Gas Controls & Monitoring.
41. Landfill gas has generally been detected at low concentrations in all of the above soil gas probes, except for SG-11 on the west side of LF-1, where methane and carbon dioxide have been detected up to 17% and 16% by volume, respectively. All of the probes have indicated the presence of volatile organic compounds (VOCs), however. The most VOC-impacted probes included SG-6, SG-11 and deep probe, SG-1, which had the highest concentration of vinyl chloride (418 ppbv). The results of these three soil gas probes are summarized below.

---

5. *State Water Resources Control Board Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System (NPDES) General Permit No. Cas000001 Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities.*

6. Calculation based on lowest elevation of waste (216 feet MSL) and estimated highest groundwater elevation (46 feet MSL, including capillary rise) at M-1's LCRS sump.

Soil Gas Probe Monitoring Results			
Constituent	Average Concentration, ppbv <sup>1</sup>		
	Shallow		Deep
	SG-6	SG-11 <sup>2</sup>	SG-1
Freon 11	382	4.5	<0.5
Freon 12	1,054	600	115
Freon 113	23.1	0.6	<0.5
Freon 114	42.6	153	<0.5
Toluene	67.9	80.8	53
Vinyl Chloride	<0.5	36.6	418

1. Based on semiannual monitoring conducted from October 2003 through March 2014.

2. This probe also had the highest concentration of methane (17% by volume).

The monitoring and reporting program in these WDRs requires that the Discharger continue semiannual monitoring of all the unit perimeter soil gas probes for field gases and sample a probe for VOCs any time the field gas concentration in that probe exceeds a specified threshold criteria based on field measurement of methane and total organic vapor concentrations. See MRP, Section A.2.b.ii.<sup>7</sup>

42. The soil gas monitoring system also includes 25 triple probe methane migration monitoring wells (SG-12 and SG-102 through SG-125) installed along the facility perimeter to per Local Enforcement Agency (LEA) requirements (Title 27, section 20919 et seq.). Soil gas well SG-12 was installed in 2004 and soil gas wells SG-102 through SG-125 were installed in 2009. All wells were completed to a maximum depth of 160 feet MSL with upper, intermediate, and lower zone nested probes relative to landfill waste. The locations of these wells are shown in Attachment E: Gas Controls & Monitoring.
43. Semiannual monitoring of the methane migration monitoring wells at the site conducted under the facility's Solid Waste Facilities Permit has not indicated any methane exceedances along the site perimeter since installation of the wells. Also, the wells were not historically monitored under previous WDRs, which were adopted in 2003 before installation of the wells. Given the detection of methane and VOCs in the soil gas probes along the perimeter of the landfill unit, these WDRs require that the Discharger conduct VOC sampling at any methane migration monitoring well or probe in which the above threshold criteria is exceeded.<sup>7</sup> Copies of the monitoring results submitted to the LEA are also required. See MRP, Section A.2.b.ii.

#### Soil Pore Water

44. LF-1 does not have a soil pore water monitoring system given that it is unlined and predates Chapter 15 regulations. LF-2, Module 1 was constructed with four suction

<sup>7</sup>. VOC sampling required in all soil pore gas probes in which methane is detected above 1% by volume and/or total organic vapors are detected above 50 ppbv during a monitoring event.

lysimeters, including one background lysimeter (LZ-1) installed near the northeast site boundary and three detection lysimeters (LZs-2, 3, and 4) installed beneath the module's containment system. LZ-2 was installed beneath the LCRS sump in the southeast corner of the module; LZ-3 was installed beneath an LCRS trench in the northeast part of the module; and LZ-4 was installed beneath the base liner in the southwest corner of the module. Soil pore water monitoring devices installed at future LF-2 modules, beginning with Module 2, Phase A, will consist of one or more pan lysimeters, including at least one pan lysimeter installed beneath the module's LCRS sump. See MRP Section A.2.a and Attachment C: Site Map.

No liquid has been detected in any of the lysimeters at LF-2, Module 1 since their installation in 2003. This supports findings that LF-1 is the source of VOC impacts detected in soil gas and groundwater at the site.

45. No leachate monitoring is conducted at LF-1 (other than seep monitoring) because it is unlined and is not equipped with an LCRS sump. The Discharger has been conducting semiannual leachate sump monitoring at LF-2, Module 1 since 2005, however. The results of this monitoring are summarized in the table below.

LF-2, Module 1 Leachate Monitoring Results <sup>1</sup>	
<u>Constituent</u>	<u>Average Concentration</u>
General Minerals	<i>mg/L</i>
Chloride	208
Total Dissolved Solids	1,565
VOCs <sup>2</sup>	<i>µg/L</i>
1,1-Dichloroethane	4
Ethyl benzene	12
Methyl tert-butyl ether	96
Tetrachloroethene (PCE)	2
Toluene	32
Trichloroethene (TCE)	3
Total Xylenes	26
2-butanone (MEK)	1,214
4-methyl-2-pentanone	46

1. Results based on semiannual LCRS sump monitoring conducted since 2005.
2. Listing includes most, but not all, VOCs detected in the module sumps during the monitoring period.

During the First Half 2014, the leachate flow rate to the sump averaged 33,600 gallons per month. MRP Section D requires that the Discharger monitor leachate monthly for flow rate and other field parameters and annually for landfill constituents of concern.

## GROUNDWATER CONDITIONS

46. First encountered groundwater at the site varies from about 200 to 300 feet bgs. Groundwater elevations generally range from about 36 feet MSL on the southern side of the site to about 61 feet MSL on the northern side of the site +/- 1 foot of seasonal variation. The average groundwater elevation at the site is about 45 feet MSL. The uppermost aquifer beneath the site occurs in Mehrten alluvium (e.g., sandy gravel) under confined or partially confined conditions. The overall permeability of these deposits is estimated to be about  $9 \times 10^{-3}$  cm/sec based on monitoring well slug testing data for similar alluvial deposits at the North County Landfill about eight miles northwest of the site. The groundwater gradient is typically about 0.0025 ft/ft toward the southeast, corresponding to a groundwater flow velocity of about 84 ft/yr. In the southwest corner of the site, the gradient appears to turn toward the southwest. Additional definition of the gradient direction in this area will be possible after collecting a sufficient amount of monitoring data (e.g., at least two semiannual periods) from recently-installed monitoring well MW-6 (see Finding 49).
47. Background groundwater quality in the uppermost aquifer at the site is relatively good including total dissolved solids (TDS) at about 210 mg/L, electrical conductivity at about 270 mg/L, chloride at about 6 mg/L, sulfate at about 8 mg/L, and bicarbonate alkalinity at about 140 mg/L.
48. The beneficial uses of underlying groundwater stated in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.
49. The groundwater monitoring system at the site currently consists of one background well (MW-4), two side gradient wells (MW-1A, and MW-3), and three down gradient wells (MW-2R, MW-5, and MW-6).<sup>8</sup> MW-2R and MW-3 are Point of Compliance wells for LF-1 and LF-2 (Module 1), respectively, while MW-5 (installed in 2010) and MW-6 (installed in 2015) contiguously monitor both landfill units along the southern site boundary. See MRP Section A.1.a and Attachment C: Site Map.
50. As part of the Water Quality Protection Standard, Title 27, section 20415(b)(1) requires that the Discharger establish a sufficient number of monitoring wells along the landfill Point of Compliance (e.g., downgradient perimeter of unit) for detection and corrective action monitoring purposes. See Standard Monitoring Specification I.29, SPRR. A Point of Compliance well was not installed directly down gradient of LF-1, however, because previous WDRs classified LF-1 and LF-2 (i.e., Module 1 and the future Subtitle D lined expansion modules) as a single landfill unit with a Point of Compliance along its southern perimeter. Given that these WDRs classify the landfill as two separate units, each with its own Point of Compliance along the southern

---

<sup>8</sup> Monitoring well MW-1A was installed in 2013 as a replacement well for MW-1, which could no longer be sampled due to declining water levels. Another historical monitoring well, MW-2, was abandoned and replaced with nearby well MW-2R in 2003 to accommodate development of LF-2, Module 1.

perimeter of each unit, and that the two landfills were constructed and developed contiguously as a single unit under previous WDRs, the Discharger has adequately demonstrated that it is no longer feasible to install Point of Compliance wells down gradient of LF-1 (e.g., such a well would puncture the HDPE barrier layer separating the units and would likely be unstable due to landfill settlement). MRP No. R5-2015-XXXX therefore allows for contiguous monitoring of both units along the downgradient perimeter of LF-2 per Title 27, section 20410(e)(3), with LF-1 in corrective action monitoring and LF-2 in detection monitoring. The groundwater monitoring system for both units complies with applicable Title 27 performance standards for detection and corrective action monitoring. See MRP Section A.1.

51. Low to trace concentrations of VOCs, primarily of Trichloroethene (TCE) and 1,1-Dichloroethene (DCE), have been intermittently detected in monitoring well MW-3 adjacent to unlined LF-1 since 1995, indicating a historical release from LF-1. For example, in January 1995, TCE was detected in MW-3 at a concentration of 0.9 µg/L and has been subsequently detected in the well up to 4.0 µg/L (January 1999). TCE was also detected in this well in 7 out of the last 9 semiannual monitoring events conducted at the site through the First Half 2014 and was most recently detected a concentration of 1.4 µg/L. DCE has been historically detected in MW-3 at trace concentrations. Time series plots of VOC monitoring data in MW-3 suggest a moderate increasing trend in MW-3 over the past 5 years. No VOCs have been confirmed in any of the other groundwater monitoring wells at the site.

In 2006, the Discharger implemented various corrective action measures (e.g., partial landfill closure, landfill gas extraction) to address the VOC release under Cleanup and Abatement Order (CAO) R5-2004-0706 issued by the Executive Officer (see Finding 95). The monitoring and reporting program of these WDRs requires corrective action monitoring of LF-1 to assess the effectiveness of these measures and groundwater cleanup.

52. No significant exceedances of inorganic parameters have been historically confirmed at the site. The concentration of chloride and total dissolved solids (TDS) detected in MW-3, for example, have historically averaged about 9.5 mg/L and 207 mg/L, respectively, compared to calculated concentration limits of 7.5 mg/L and 260 mg/L using historical monitoring data from background well MW-4. (The slight chloride exceedance could be spatial variability.) The absence of confirmed inorganics impacts to groundwater at the site indicates that the release is likely due to a landfill gas release from the unlined landfill, LF-1.
53. A review of the files indicates that no Water Quality Protection Standard (WQPS) Report has ever been submitted for this site. Previous WDRs specified concentration limits for organic constituents and some inorganic constituents, while concentration limits for certain other inorganic constituents were left to be determined based on future monitoring results. These WDRs require that the Discharger develop a complete list of concentration limits for each landfill unit and submit a WQPS Report

describing the WQPS for each unit consistent with the requirements of this Order. See Provision H.7 and MRP Section C.4.

#### Monitoring Data Analysis Methods

54. 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) allow 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.
55. 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. 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.
56. 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); or
  - b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

57. Title 27 specifies the prescriptive requirements and performance standards applicable to monitoring data analysis and requires that such methods be implemented as follows:
- a. As specified in the existing MRP under the WDRs; or
  - b. In accordance with a technical report (certified by an appropriately registered professional) documenting such methods, submitted to, and approved by, the Central Valley Water Board; or
  - c. In accordance with any water quality data analysis software deemed appropriate for such use by either the Central Valley Water Board or SWRCB.

The MRP of these WDRs requires that concentration limits for naturally-occurring constituents be based on an interwell approach absent a satisfactory demonstration that an intrawell approach is justified at the site (e.g., existence of significant spatial variability not attributable to a release from the unit). Consistent with monitoring reports submitted under previous WDRs, MRP No. R5-2015-XXXX specifies that the method of Interwell Tolerance Limits be used to calculate concentration limits for naturally-occurring constituents at the site. For evaluation of corrective action progress (i.e., trends), the monitoring program specifies an intrawell statistical procedure (e.g., Sens Slope Method). See Section C.4, MRP.

58. To demonstrate that corrective action has been completed (i.e., concentrations along Point of Compliance returned to compliance with the water quality protection standard), Monitoring Specification G.7 specifies a four year “proof” period. During this period, the Discharger must demonstrate that all constituents of the release have been reduced to concentration limits for at least eight consecutive semiannual monitoring events.

### **LANDFILL OPERATIONS**

59. Waste disposal is conducted by the area-ramp method. Filling of a new module generally begins along the side adjacent to the previous module. Refuse is placed in 6 to 10 foot lifts and spread and compacted on a sloped working face (about 100' x 90') until the lift is about two feet thick. The waste is inspected for unauthorized or hazardous wastes as it is spread. Diversionary berms are constructed in the wet season to divert storm water away from the working face. During the wet season, cover soil is stockpiled near the working face.
60. Cover soil for landfill operations is obtained from the long term borrow area west of Module 1 or from module construction areas. A refuse to soil ratio of approximately 4:1 is maintained for daily cover, which is applied at the working face in 6-inch minimum lifts. Tarps are employed as alternative daily cover (ADC). Intermediate cover soil of 12-inches minimum thickness is placed in areas that will be inactive for at least 180 days per Title 27, CCR Section 20705.
61. 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' Executive Officer provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. See Discharge Specification B.2.

#### Leachate and Condensate Management

62. Leachate and condensate handling facilities at the site currently include Module 1's LCRS sumps (primary and secondary) and associated controls; a 10,000 gallon leachate storage tank (near the LFG flare station); a leachate return line; condensate traps and return lines; and other related facilities. Similar leachate and condensate handling facilities will be installed at the site on an as-needed basis as future landfill modules (each with an LCRS and LCRS sump) are developed. See also Finding 98.
63. 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 and landfill gas condensate from composite lined units with an LCRS may be returned to the unit from which they came, but may not be discharged to another MSW landfill unit. Similarly, landfill gas condensate obtained from an unlined unit may not be returned to that unit because it is not compositely-lined, and it may not be discharged to another MSW landfill unit because it did not originate from that unit.
64. No leachate is collected from unlined unit LF-1 because it does not have an LCRS. Leachate collected from compositely-lined Module 1 (including any leakage collected in the secondary sump) is generally returned to Module 1 via a return line to infusion points on the landfill top deck. Depending on needs and other factors, leachate may alternatively be routed to the onsite storage tank (located near the LFG flare station) for later application to M-1 (i.e., infusion and/or dust control).
65. The Discharger proposes to continue the practice of returning leachate to the same module from which it was collected, or if necessary depending on operational factors, to another compositely-lined LF-2 module. No leachate may be discharged to Module I, however, since it is unlined and does not have an LCRS. Consistent with Title 27 and Subtitle D regulations, these WDRs allow the Discharger to continue returning landfill leachate to existing and future compositely-lined LF-2 modules, as proposed, but prohibits the discharge of leachate to LF-1, which is a separate, unlined MSW landfill unit, See Discharge Prohibition A.3 and Discharge Specification B.5.

66. Previous WDRs authorized the discharge of LFG condensate derived from unlined Module **I** to lined Module 1 because the two modules were considered to be within the same MSW landfill unit. The Discharger therefore historically commingled landfill gas collected from unlined Module **I** and lined Module 1 and discharged the condensate obtained from the commingled gas to Module 1's LCRS sump. Given that these WDRs classify Module **I** as a separate, existing MSW landfill unit (LF-1), the Discharger is no longer authorized to discharge condensate derived from unlined LF-1 (Module **I**) to existing or future LF-2 modules. These WDRs require that the Discharger submit an operations plan for the LFG extraction system, including a plan to remove and handle LFG condensate derived from LF-1 separately so that it can be appropriately disposed of at an authorized facility. See Discharge Prohibition A.3.b and Facility Specification C.1.

### **LANDFILL DESIGN AND CONSTRUCTION**

67. 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 (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.
68. Title 27, section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative design (EAD) to the prescriptive standard. In order to approve an EAD 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).
69. 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.

### Landfill 1

70. LF-1 (Module 1) is an 84-acre, partially-closed landfill unit in the central portion of the site. As the original Foothill Landfill disposal module, the unit predated Title 27 regulatory standards and was not constructed with a Title 27 containment system or LCRS.
71. The landfill is approximately triangular-shaped with 2,000 foot long sides. The top deck area (also triangular-shaped similar to the base) was partially-closed with an ET cover in 2006, as described in Finding 103. The base elevation of the unit is unknown due to the unavailability of historical construction documents, but is estimated to be about 250 feet MSL. The maximum elevation of the landfill is about 432 feet MSL, including final cover, corresponding to about 170 feet above surrounding grade. The maximum height of the LF-1 waste column is estimated to be about 180 feet. See Attachment C: Site Map.
72. LF-1's exterior side slopes were graded to an average of about 4H:1V with 15-foot wide side slope benches every 50 feet of vertical height. All side slopes except for the southern slope were filled to planned final waste grade and covered with up to 3 feet of interim cover soil, including partial cover soil placed on the slopes under the 2006 Site Improvement Program (see Finding 96). A geomembrane barrier layer was also installed on the lower portion of the southern slope during the second phase of Module 1. Various erosion and drainage control improvements were also implemented at the module to bring it into compliance with Title 27 standards.
73. Precipitation and drainage controls installed on the landfill module included:
  - a. Top decks graded at 5% minimum for drainage.
  - b. Soil berms along top deck perimeter to direct runoff to corner drop inlets.
  - c. Overside drains to capture top deck and side slope bench drain flows.
  - d. Ditches installed alongside slope benches to intercept and convey sheet flow runoff to overside drains. Benches also graded for sheet flow runoff.
  - e. Landfill perimeter ditches to convey collected runoff to onsite storm water basins. See Finding 37.
  - f. Velocity controls (e.g., erosion control blanket, rip rap) at appropriate locations in bench drains and landfill perimeter ditches to reduce erosion.

### Landfill 2

74. Previous WDRs Order R5-2003-0020 approved an EAD to the Title 27/Subtitle D prescriptive liner design for an MSW landfill proposed by the Discharger for the containment systems of LF-2, Module 1 and future expansion modules at the site.

The approved EAD included the following elements:<sup>9</sup>

<u>Component</u>	<u>Base Liner</u>	<u>Side Slopes</u>
Operations Layer	2 feet soil	
Filter Fabric	Geotextile <sup>1</sup>	Geocomposite <sup>2</sup>
LCRS	9-inch gravel drainage layer	
	4-inch HDPE collection piping in drainage troughs	
Base Liner	60-mil HDPE <sup>3</sup>	
	Geosynthetic Clay Liner (GCL)	
Foundation Layer	Prepared subgrade	
	≥ 1 foot	Thickness not specified

1. Geotextile consists of 8 oz/yd<sup>2</sup> non-woven fabric.
2. Geonet with above geotextile on both sides.
3. HDPE double-side textured.

In authorizing the above EAD for the landfill's containment system, previous WDRs found that the Discharger had made the requisite demonstration under Title 27, Section 20080(b) that construction of the prescriptive design was infeasible and that the proposed EAD met Title 27 performance standards. See Information Sheet.

75. The first phase of Module 1 (M-1A) was constructed in 2003 in accordance with the above EAD. M-1A consisted of a 34-acre expansion of the landfill footprint immediately south of LF-1. Excavation side slopes were graded to 1H:1V, forming the sides of native soil berms constructed around the module. The foundation layer was graded from northwest (267 feet MSL) to the southeast (225 feet MSL) at a slope of 3%. Anchor trenches were cut into the northern and southern perimeter berms to anchor the liner.
76. The second phase of Module 1 (M-1B), constructed in 2006, consisted of a northward extension of the landfill footprint over a native soil berm between LF-1 and LF-2 and the filling of wastes up against the lower slopes of unlined unit LF-1. A geomembrane barrier layer was installed in the area of overlap between the two modules as a corrective action measure to help prevent leachate and gas migration into LF-1.<sup>10</sup>

As described in Finding 7, these WDRs classify LF-1 and LF-2 as separate landfill units under Title 27. As such, these WDRs require that all future LF-2 liner

---

<sup>9</sup>. Under Title 27, section 20080(b), the Discharger may construct an engineered alternative to the Title 27 prescriptive standard provided that the requisite demonstration is made (e.g., that the design meets Title 27 performance standards and that compliance with the prescriptive standard is not feasible).

<sup>10</sup>. The geomembrane barrier layer was not a construction requirement because the landfill was considered a single unit under previous WDRs and therefore the overlap area did not constitute an expansion of the landfill footprint under Title 27/Subtitle D. See Finding 96.b and Title 27, section 20164.

extensions overlapping unlined unit LF-1 meet Title 27 containment system standards for a Class III, existing (i.e., pre-Subtitle D) MSW landfill (i.e., non-composite compacted clay liner or equivalent). See Construction Specification D.1; Title 27, sections 20330 and 20340.

77. Module 1's LCRS layer included a 9-inch layer of drainage gravel on the landfill's base liner and geonet on the landfill's interior side slopes. The gravel layer was designed for sheet flow drainage (3% grade) to a collection sump constructed in the southeast corner of the module. Perforated HDPE collection piping, including six, 4-inch laterals and a 6-inch header, were also installed to assist drainage and minimize leachate head on the liner. Five of the laterals (each cross-sloping from west to east at a 2% grade) were plumbed to a header pipe installed in a gravel-filled trough along the eastern side of the module. The other lateral was installed in a collection trough along the southern side of the module and plumbed directly to the sump. Each end of the laterals was connected to a riser extending up the side slope to allow for inspection and cleaning, if necessary.
78. Module 1's LCRS sump was designed as follows, from top to bottom:
  - a. A geotextile separator layer (immediately underlying the module's LCRS);
  - b. Up to 4 feet of LCRS sump gravel;
  - c. A geotextile cushion layer;
  - d. Primary composite liner;
  - e. A secondary sump;
  - f. A secondary composite liner; and
  - g. One foot of prepared foundation soil.

Both the primary and secondary sump liners were constructed in accordance with the EAD approved under previous WDRs.

79. The primary sump was constructed to a maximum depth of 4 feet (216 feet MSL) with 3H:1V side slopes. A dedicated submersible sump pump with a liquid level sensor installed in an 18" HDPE sump collection/riser pipe to control sump liquid levels was included in the design. External controls allowed for setting the pump cycle to ensure that the sump is off. The system also included alarms set at minimum and maximum allowable liquid levels to ensure safe pump operation and to prevent head buildup on the liner beyond the sump. Volume pumped was also automatically recorded.
80. A secondary sump was also included in the design to monitor the primary sump for leaks. The secondary sump consisted of a geonet blanket layer (sandwiched between the primary and secondary composite liners) draining into a 2-foot deep gravel-filled trench underlying the primary sump. 12-inch HDPE collection and riser piping housing a bubbler line to measure liquid level were also included in the secondary sump design. A submersible pump was also installed in the secondary sump to pump and return any leakage to the primary sump.

81. All components of M-1's LCRS, including blanket layer, piping, sump, and handling facilities were designed to meet Title 27 performance standards using appropriate engineering methods and models (e.g., Hydraulic Evaluation of Landfill Performance (HELP) Model Version 3.07, pipe flow calculations).
82. The exterior side slopes of Module 1 were graded with slopes not exceeding 3.4H:1V with 15-foot wide benches every 50 vertical feet. A 200 foot setback from the site perimeter was also maintained. Precipitation and drainage controls installed at the module were similar to those installed at LF-1. See Findings 37 and 73.

#### Module 2

83. On 27 January 2015, Central Valley Water Board staff approved the design report for Module 2 (M-2), the next landfill expansion module to be constructed at the site. M-2 will be constructed contiguous with, and immediately south of, Module 1.<sup>11</sup> The new module's footprint will be built-out in two phases, including a 14-acre first phase (M-2A) scheduled for completion by the end of 2015, and a second phase (M-2B) scheduled for completion by the end of 2018. The modules' containment system (i.e., base liner and excavation side slopes) will consist of the approved EAD authorized under the previous WDRs. M-2's containment system will therefore be the same as M-1's, absent a Title 27-lined interior side slope overlapping LF-1.
84. M-2A's foundation layer will generally be graded to slope from west (222 feet MSL) to east (210 feet MSL) at a 1% grade. Three parallel V-drains each one foot deep with 3H:1V side slopes will be cut into the foundation layer for the overlying LCRS (described below). The module's excavation side slopes will be 2H:1V on all sides except the east side, which will be 3H:1V. An access road will also be constructed on the west side of the module. The M-2B area will be used as a staging area during M-2A construction.
85. M-2A's LCRS will include a 9-inch thick gravel blanket layer overlying three east-sloping, gravel-filled V-drains. The effective drainage grade within the V-drains will be 2% toward the east-sloping center line. Four-inch lateral collection piping will be installed in the V-drains to assist drainage. Two of the laterals/V-drains will be plumbed to a 6-inch perforated header pipe running along the eastern side of the module, while the other V-drain will be plumbed directly into the LCRS sump. Each lateral will be accessible for inspection and cleaning via riser pipe extending up the eastern excavation slope.

---

11. See 5 October 2014 *Design Report, Area 2A Expansion, Foothill Sanitary Landfill*, prepared by Geosyntec, Inc..

86. Drainage calculations for M-2's LCRS are summarized as follows:

Data Source	Leachate Head	Peak Flow Rate			
	Inches	Gal/min			
		Blanket Layer		LCRS Piping/Trenches	
	Base Liner	Gravel	Geonet	Lateral	Header
Model <sup>1,2</sup>	1	71	18.4	76	148
Regulatory Standard	<12 <sup>3</sup>	142	37 <sup>4</sup>	152 <sup>4</sup>	296 <sup>4</sup>
Design	9	568	295	512	512

1. Based on anticipated or "worst case" peak conditions (e.g., high precipitation, infiltration and runoff during initial waste filling operations) using HELP) Model, Version 3.07.
2. The maximum daily leachate flow calculated using the HELP model was 9,231 gal/acre/day corresponding to 133,826 gal/day over the 14.5 acre module area.
3. Based on 30 cm maximum head authorized for MSW landfill under Subtitle D regulations. See Standard Construction Specification F.2, SPRR.
4. Twice anticipated peak daily flow rate derived from HELP model (expressed in gpm) per Title 27, Section 20340(b).

87. M-2A's LCRS sump will be constructed in the southeast corner of the M-2A area and will be designed and operated similar to M-1's LCRS sump. The sump pump will be sized to handle calculated maximum daily and annual average leachate flow rates to the sump (93 gpm and 5 gpm, respectively). A separate LCRS sump may be constructed for the M-2B area.

88. The Discharger plans to construct future modules consistent with existing approvals for Modules 1 and 2, or as separately proposed and approved for a new module. Specific designs and construction plans will be submitted for approval as each module is proposed for development.

Construction Specifications D.1 through D.4 of these WDRs require that new LF-2 modules be constructed consistent with the EAD approved under previous WDRs and Title 27 containment requirements applicable to sideslope development over an existing, unlined MSW landfill (i.e., non-composite compacted clay liner or equivalent). Construction Specification D.6 further allows for the Executive Officer to approve less than significant changes to these designs, but requires Board approval of substantive changes.

### Slope Stability

89. Updated slope stability analysis (see January 2012 *Updated Slope Stability Analysis for Foothill Sanitary Landfill*, prepared by Shaw Environmental, Inc.; and 20 January 2015 supplemental report *Review of the Stability Analysis at the Foothill Landfill*,

prepared by CB&I) focused on LF-1 and the southern part of LF-2 where Modules 2 and 3 will be developed along the unit perimeter over the next several years, reaching approximate final cover grade. The following representative cross-sections were evaluated in this area to assess both interim and global landfill slope stability:

- a. Interim: N-S section of southern fill slope over interface between Module 1 and Module 2.
  - b. Interim: E-W section of western fill slope over interface between Module 2 and future Module 3.
  - c. Global: N-S section of southern final cover slope spanning LF-1, M-1, and M-2.
90. Slope stability analysis was performed on the above cross sections using the SLIDE® (Version 6.0013) software program developed by Rocscience, Incorporated. The program performs two-dimensional limit equilibrium analysis using the method of slices to compute factors of safety based on various analysis procedures. These procedures are included the Morgenstern-Price method, which considers both force and moment equilibrium. Critical interface failure envelopes were developed for the modules based on the results of laboratory shear testing of liner components up to maximum expected loads and other factors. Computed static safety factors for the two interim fill slopes were 1.3 (southern) and 2.0 (western) and global safety factors computed for the landfill (i.e., southern final cover slope) were to 2.34 (static) and 1.8 (pseudo-static). Critical interfaces included the geocomposite-geomembrane interface, the geomembrane-GCL interface, and internal failure of the GCL.
91. A peak horizontal ground acceleration of 0.054 g was used in dynamic slope stability analysis based on an earthquake of moment magnitude 8.1 occurring along the San Andreas fault zone about 85 miles west of the site. Deformation analysis indicated an estimated displacement of approximately 0.3 inches, well below the 12-inch maximum recommended by the USEPA in its 1995 publication *Seismic Design Guidance for Municipal Solid Waste Landfills*.

### **CORRECTIVE ACTION**

92. Previous WDRs Order No. R5-2003-0020 required that the Discharger implement an Evaluation Monitoring Program (EMP) to investigate the nature and extent of groundwater impacts at the site and, by 1 June 2003, submit an Engineering Feasibility Study (EFS) report proposing corrective action measures, including a plan for closure of LF-1. A partial cover work plan for LF-1 was also required to be submitted by the same date.
93. In June 2003, the Discharger completed implementation of the EMP, including installation of temporary borings down gradient of MW-3 to delineate the extent of the release; a deep soil gas probe (SG-1) to sample for VOCs in soil gas near the water table; and VOC sampling. No VOCs were detected in groundwater samples collected from the temporary borings and MW-3. Four VOCs were detected in soil gas at SG-1, but none of them matched those previously detected in groundwater at MW-3. No

VOCs were detected in groundwater during the investigation.

94. On 30 October 2003, in response to a September 2003 California Water Code Section 13267 Order issued by the Executive Officer, the Discharger submitted an EFS report and a partial cover work plan (*Partial Cover Workplan and the Engineering Feasibility Report and Corrective Action Program, Based on the Results of the Evaluation Monitoring Plan at the Foothill Sanitary Landfill*, prepared by San Joaquin County Department of Public Works). The EFS report attributed the groundwater impacts to localized infiltration from exposed wastes along the edge of the landfill near MW-3 and indicated that the issue had been resolved in 1998 by grading and covering the area. The EFS did not recommend any further corrective action measures and did not include a work plan for closure of LF-1.
95. On 16 December 2003, the Executive Officer issued an Administrative Civil Liability Complaint (ACLC No. R5-2003-0159) in the amount of \$10,000 for failure to submit the required work plan for closure of LF-1 in violation of the Section 13267 Order. Subsequent negotiations resulted in a formal Settlement Agreement by which the Discharger agreed to pay the \$10,000 in proposed administrative civil liability and accept a Cleanup and Abatement Order (CAO R5-2004-0706) implementing a Site Improvement Project proposed by the Discharger to address the threat to groundwater from LF-1. A revised ACL Complaint (ACLC No. R5-2004-0520) was also issued acknowledging the agreement. The Executive Officer agreed to recommend a modification of WDRs Order No. R5- 2003-0020 to be consistent with CAO R5-2004-0706 if landfill gas releases were successfully eliminated.
96. The Site Improvement Project incorporated into CAO R5-2004-0706 included the following components;<sup>12</sup>
  - a. Final closure of the crest of LF-1;
  - b. Installation of an overlay barrier between Module I refuse and Module 1's expansion side slope;
  - c. Installation of partial and intermediate cover over areas of LF-1 not included above;
  - d. Implementation of landfill drainage and erosion controls;
  - e. Installation of a landfill gas collection system; and
  - f. Installation of at least two additional groundwater monitoring wells.

CAO R5-2004-0706 required submission of various plans and reports corresponding to the above tasks and specified a 1 November 2006 due date for completion of the project including initiation of gas extraction. (This due date was ultimately extended

---

12. See 16 January 2004 letter *Proposal to Address RWQCB Staff Concerns Regarding Foothill Sanitary Landfill Module I* from Steven Winkler, San Joaquin Co. DPW to Thomas Pinkos, Central Valley Water Board and 2 February 2004 letter *Strategy for Site Improvements, Foothill Sanitary Landfill*, from W. Michael Carroll, San Joaquin Co. DPW to K. Schwab, Central Valley Water Board.

to 24 February 2007 to provide the Discharger time to complete installation of the LFG extraction system.)

97. Each plan required under CAO R5-2004-0706 was ultimately submitted by the Discharger and implemented as approved by Central Valley Water Board staff. Plans and reports submitted/approved under CAO R5-2004-0706 for the Site Improvement Project, included, but were not limited to, the following:
- a. 31 August 2004 *Project Design Report for the Site Improvement Project*;
  - b. 15 November 2004 *Partial Cover, Intermediate Cover, and Drainage and Erosion Control Plan*;
  - c. 21 September 2004 *Landfill Closure Method Selection Report*;
  - d. 30 January 2005 *Preliminary Closure and Postclosure Maintenance Plan*, prepared by Kleinfelder;
  - e. March 2005 *Landfill Gas Collection and Control System Design Plan*, prepared by GC Environmental, Inc., prepared by Kleinfelder;
  - f. 12 May 2005 *Module "I" Partial Final Closure Plan* (approved by Water Board staff on 18 July 2005) , prepared by Kleinfelder;
  - g. 28 November 2005 *ET Cover Design Report for the Foothill Sanitary Landfill Site Improvement Project*, prepared by Kleinfelder; and
  - h. 24 February 2007 *Final Construction Quality Assurance Report*, prepared by Vector Engineering.

The above *Final Construction Quality Assurance Report* for the project was approved by Water Board staff on 20 March 2007. The implementation of each component of the Site Improvement Project is described in Findings of this Order applicable to that aspect of the landfill design.

#### Landfill Gas Controls

98. The landfill gas (LFG) extraction system installed as part of the 2006 Site Improvement Project included the installation of 9 vertical extraction wells (GX-1 through GX-9) at Module I and 5 horizontal extraction wells (HC-1 through HC-5) at LF-2, Module 1. Each vertical extraction well was spaced about 500 feet apart for an estimated 250 foot radius of influence. The wells were completed to depths ranging from 41 to 100 feet depending on waste column thickness. Each horizontal well was designed for a 400 foot horizontal and 30 foot vertical radius of influence. Associated LFG collection and treatment facilities included lateral and header piping (3" HDPE and 12" HDPE); a condensate knock-out sump and a 1-inch diameter HDPE return line to Module 1's LCRS sump; two, 2,000 CFM blower motors; a flare station; and a 3.5 megawatt, 1,500 SCFM (standard cubic feet per minute) gas-to-energy plant.
99. The current landfill gas extraction rate at the site is approximately 1,200 SCFM. Since 2010, all LFG collected from the landfill has been piped to the gas-to-energy plant (in the southeast corner of the site), which is owned and operated by Ameresco under an

agreement with the Discharger. Any remaining condensate is removed from the gas at the plant, and the methane gas is used to fuel a generator and create electricity which is exported for commercial use. Since start-up of the gas-to-energy plant, the LFG flare station has been inactive. See Finding 62 (Leachate and Condensate Management) and See Attachment E: Gas Controls & Monitoring.

Additional LFG collection facilities will be installed at the site, as necessary, to meet landfill development and corrective action needs. Existing LFG facilities within the planned landfill footprint, including the flare station and gas-to-energy plant, will be moved prior to initiating module construction in those areas.

100. Previous WDRs predated installation of the LFG system at the site and therefore did not require LFG extraction monitoring. Given that an LFG extraction system has since been installed at the site, the monitoring program in these WDRs requires that the Discharger conduct semiannual LFG extraction monitoring for parameters and constituents, including VOCs.

101. On 19 December 2014, in response to a 17 October 2014 email request by Central Valley Water Board staff, the Discharger submitted an amended EFS proposing the installation of additional LFG controls and monitoring wells at the landfill as part of the corrective action program to address VOC impacts to groundwater at the site. The amended EFS included a two-phase plan to address areas of the unit where LFG may be trapped and migrating toward groundwater, including the lower portion of the landfill waste column near MW-3 and under the HDPE barrier layer in the overlap area between LF-1 and LF-2.

Phase 1 of the plan would include the installation of 4 additional LFG extraction wells at LF-1, including two wells (GX-10 and 11) screened in the lower portion of the waste column in the western corner of the unit near MW-3 and two wells (GX-12 and 13) screened beneath the HDPE barrier layer in the LF-1/LF-2 overlap area. Existing LFG extraction wells would be vacuum-tested to estimate the radius of investigation for placement of the new wells. Five of the single probe soil gas monitoring wells along the northern and western perimeter of the unit (SG-2, -3, -4, -5 and -11) would be replaced with triple completion wells (SG-2A, -3A, -4A, -5A and -11A) to monitor the effectiveness of the extraction system in reducing VOC concentrations in soil gas. Phase 1 would also include unsaturated zone modelling using EPA's VLEACH software to evaluate LFG migration in the unsaturated zone and threshold concentrations of specific VOCs in soil gas that represent a threat to groundwater.

Based on the results of unsaturated zone modelling and gas probe monitoring data (at least one year), up to 8 additional gas extraction wells would be installed within the LF-1 area, as needed, as Phase 2 of the plan. Central Valley Water Board staff is currently reviewing the amended EFS, but the plan has not yet been approved.

### **CLOSURE AND POSTCLOSURE MAINTENANCE**

102. The Title 27 prescriptive standard for landfill final cover includes the following

components, from top to bottom:

- a. Erosion Resistant Layer -- at least one foot of vegetative cover soil;
- b. Barrier Layer (compositely-lined landfills only) – Geomembrane equivalent to geomembrane in composite base liner.
- c. Low Hydraulic Conductivity (LHC) Layer -- Minimum one foot of compacted clay soil with a permeability less than or equal to the lesser of  $1 \times 10^{-6}$  cm/s or the permeability of underlying clay soil liner or natural geologic materials, as applicable;
- d. Foundation Layer - at least two feet of materials (soil and/or waste) with appropriate engineering properties to support the overlying cover.

In lieu of the prescriptive cover design, the Discharger may construct an EAD provided that it meets the requisite demonstration under Title 27, section 20080(a). See Finding 74 (Footnote No. 9).

#### LF-1

103. In May 2005, the Discharger submitted a Partial Final Closure and Postclosure Maintenance Plan for Module I as required under the CAO R5-2004-0706 as part of the Site Improvement Plan (see Finding 97.f). The plan proposed installation of a 4.5-foot thick evapotranspirative (ET) cover on the top deck of Module I as a corrective action measure under the CAO R5-2004-0706. Water Board staff subsequently approved the design report on the condition that the Discharger conduct a 5-year demonstration project to show that the ET cover qualified as an EAD under Title 27, section 20080(b). A test pad was constructed on the top deck and monitored for various parameters for five consecutive wet seasons (2008-2009 through 2012-2013). Monitoring results were submitted in annual assessment reports.

In a 11 July 2014 letter, Water Board staff acknowledged that the Discharger had adequately demonstrated that the ET cover met or exceeded Title 27 standards and that the landfill had been partially closed in accordance with the CAO R5-2004-0706. A description of the demonstration test pad and monitoring results is provided in the Information Sheet attached to this Order.

104. Given that LF-1 does not have a Class III base liner (see Finding 21) and is no longer authorized to accept new wastes for disposal (see Discharge Prohibition A.2), these WDRs require that the remainder of LF-1 (i.e., all slopes outside of the closed top deck) be closed in accordance with a Partial FC/PCMP submitted under this Order, as approved by Central Valley Water Board staff. The Partial FC/PCMP is due by 15 October 2016 and LF-1 is required to be completely closed no later than 15 October 2018. For LF-1 side slopes overlapped by LF-2 as the landfill is developed, these WDRs allow the Discharger to propose a single containment system that functions as both LF-1 final cover and LF-2 side slope liner, provided that Title 27 performance standards are met. See Closure and Postclosure Specifications E.1 and E.2 and Construction Specification D.5.b.3).

## LF-2

105. On 30 July 2010, the Discharger submitted a revised Preliminary Closure and Postclosure Maintenance Plan (PC/PCMP) with conceptual plans for closure of LF-1, Module I and the 10 planned LF-2 expansion modules as a single waste management unit.<sup>13</sup> The plan scope consisted mostly of closing LF-2, given that at closure, LF-2 would completely encircle LF-1, Module I's closed top deck, less the thickness of final cover soil to be applied. Proposed landfill closure activities would include grading and final cover installation; modifications and improvements to the landfill's monitoring systems and LFG control facilities; and various site improvements associated with landfill closure (e.g., drainage controls, demolition/decommissioning, survey monuments, site security).
106. The plan anticipated installation of a 4.5 foot thick ET cover over LF-2 similar to that installed on LF-1's top deck in 2006, utilizing existing intermediate cover soil. For preliminary planning purposes, the proposed ET cover would likely rely on the test pad demonstration conducted at LF-1 for its EAD demonstration. The closed landfill (i.e., LF-1 and LF-2) would be approximately square-shaped with a maximum final cover elevation of 432 feet MSL occurring along the spine of a boot-shaped top deck. Proposed final cover side slope grades (3.4H:1V) and setback from the site perimeter (200 feet) would generally be the same as the interim cover slopes of completed modules. The top deck would be graded to drain at a 6 % slope toward grass-lined cover drains along the flanks of the unit that discharge to overside drains. Grass-lined bench drains would collect sheet flow runoff from the landfill side slopes and direct it to the overside drains. The overside drains would discharge to a series of large (12 foot wide) drainage ditches connected to an elongated storm water detention basins (100' wide x 500' long) along the perimeter of the unit to reduce peak flow discharges. The perimeter drainage system would discharge to the large storm water (i.e., stock) pond in the southeast corner of the site.
107. The 30 July 2010 PC/PCMP did not include final cover slope stability analysis because none of the proposed final cover slopes are steeper than 3H:1V and a geosynthetic component is not being proposed as a component of the cover. See Standard Closure and Postclosure Specification G.14, SPRR. Also, limited global slope stability analysis conducted for the design of LF-2's containment system indicated that final cover slopes with an ET final cover would likely be stable in accordance with the requirements of Title 27. See Finding 78.c.
108. The 30 July 2010 PC/PCMP did not include a specific plan for partial/phased landfill closure; however, it indicated that the landfill would likely be closed in phases. Phased closure would proceed once a sufficient number of adjacent expansion modules had been developed to constitute a closable phase. The first closure phase

---

13. See 30 July 2010 *Preliminary Closure and Postclosure Maintenance Plan, Foothill Sanitary Landfill, San Joaquin County*, prepared by Shaw Environmental, Inc. (Appendix B, JTD).

would not likely begin before the year 2024, however. These WDRs require that the Discharger partially close LF-2, as feasible as the landfill is developed, per Title 27 requirements. See Closure and Postclosure Specification E.4.

109. Closure and Postclosure Specification E.3 requires that the Discharger submit a revised PC/PCMP for LF-2 only consistent with the requirements of this Order, including, but not limited to, the requirement for separate, prior closure of LF-1; a preliminary plan for partial/phased LF-2 closure; the need for a preliminary demonstration under Title 27, section 20080(b) if an EAD final cover (e.g., ET cover) is proposed; and revised financial assurance cost estimates, as necessary. See also Provision H.10.
110. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
111. This Order final closure and post-closure maintenance plans, design documents, and CQA plan be submitted for review and approval at least 180 days prior to actual closure.
112. Landfill postclosure maintenance and monitoring activities will include final cover maintenance; leachate management; maintenance and monitoring of LFG facilities; groundwater, vadose zone, and surface water monitoring; maintenance of precipitation and drainage controls; and other postclosure related activities. The PC/PCMP includes optional plans (depending on circumstances and subject to agency approvals) to develop the area where the large storm water pond is located in the southeast corner of the site and to move the LFG flare station and related facilities onto the landfill final cover surface after closure.
113. Once every five years during the post-closure maintenance period, 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.
114. The completed final cover will 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 will be repaired and tested for adequacy based on the closure CQA Plan.

### **FINANCIAL ASSURANCES**

115. The Discharger is required to demonstrate financial assurances for closure and postclosure maintenance to the California Department of Resources Recycling and Recovery (CalRecycle) pursuant to Title 27, sections 22205 and 22210 (i.e., the

landfill operated on or after January 1, 1988). See also Standard Financial Assurance Provision H.1, SPRR.

116. 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. The 30 July 2010 PC/PCMP provided a lump sum cost estimate for closure of the entire landfill (i.e., the largest future area needing closure at any one time absent phased closure) consistent with Title 27, section 21820(a)(1)(b). The total estimated cost of landfill closure, including 20% contingency, was \$26,651,400 in 2010 dollars. These WDRs require that the Discharger submit revised closure cost estimates consistent with the requirements of this Order (e.g., separate, prior closure of LF-1; phased closure of LF-2). See Closure and Postclosure Specification E.3.c.
117. Title 27 requires that the Discharger provide and maintain financial assurances to CalRecycle in at least the amount of the closure cost estimate (i.e., in the currently approved PC/PCMP submitted under previous WDRs or this Order), as annually adjusted for inflation. See Financial Assurances Specification. The Discharger has established an enterprise fund account (San Joaquin County Resolution No. 90-1190) funded from solid waste revenues as the financial assurances mechanism for landfill closure financial assurances per Title 27, section 22228. As of 2014, the balance of the closure fund was \$3,360,455.
118. Title 27, sections 21840 and 22211 require a cost estimate for landfill post-closure maintenance. The Discharger's 30 July 2010 PC/PCMP included a cost estimate for landfill post-closure maintenance. The total estimated annual cost for postclosure maintenance and monitoring provided in the PC/PCMP, including 20% contingency, was \$1,443,100 in 2010 dollars. The corresponding 30-year cost was \$43,293,000 in 2010 dollars. See Finding 112. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation. As of 2014, the balance of the post-closure maintenance fund was \$1,845,158. In 1994, CalRecycle approved a Pledge of Revenue Agreement (Resolution No. 94-1137) proposed by the Discharger per title 27, section 22228 as the postclosure financial assurances mechanism for the site. This agreement is still in effect.
119. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. In a 20 October 2008 letter, Central Valley Water Board staff approved a 30 September 2008 cost estimate of \$1,677,090 in 2008 dollars submitted by the Discharger for corrective action of all known or reasonably foreseeable releases at the landfill. The approved cost estimate included the costs of installing four deep landfill gas extraction wells extending to the base of LF-1 to address a hypothetical gas release at unlined Module I (i.e., LF-1). On 30 January

2009, CalRecycle approved a Pledge of Revenue Agreement (Resolution R-08-686) per Title 27, section 22245 as the mechanism for corrective action financial assurances the site. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of this cost estimate, as adjusted annually for inflation. As of 2014, the balance of the corrective action fund was \$61,607.

### CEQA AND OTHER CONSIDERATIONS

120. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, section 15301.
121. 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.
122. Facilities under WDRs are classified for the purposes of determining the annual permit fee and WDR update cycle. These classifications are based on threat to water quality and complexity associated with the discharge. The Foothill Landfill was classified as a "1B" discharge under previous WDRs Order R5-2003-0020. These revised WDRs maintain the "1B" designation. The following fee criteria were used:

Threat to Water Quality:

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

Complexity:

Category "B" – "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."

The WDR update cycle for 1B discharges is 5 years from the date of adoption of the WDRs, or, if granted a continuance by the Executive Officer, from the continuance

date. The WDR fee schedule may be found on the Central Valley Water Board's website at:

[http://www.waterboards.ca.gov/resources/fees/docs/fy1415\\_wdr\\_fees.pdf](http://www.waterboards.ca.gov/resources/fees/docs/fy1415_wdr_fees.pdf)

123. Water Code Section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Central Valley Water Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Central Valley Water 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."
124. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2015-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**

125. 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.
126. The 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.
127. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.
128. 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 California 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 of the Order, except that if the thirtieth day following the date of this Order 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](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

**IT IS HEREBY ORDERED**, pursuant to Sections 13263 and 13267 of the California Water Code, that Order R5-2003-0020 is rescinded, except for purposes of enforcement, and that the San Joaquin County Department of Public Works and Foothill Sanitary Landfill, Inc., their agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted there under, shall comply with the following:

**A. DISCHARGE PROHIBITIONS**

1. The discharge of 'hazardous' or 'designated' waste, as defined under Title 27, section 20164, to the landfill unit is prohibited.
2. The discharge of new or additional waste to LF-1 is prohibited, except as follows:
  - a. The discharge of inert wastes (see Title 27, section 20230), or relocation of existing wastes, within the landfill unit consistent with the revised Partial FCP/PCMP submitted under this Order to establish the final cover grade prior to completing closure of the unit;
  - b. The beneficial reuse of inert materials in final cover construction/repair (e.g., foundation layer, side slope buttresses, berms) consistent with Discharge Specification B.8;
  - c. The stockpiling of inert materials for beneficial reuse described above; and
  - d. The beneficial reuse of inert liquids for construction or maintenance purposes consistent with Discharge Specification B.8.c.
3. The following discharges of leachate and/or landfill gas condensate are prohibited:
  - a. The return or discharge of leachate and/or LFG condensate to unlined unit LF-1;
  - b. The discharge of LF-1 leachate and/or LFG condensate to LF-2 after **15 October 2016** (see Discharge Specification B.6);
  - c. The return or discharge of leachate and/or LFG condensate to closed units or closed portions of units; and
  - d. The use of leachate and/or LFG condensate for dust control.

See 40 CFR 258.28(a)(2) and Title 27, sections 20090(e)(2), 20200(d) and 20340(g).
4. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) incorporated into this Order under Finding 2.

## **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 is not authorized to use any material as alternative daily cover (ADC) other than tarps unless and until the Discharger has demonstrated that a proposed ADC meets the requirements in Title 27, section 20705, and the Discharger has received written approval by the Executive Officer 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 in writing. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
4. If any waste is discharged at this facility in violation of this Order, the Discharger shall timely report such unauthorized discharge to the Central Valley Water Board and relocate the waste for proper disposal. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the 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.
5. Leachate and landfill gas condensate may be returned/discharged only to active LF-2 modules constructed and operated in accordance with this Order and only if consistent with Discharge Prohibition A.3.
6. After **15 October 2016**, leachate and LFG condensate derived from LF-1 shall be discharged at an authorized offsite facility or appropriately handled for such discharge (e.g., stored in tanks pending pick-up). See Facility Specification C.2.
7. The discharge of dewatered sewage, septage, and/or water treatment sludge shall be limited to active LF-2 modules constructed and operated in accordance with this Order, including, but not necessarily limited to, Construction Specifications D.1 through D.4 and SPRR, Standard Prohibition C.1.b.
8. The beneficial reuse of wastes at LF-1 per Discharge Prohibition A.2.b shall be subject to the following restrictions:
  - a. Inert wastes used in construction or repair of landfill final cover shall meet the project specifications contained in the approved construction documents

described in, or submitted under, this Order and shall be applied consistent with the revised Partial FC/PCMP submitted under this Order. See Construction Specifications D.7 and D.9.

- b. Only clean soil (i.e., soil not containing any waste) may be used in the construction/repair of the ET cover; the erosion resistant and low hydraulic conductivity layers of prescriptive cover; cover berms and drains; side slope benches; landfill buttresses, and detention basin walls.
  - c. Inert liquids (i.e., groundwater, surface water, or storm water) may be applied to landfill prescriptive or ET final cover for construction or maintenance purposes (e.g., dust control, limited irrigation of vegetative cover) consistent with Title 27, section 21090(a)(5)(B).
9. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs.

### **C. FACILITY SPECIFICATIONS**

1. Consistent with Discharge Prohibition A.3, LFG extracted from LF-1 shall be routed through a condensate knock-out sump prior to being commingled with LF-2 LFG, if condensate removed from LF-2 LFG is to be returned to LF-2.
2. Per Title 27, section 21760(b), the Discharger shall develop and implement an operations and maintenance (O&M) plan for the LFG extraction system, as approved by Central Valley Water Board staff, to ensure that LFG from the landfill units is controlled and handled appropriately in accordance with the requirements of this Order and Title 27 regulations. The plan shall include, but not be limited to, a plan for the separate removal and offsite disposal of LFG condensate from LF-1 per Discharge Specification B.6 above. See also Provision H.8.
3. 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**

#### Liner

1. LF-2 expansion modules shall, at a minimum, be constructed in accordance with the following engineered alternative design (EAD), from top to bottom:<sup>14</sup>

---

<sup>14</sup>. Incorporates EAD approved under previous WDRs and Title 27 containment system requirements for side slope extensions overlapping an existing MSW landfill (i.e., LF-1).

<u>Component</u>	<u>Base Liner</u>	<u>Side Slopes</u>	
		<u>Excavation</u>	<u>LF-1/LF-2 Interface</u>
Operations Layer	<sup>3</sup> 2 feet soil		
Filter Fabric	Geotextile <sup>1</sup>	Geocomposite <sup>2</sup>	
LCRS	9-inch gravel layer		
	Appropriately-sized HDPE collection piping in drainage troughs		
Base Liner	60-mil HDPE <sup>3</sup>	None <sup>4</sup>	
	Geosynthetic Clay Liner (GCL) <sup>5,6</sup>		
Foundation Layer	<sup>3</sup> 1 foot prepared subgrade <sup>7</sup>		

1. Geotextile consists of 8 oz/yd<sup>2</sup> non-woven fabric.
2. Geonet with geotextile on at least one side.
3. HDPE textured on at least one side.
4. Additional containment components (e.g., synthetic barrier layer) shall be installed if (and to the extent) required under an approved corrective action program submitted under these WDRs and/or separate Central Valley Water Board order (e.g., CAO R5-2004-0706).
5. GCL shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep, shear, and bearing capacity.
6. May alternatively be constructed with a Title 27 prescriptive clay liner. See Title 27, section 20330(a).
7. See Construction Specification D.2.

2. The foundation layer in the above composite liner design (D.1) shall be constructed as follows:
  - a. Project CQA shall include both preparation of the foundation surface so as to minimize the risk of liner puncture, and leak detection testing. The foundation layer shall consist of select fine-grained soil materials compacted as follows:
    - 1) In lifts of 6 inches or less; and
    - 2) To at least 90% of maximum dry density per moisture content specification in approved CQA plan; and
    - 3) To a minimum hydraulic conductivity of  $1 \times 10^{-5}$  cm/sec; or
    - 4) In accordance with the following gradation criteria:
      - i. A maximum size of 3/8-inch; and
      - ii. At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve.
  - b. The subgrade for the bottom and side slopes (including LF-1/LF-2 interface areas) shall be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a smooth surface free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.

**LCRS**

3. The LCRS for LF-2 expansion modules shall, at a minimum, be constructed in accordance with the following, from top to bottom:
  - a. Blanket Drainage Layer –
    - 1) Minimum 9-inches thick layer of sufficiently rounded or cushioned drainage gravel over base liner
    - 2) Geocomposite (or equivalent combination of geonet and filter fabric) over side slopes, including LF-1/LF-2 interface areas.
  - b. Collection Piping
    - 1) Perforated HDPE laterals installed in collection troughs (or directly on base liner) and plumbed to header pipe(s) or directly to an LCRS sump (e.g., depending on module design/geometry). Laterals shall be equipped with pipe risers to allow for video camera inspection (by wire rope or robot) and cleaning, as necessary.
    - 2) As warranted, based on module design/geometry, HDPE header pipe plumbed to LCRS sump.
  - c. Collection Troughs – graded toward header or LCRS sump.
4. The LCRS sump shall be constructed consistent with the approved designs for Module 1 or Module 2, as follows, from top to bottom:

<u>Component</u>		<u>Specification</u>
Filter Fabric		Geotextile <sup>2</sup>
Sump <sup>1,3</sup>	Gravel	Sump gravel
	Depth	≥ 4 feet
	Pump	Automatic with high and low alarms, flow meter
Cushion		Geotextile <sup>2</sup>
Primary Composite Liner		60-mil HDPE/GCL
Secondary LCRS <sup>3</sup>		Geonet
Secondary Composite Liner		60-mil HDPE/GCL
Foundation Layer		<sup>3</sup> 1 foot compacted subgrade

1. Sump shall be equipped with an automatic pump, flow meter, and recording device, allowing instantaneous measurement of rate and volumes removed. High and low liquid level sensors and associated alarms shall also be included in design.
2. 8 oz/yd<sup>2</sup> non-woven fabric.
3. Design shall include appropriately-sized HDPE riser pipes for leachate monitoring and removal.

**Final Cover**

5. Final cover installed over the remainder of partially-closed LF-1 shall, at a

minimum, be constructed in accordance with one of the following designs consistent with the Partial FCP submitted under this Order, as approved:

a. Title 27 Prescriptive Standard, from top to bottom:

<u>Component</u>	<u>Side Slopes</u>	
	<u>Exterior</u>	<u>LF-1/LF-2 Interface</u>
Erosion Resistant Layer	<sup>3</sup> 2 feet vegetative cover soil	
Low Hydraulic Conductivity (LHC) Layer	<sup>3</sup> 1 foot compacted clay soil ( $k \leq 1 \times 10^{-6}$ cm/sec) <sup>1</sup>	
Foundation Layer	<sup>3</sup> 2 feet soil or appropriate waste materials <sup>2</sup>	

1. Minimum relative compaction of 90%.
2. See Construction Specification D.2.

b. One or more of the following Title 27 Engineered Alternative Designs (EADs), as applicable, from top to bottom:

1) GCL

<u>Component</u>	<u>Side Slopes</u>	
	<u>Exterior</u>	<u>LF-1/LF-2 Interface</u>
Erosion Resistant Layer	<sup>3</sup> 2 feet vegetative cover soil	
Low Hydraulic Conductivity (LHC) Layer	Geosynthetic Clay Liner (GCL) <sup>1</sup>	
Foundation Layer	<sup>3</sup> 2 feet soil or appropriate waste materials <sup>2</sup>	

1. GCL shall exhibit appropriate strength characteristics (hydrated) to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep and shear.
2. See Construction Specification D.2.

2) ET Cover (Exterior side slopes only)

<u>Component</u>	<u>Side Slopes</u>	
	<u>Exterior</u>	<u>LF-1/LF-2 Interface</u>
Evapotranspirative Layer	≥ 3 feet soil	n/a <sup>1</sup>

1. ET cover not authorized in LF-2 underlap areas. Use GCL or prescriptive design.

3) Liner-Cover Combination System (LF-1/LF-2 interface areas only)

For LF-1/LF-2 interface areas only, a combined liner-cover that system that incorporates, but does not necessarily duplicate, elements specified above for LF-1/LF-2 interface liner (Construction Specification D.1) and

final cover (Construction Specification D.5), provided that the combined containment system meets Title 27 performance standards for both final cover and Class III (non-composite) landfill liner.

The partial FC/PCMP shall include an appropriate EAD demonstration per Title 27, section 20080(b) for each of the above designs proposed. See Closure and Postclosure Maintenance Specification E.5.

6. The Discharger may propose changes to the liner/final cover system design prior to construction provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner/final cover system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board in revised WDRs.
7. **At least 90 days** prior to initiation of any new landfill modules or closure construction activities under an FC/PCMP or Partial FC/PCMP, as approved by the Executive Officer, the Discharger shall submit for review and approval all applicable plans and reports, including, but not necessarily limited to, the following:
  - a. Any proposed design modifications pertaining to construction or closure of the unit, module, or phase per Construction Specification D.6.
  - b. A construction design report, including project specifications, drawings, grading and design plans; and
  - c. A Construction Quality Assurance (CQA) Plan which satisfies the requirements of Section 20324 of Title 27 as it applies to the construction of the erosion-resistant and foundation layers.

Closure construction shall proceed only after the above (and any other applicable) reports have been approved by Executive Officer. See also Standard Construction Specification F.1, SPRR.

8. LFG extraction facilities necessary to control LFG shall be installed as each new module is constructed and developed. New modules shall be tied into the existing LFG extraction system in order to help control LFG.
9. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs.
10. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs.

## E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

### LF-1

1. By **15 October 2016**, the Discharger shall submit a revised Partial FC/PCMP for closure the remainder of LF-1 consistent with the construction specifications (e.g., Construction Specification D.5) and other applicable requirements of this Order. The revised Partial FC/PCMP shall include plans for closure of all portions of the unit that have not yet been closed (e.g., side slopes), and include a description of closure activities, a schedule, and all other information required under Title 27, section 21769(c). See Finding 104, Closure and Postclosure Specification E.2, Provision H.9.b and Standard Closure and Postclosure Specification G.8.
2. By **15 November 2018**, the Discharger shall complete closure of unlined unit LF-1 (i.e., Module I) and within 30 days thereafter submit a certification that the landfill has been closed consistent with Standard Closure and Postclosure Specification G.23, SPRR and Provision H.9.d of this Order.

### LF-2

3. By **15 March 2017**, the Discharger submit a revised PC/PCMP for LF-2 consistent with the revised Partial FC/PCMP submitted under these WDRs for LF-1, as approved by the Executive Officer, and all other requirements of this Order and Title 27, section 21769(b). The revised PC/PCMP shall include, but not be limited to, the following:
  - a. A preliminary plan and timeline for partial/phased landfill closure;
  - b. A preliminary demonstration under Title 27, section 20080(b) for an EAD final cover, if an EAD final cover is being proposed (see Closure and Postclosure Specification E.5); and
  - c. Revised closure and postclosure financial assurance cost estimates, as appropriate.

See Provision H.10 and Closure and Postclosure Specification E.4 below.

4. The operator shall to the extent feasible, based on site specific factors, implement partial and/or partial final closure activities as the site operation progresses, consistent with the closure of the entire site. See Title 27, section 21120(a).

### Both Units

5. Landfill final cover designs proposed in preliminary or final closure plans submitted under this Order shall be consistent with the prescriptive standard or engineered alternative design (EAD) options specified in Finding 102 and Construction Specification D.5. Any proposal for an EAD final cover included in a FCP or Partial FCP shall be accompanied by the requisite demonstration under Title 27, section 20080(b) and (c), including, but not limited to, a demonstration

that construction of the prescriptive standard is infeasible and that the proposed EAD meets or exceeds Title 27 performance standards for final cover. Such demonstration may require a field pilot project or test pad.

6. Any proposal for final cover included in the FCP or Partial FCP for the landfill units shall meet the requirements of Title 27 and Subtitle D, including the requirement that the permeability of the LHC layer (or percolation rate through proposed ET cover) be no greater than that of the base liner or underlying natural geologic materials (whichever is less) in order to prevent a "bathtub effect". See Title 27, section 21090(a)(2) and 40 CFR 258.60(a)(1).
7. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order.
8. Closed or partially closed landfill unit side slopes shall be no steeper than 3H:1V, and closed top deck areas shall be sloped at three percent or greater.
9. The Discharger shall install and maintain an active landfill gas extraction system appropriately sized to remove LFG from the closed landfill unit throughout the postclosure period. 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.
10. For closure designs including geomembrane and/or GCL, the Discharger shall seal the edges of the final cover by connecting its components to the base liner, as necessary and feasible.
11. 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.
12. 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 sediment controls to prevent sediment in runoff from the closed landfill during the period the vegetation is being established.
13. 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 SPRs 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 of LF-2 in at least the

amounts in the most recently approved PC/PCMP, as 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 most recently approved PC/PCMP 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 PC/PCMP 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 Financial Assurances Specification F.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 119. 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) R5-2015-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 R5-2015-XXXX, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012.
3. The Discharger shall comply with the Water Quality Protection Standard specified in the Water Quality Protection Standard Report submitted under Provision H.7 of this Order, as approved.
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 R5-2015-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 R5-2015-XXXX and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012.
6. In the event of a release, the data analysis methods shall also include trend analysis; an evaluation of the water chemistry; and preparation of contaminant contour plots to monitor the nature of the release and effectiveness of corrective action measures, as specified in the MRP.
7. Prior to termination of corrective action measures required under Section 20430(c), the discharger shall demonstrate, pursuant to Section 20430(f), and 40 CFR 258.58(e)(2) for an MSW landfill, that the constituents of the release have been reduced to levels below concentration limits throughout the entire zone affected by the release. During this "proof period", the Discharger shall demonstrate that:
  - a. The concentration of each constituent in each sample from each monitoring point remained at or below its concentration limit for at least **four** years, beginning immediately after the suspension of corrective action measures;
  - b. The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of at least two sampling events per year (i.e., one each semester) per monitoring point (i.e., quarterly monitoring); and
  - c. At the end of the proof period, a single data analysis method (statistical or nonstatistical, as appropriate) shall be used for each monitoring parameter at each monitoring point to determine whether that parameter has been reduced to levels at or below concentration limits at that monitoring point.

The Discharger shall notify the Board and obtain Executive Officer approval prior to (1) suspending corrective action measures prior to making the above demonstration; and (2) terminating corrective action measures after making the above demonstration.

8. Any proposal for concentration limits greater than background (CLGBs) shall be accompanied by the requisite demonstration under Section 20400(c) (i.e., that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment). Approval of CLGBs shall require approval of revised WDRs by the Central Valley Water Board.
9. 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.

#### **H. PROVISIONS**

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP R5-201X-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 R5-2015-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.
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 **31 January 2016**, the Discharger shall submit, for the Executive Officer's approval, a Water Quality Protection Standard (WQPS) Report describing the WQPS for each landfill unit at the site for each monitored media under this Order (i.e., unsaturated zone, groundwater, and surface water). The WQPS report shall specify Constituents of Concentration, Concentration Limits, Monitoring Points,

Points of Compliance, and Compliance Periods, consistent with the requirements of this Order and Title 27 regulations. See Standard Monitoring Specification I.25 and MRP Section C.

8. By **15 January 2017**, the Discharger shall submit, for Board staff approval, an Operations and Maintenance (O&M) Plan for the LFG control system, to ensure that LFG extracted from the landfill units is handled and disposed of in accordance with the requirements of this Order and Title 27 regulations. See Discharge Prohibition A.3.b, Discharge Specification B.6, and Facility Specifications C.1 and C.2.
9. Pursuant to Section 13267 of the California Water Code, the Discharger shall submit the following technical reports relevant to completing closure of LF-1:

	<b>Report</b>	<b>Due Date</b>
a.	Closure Status Report (e.g., interested agency permitting/approvals; project schedule; site preparation and construction progress).	<b>Quarterly beginning 15 November 2016</b>
b.	A revised Partial Final Closure and Postclosure Maintenance Plan (Partial FC/PCMP) per Closure and Postclosure Maintenance Specification E.1.	<b>15 October 2016</b>
c.	Closure construction plans per Construction Specification D.7.	<b>At least 90 days prior to initiation of closure construction</b>
d.	Letter certifying completion of closure construction per Closure and Postclosure Maintenance Specification E.2.	<b>15 December 2018</b>
e.	Certification Report documenting completion of landfill closure per approved construction plans per Standard Closure and Postclosure Specification G.24, SPRR.	<b>15 May 2019</b>

All of the reports required above shall be prepared by a California-registered civil engineer or certified engineering geologist.

10. By **15 March 2017**, the Discharger shall submit a revised PC/PCMP for LF-2 consistent with the revised Partial FC/PCMP submitted under these WDRs for LF-1, as approved by the Executive Officer, and all other requirements of this Order and Title 27, section 21769(b). See Closure and Postclosure Specification E.3.

11. 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

Attachments  
JDM: 17 March 2015