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**[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER
R5-2020-XXXX**



ORDER INFORMATION

Order Type(s): Waste Discharge Requirements (WDRs)
Status: TENTATIVE
Program: Title 27 Discharges to Land
Region 5 Office: Sacramento (Rancho Cordova)
Discharger(s): Stanislaus County, Dept. of Environmental Resources
Facility: Fink Road Landfill
Address: 4040 Fink Road, Crows Landing, California 95313
County: Stanislaus County
Parcel No.: 027-017-040-000
CIWQS ID: 224472
Prior Order(s): 73-108, 88-038, 90-269, 94-257, 98-184, 5-01-207, r5-2004-0158, & r5-2008-0144

CERTIFICATION

I, PATRICK PULUPA, Executive Officer, hereby certify that the following is a full, true, and correct copy of the order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____ June 2020.

PATRICK PULUPA,
Executive Officer

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GLOSSARY

ACW	Asbestos Containing Wastes (> 1% friable asbestos by weight)
ADC.....	Alternative Daily Cover
Antidegradation Policy.....	Statement of Policy with Respect to Maintaining High Quality Waters in California, State Water Board Resolution 68-16
Basin Plan	Water Quality Control Plan for [Basin]
bgs	Below Ground Surface
BOD	Biochemical Oxygen Demand
BPTC.....	Best Practicable Treatment and Control
C&D.....	Construction and Demotion Wastes
CalRecycle	California Department of Resources Recovery and Recycling
CAP	Corrective Action Program
CCR	California Code of Regulations
CEQA.....	California Environmental Quality Act
CEQA Guidelines	CCR, Title 14, section 15000 et seq.
CFR.....	Code of Federal Regulations
CHSC	California Health & Safety Code
COCs	Constituents of Concern
C-Soil	Contaminated Soil
CQA	Construction Quality Assurance
DEIR.....	Draft Environmental Impact Report
DMP	Detection Monitoring Program

DTSC	California Department of Toxic Substances Control
DWR.....	California Department of Water Resources
EC	Electrical Conductivity
EIR	Environmental Impact Report
EMP	Evaluation Monitoring Plan
Existing WMU.....	Units permitted/operated on or before 27 November 1984 per Title 27, section 20080(d)
Existing MSWLF.....	MSWLF unit operating before Subtitle D federal deadline (typically 9 October 1993).
FCPMP.....	Final Closure and Post-Closure Maintenance Plan
FEIR.....	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
GCL.....	Geosynthetic Clay Liner
HDPE	High-Density Polyethylene
Hazardous Waste.....	Waste defined as hazardous under Title 22, CCR
Inert Waste.....	Solid waste defined as inert in Title 27, section 20230(a)
JTD.....	Joint Technical Document
LCRS.....	Leachate Collection and Recovery System
LEA	Local Enforcement Agency
LFG	Landfill Gas
MCE	Maximum Credible Earthquake
MDB&M.....	Mount Diablo Base and Meridian
MDL.....	Method Detection Limit

µg/L	Micrograms per Liter
mg/L	Milligrams per Liter
MPE	Maximum Probable Earthquake
MSL.....	Mean Sea Level
MRP	Monitoring and Reporting Program
MSW	Municipal Solid Waste
MSWLF	Municipal Solid Waste Landfill
MW.....	Monitoring Well
NAVD88	North American Vertical Datum of 1988
New WMU	Units permitted/constructed and operated after 27 November 1984 per Title 27, section 20080(d)
New MSWLF	MSWLF unit constructed on or after Subtitle D federal deadline (typically 9 October 1993).
Nonhazardous Waste.....	Solid Waste defined as nonhazardous in Title 27, section 20220(a)
PCPMP	Preliminary Closure and Post-Closure Maintenance Plan
SPRRs	Standard Provisions and Reporting Requirements
Subtitle D.....	USEPA-promulgated MSW regulations under RCRA (see 40 C.F.R. part 258)
RCRA.....	Resource Conservation and Recovery Act
ROWD.....	Report of Waste Discharge
TDS.....	Total Dissolved Solids
Title 22	California Code of Regulations, Title 22

Title 23	California Code of Regulations, Title 23
Title 27	California Code of Regulations, Title 27
TSCA.....	Federal Toxic Substances Control Act (40 CFR 763)
TWW	Treated Wood Waste, as defined in Title 22, section 67386.4
USEPA.....	United States Environmental Protection Agency
VOCs.....	Volatile Organic Compounds
WDRs.....	Waste Discharge Requirements
WMU or Unit.....	Waste Management Unit
WQPS	Water Quality Protection Standard

FINDINGS

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) hereby finds as follows:

Introduction

1. The County of Stanislaus (Discharger) owns and operates the Fink Road Landfill (Facility), an active municipal solid waste (MSW) landfill located in Stanislaus County near the Interstate 5 freeway about 3.5 miles west of Crows Landing and four miles south of Patterson. The approximate (USGS Quad map) location of the Facility is Section 30, T6S, R7E and Section 19, T6S, R8E, Mount Diablo Base and Meridian (MDB&M). See Finding 25 and Attachment A: Location Map.
2. The 203-acre Facility is on a single, 219-acre parcel of land owned by the County of Stanislaus. As owner and operator of the Facility, the County of Stanislaus (Discharger) is responsible for compliance with this Order.
3. This Order prescribes waste discharge requirements for construction, operation, monitoring, corrective action, closure, and/or postclosure maintenance of three classified landfill units under Title 27 regulations, as summarized in Table 1 below.

Table 1- Landfill (LF) Units

Unit	Fill Areas	Area (acres)	Containment System	Unit Class	Subtitle D	Primary Wastes	Status
LF-1	Cell 1	18.5	Unlined w/ Final Cover	III	Closure only	MSW	Closed
LF-2	Cells 1 - 7	90	Single Composite Liner	III	Applicable	MSW	Active
LF-2	Infill & Overlap	27	Single Composite Liner	III	Applicable	MSW	Future
LF-3	Cells 1 - 5	37	Double Composite Liner	II	Not Applicable	Boiler Ash	Active

4. This Order also prescribes waste discharge requirements for operation, monitoring, closure, and/or postclosure maintenance of two classified surface impoundment units under Title 27 regulations, as summarized in Table 2 below.

Table 2 - Surface Impoundment (SI) Units

Unit	Volume (MGal)	Containment System	Unit Class	Wastes	Status
SI-1	5.0	Double-lined	II	LF-3 leachate	Active
SI-2		Double-lined	II	LF-2 leachate	Active

Materials Accompanying this Order

5. The following documents are attached to this Order and incorporated herein:
 - a. Attachment A – Location Map
 - b. Attachment B – Area Map
 - c. Attachment C – Site Map
 - d. Attachment D – Gas Monitoring & Controls
 - e. Attachment E – Groundwater Monitoring System
 - f. Attachment F – Leachate Sump & Lysimeter Monitoring
 - g. Attachment G – Authorized Waste Discharges
 - h. Attachment H – Title 27 Final Cover Designs
 - i. Attachment I – Preliminary Final Cover Grades
 - j. Attachment J – Landfill Cell Design
 - k. Attachment K – Surface Water Monitoring & Drainage Controls
 - l. Standard Provisions and Reporting Requirements, December 2015 Edition (MSW Landfill SPRRs)
 - m. Standard Provisions and Reporting Requirements, April 2016 Edition (Industrial SPRRs)
 - n. Information Sheet (including Attachment 1)

Attached and incorporated as part of this Order is the separately issued Monitoring and Reporting Program R5-2020-XXXX (MRP), which sets forth the

approved Water Quality Protection Standard (WQPS). (Title 27, § 20390 et seq.) Compliance with the operative MRP (including subsequent amendments) is required under this Order.

6. Additional information set forth in the attached Information Sheet is incorporated herein as part of these findings.
7. On 23 August 2019, the Discharger submitted a revised Joint Technical Document (JTD) document describing significant changes at the Facility since 2008 and plans for vertical expansion, including, but not limited to, the following information:
 - a. Construction of three additional landfill modules (LF-2 Cells 5 & 6 and LF-3 Cell 4).
 - b. A plan for infill and vertical expansion of LF-2 (construction estimated to begin in 2027) that would extend the estimated active life of the Facility by 27 years. See Finding 57.
 - c. An updated preliminary closure and postclosure maintenance plan (PC/PCMP) reflecting preliminary plans for landfill closure after lateral and vertical expansion of LF-2.
 - d. Updated slope stability analysis and pipe hydraulics and loading calculations for the proposed lateral and vertical expansion of LF-2.
 - e. An updated Water Quality Protection Standard (WQPS) Report;
 - f. Financial assurance cost estimates and funding for post-closure maintenance and corrective action; and
 - g. Updated facility maps and related information showing the landfill gas (LFG) extraction system, monitoring wells and other site improvements implemented since the adoption of previous WDRs in 2008.

These revised WDRs prescribe Title 27 requirements applicable to the facility based on information in the JTD and project files.

8. On-site facilities include the landfill units and surface impoundments; access roads; precipitation and drainage controls, including a sedimentation pond; erosion controls; leachate collection systems; an LFG extraction system and flare station; monitoring wells/probes, and various other landfill facilities. See Attachment C: Site Map.

Wastes & Unit Classifications

9. One or more of the landfill units at the Facility (i.e., LF-1 & LF-2) accepted MSW (i.e., household waste) on or after 9 October 1991, the effective date of Subtitle D regulations and are therefore subject to Subtitle D in whole or in part. Title 27 regulations implement Subtitle D through SWRCB Resolution 93-62, which adopted portions of Subtitle D necessary to comply with federal law.
10. These WDRs continue the Title 27 unit classifications of previous WDRs as listed in Table 1 and Table 2 and further described below. See Findings 11, 13 and 18.
11. Constructed in 1971, unlined LF-1 is an existing, Class III landfill unit under Title 27 regulations.¹ LF-1 is also an “existing MSWLF” unit under Subtitle D regulations because it was closed prior to the applicable Subtitle D federal deadline (9 October 1993).
12. LF-1 historically accepted inert and nonhazardous wastes consisting primarily of MSW, commercial wastes and C&D from communities in western Stanislaus County. The waste stream also included treated medical wastes. About 6,000 tons/year of waste was discharged to LF-1 over its active life. In June 1993, LF-1 ceased accepting wastes (upon start-up of LF-2) and was subsequently closed with a Title 27-compliant final cover in 1997.
13. Constructed beginning in 1993, LF-2 currently consists of six cells, of which five (Cells 2 – 6) were constructed with a Subtitle D composite liner and one (Cell 1) was constructed with a single clay liner. One additional (compositely lined) LF-2 cell (Cell 7) is planned for future construction in about the year 2022. LF-2 will also include compositely lined infill and unit overlap areas associated the proposed infill and vertical expansion project estimated to begin in about 2027. See Finding 57.
14. LF-2 is a new, Class III unit under Title 27 because it was constructed with a Title 27 clay liner on or after the effective date of Chapter 15 regulations (i.e., 27 November 1984) per Title 27, section 20080(d). LF-2 is also a lateral expansion MSWLF unit under Subtitle D regulations given that it consists of pre (Cell 1) and

¹ Although LF-1 is unlined, soils underlying the site have sufficient clay content and low enough permeability to meet Class III standards. LF-1 was also closed with a Title 27 final cover, which constitutes its principle containment system. See Findings 23 and 68.

post (Cells 1 – 7) federal deadline (9 October 1993) MSWLF footprints.² Also, since LF-2, Cell 1 was not constructed with a Subtitle D composite liner, however, and is therefore restricted in the types of wastes it can accept.

15. LF-2 historically accepted the same types of wastes as LF-1 (i.e., MSW, C&D and treated medical wastes), as well as commercial, industrial, and agricultural wastes. Most of these wastes were co-disposed of with the MSW, except for where special handling was required. See Findings 67. LF-2 is still operating and will close upon completion of the proposed vertical expansion project (estimated to occur in 2057). Until then, the Discharger proposes to continue discharging MSW and non-MSW to LF-2 consistent with past operations.
16. The Discharger also proposes to continue discharging asbestos-containing wastes (ACW) to LF-2 Cells 5, 6 and 7. Although classified as a non-RCRA hazardous waste under Title 22 regulations, ACW does not pose a threat to groundwater quality and per CHSC section 25143.7 may be discharged to a landfill if specifically authorized under its WDRs and handled and disposed of in accordance with applicable statutes and regulations.³ These WDRs allow ACW to be discharged to LF-2 as proposed, provided that it is monofilled or otherwise disposed of separately from other wastes so as not to be disturbed after disposal. See Discharge Specifications B.1 and B.6.
17. LF-2 also accepts treated wood waste (TWW) per Title 22, section 67386.11, which allows it to be discharged to a landfill provided that such discharge is limited to Subtitle D compositely-lined units/cells and the waste is handled and disposed of in accordance with CHSC sections 250150.7 and 25143.1.5; Title 22 section 67386.3; and Title 27. See Discharge Specifications B.1 and B.3 and the Landfill SPRRs.
18. LF-3 is a new, Class II landfill under Title 27 that has been in operation since 1988. LF-3 currently consists of four cells (Cells 1 through 4), with one additional cell (Cell 5) planned for future construction. Cell 1 is a single clay-lined cell, Cell 2 is a single compositely lined cell, and Cells 3 and 4 are double compositely

² LF-2 may alternative be considered either two separate units under Subtitle D (i.e., existing MSWLF and MSWLF later expansion unit).

³ Such laws and regulations include, but are not limited to, the federal Toxic Substances Control Act (15 U.S.C. §2601 et seq.) and federal Clean Air Act (42 U.S.C. § 7401), including regulations thereunder; and Title 14, Division 7, Chapter 3.5.

lined cells. Future Cell 5 will also be double compositely lined. All cells are/will be operated as boiler ash monofills, as described in Finding 19.

19. Waste discharges to LF-3 have been historically limited to boiler ash generated by an offsite waste-to-energy (WTE) Plant immediately southwest of the Facility. The WTE Plant, owned and operated by Covanta Stanislaus Inc., imports commercial and industrial waste from high technology companies in the Silicon Valley. The boiler ash typically contains soluble metals at concentrations exceeding water quality objectives, rendering it a designated waste under Title 27 regulations. Boiler ash containing Title 22 hazardous concentrations of soluble and/or total metals (e.g., cadmium and lead) is also discharged to LF-3 under an exemption (approved by DTSC in 1990) that allows the waste to be managed and discharged to a landfill as a Title 22 "nonhazardous" waste if authorized under WDRs issued by the Water Board. The Discharger proposes to continue discharging boiler ash from the WTE to LF-3. No other wastes are proposed for discharge to LF-3.
20. Surface Impoundments SI-1 and SI-2 are new, Class II surface impoundments under Title 27 regulations.⁴
21. SI-1 was constructed in 1988 to store and dispose of (through dry season evaporation) leachate flows from LF-3 and any liquid recovered from LF-3's LCRS. In 1998, SI-1 was re-constructed to accommodate increased leachate flows from LF-3 development, increasing SI-1's capacity from 218,000 gallons to five million gallons. The containment system design was also modified to incorporate an approved engineered alternative liner design. See Finding 63.
22. SI-2 was similarly constructed in 1993 to store and dispose of (through dry season evaporation) leachate flows from LF-2, any leachate recovered from LF-2's LCRS, and any liquid recovered from LF-2's underdrain. The containment system design of the unit is summarized Finding 64.
23. The lowest waste elevations at each landfill/cell are as follows:⁵
 - a. LF-1: Unknown (Previous WDRs required 20 feet of separation when unit constructed). See Finding 42.

⁴ Title 27 surface impoundments are not subject to Subtitle D regulations.

⁵ Lowest waste elevation at each cell corresponds to LCRS sump or, if not constructed with a sump, the toe of each cell's LCRS where it is plumbed for drainage.

- b. LF-2: 260 feet MSL (Cell 1), 254 feet MSL (Cell 2), 252 feet MSL (Cell 3), 246 feet MSL (Cell 4), 250 feet MSL (Cell 5), 244 feet MSL (Cell 6) and 287 feet MSL (future Cell 7).
- c. LF-3: 254 feet MSL (Cells 1 & 2), 254 feet MSL (Cell 3), 270 feet MSL (Cell 4) and 270 feet MSL (future Cell 5).

See Information Sheet, Attachment 1: Landfill Base Grades

24. Previous WDRs required that the Discharger monitor leachate quality and flows from each landfill cell their corresponding surface impoundments. Leachate monitoring results for the site generally indicate that that LF-3's active cells (1, 2 and 3) generate a much stronger (i.e, more saline) leachate than those at LF-2. For example, over the past three years (2017 – 2019), the concentrations of TDS and chloride detected in LF-3 leachate averaged about 155, 000 mg/L and 65,000 mg/L, compared to 3,090 mg/L and 1,055 mg/L at LF-2. Annual leachate flows at LF-2 ranged from about 420 gallons (Cell 1) to about 158,000 gallons (Cell 5) and averaged about 40,000 gallons per cell. LF-3 averaged about 232,000 gallons. Annual average leachate flow rates at LF-2 and LF-3 ranged up to about 433 gpd (Cell 5) and 1,400 gpd (Cell 3) respectively with corresponding averages of about 130 gpd and 700 gpd for the units as a whole.

Site Description

25. The Facility is on a low hill in the eastern foothills of the Diablo Mountains (part of the Coast Range) overlooking the San Joaquin Valley floor to the north, east and south. The geographic coordinates of the site are Latitude 37.388° north, Longitude -121.136° west.⁶ The Facility's address is 4000 Fink Road, Crows Landing, CA 95313. See Attachments A and B.
26. To the west is an intermittent stream draining north to the valley floor. Site elevations generally range from about 360 feet MSL to about 240 feet MSL. The Valley floor in the area (200 feet MSL) generally slopes to the east at about a 1.5 percent grade.
27. Land uses in the vicinity of the Facility include industrial (i.e., the landfill), irrigated agriculture, ranching, water conveyance (State Water Project), transportation corridor (Interstate 5 freeway) and aviation (private airport owned by NASA). See Attachment B: Area Map.

⁶ The Stanislaus County Assessor's Parcel Number (APN) for the site is 027-017-040-000.

28. The Facility is not within a 100-year flood plain based on the Federal Emergency Management Agency (FEMA)'s online Flood Insurance Rate (FIRM) Map for the area.⁷
29. The facility receives an average of about 10 inches of precipitation per year based on historical data for the Department of Water Resources (DWR)'s Patterson Station approximately five miles north/northeast of the site. The 100-year, 24-hour and 1,000-year, 24-hour precipitation events for the site are about 2.6 inches and 3.2 inches.⁸ The mean pan evaporation rate is about 54 inches per year (6.8 inches per month during the dry season and 2.2 inches per month during the wet season).⁹ Average monthly evaporation typically exceeds average monthly precipitation 10 consecutive months (February through November) out of the year.
30. An August 2019 Department of Water Resources (DWR) well survey identified at least 15 groundwater supply wells within a one-mile radius of the site, including six domestic supply wells, four agricultural/irrigation wells, and five stock watering wells. The locations of these wells relative to the Facility are shown on Information Sheet, Attachment 2: Nearby Supply Wells.
31. The regional geology of the eastern Diablo Mountains consists of Cretaceous Great Valley sequence marine sediments (e.g., shales) thrust up against a Franciscan subduction complex core (e.g., volcanic and metamorphic rocks) forming the Central Valley Thrust Fault Zone.¹⁰ Along this topographic boundary between the Coast Range and San Joaquin Valley, sedimentary rocks of the Plio-Pleistocene Tulare and Turlock Lake Formations dip northeastward off the Range into the San Joaquin Valley where they flatten out. Overlying soils in this

⁷ · Based on FIRM Map No. 06099C0745E for Stanislaus County, Community Panel No. 060384, updated on 26 September 2008. See <https://msc.fema.gov/portal>.

⁸ · Based on the Rainfall Depth Duration Frequency Data provided on DWR's Flood Emergency Response Information Exchange (FERIX) website for the Patterson Station (B00 6679 05). See <http://ferix.water.ca.gov/webapp/precipitation>.

⁹ · Estimate based on historical data collected at DWR's Denair II California Irrigation Management Information System (CIMIS) Station about 20 miles northeast of the site.

¹⁰ · The San Joaquin Valley is part of the Great Valley sedimentary basin, a 22,500 square mile structural trough comprising California's Central Valley. See Information Sheet.

area generally consist of weathered bedrock on hills and alluvial deposits from San Joaquin River tributaries in valleys between the hills.

32. The site is underlain by terrace deposits to a maximum depth of about 60 feet bgs and then bedrock. The weathered terrace deposit generally consist of clay loam and (e.g., interbedded clays, silts and sands) and gravelly clay loam soils to a maximum depth of 15 feet underlain by more sandy loam soil.^{11,12} Permeabilities of the terrace deposits generally range from 1×10^{-4} cm/sec to 1×10^{-9} cm/sec. Bedrock underlying the site generally consists of Tertiary Fanglomerate siltstone to a depth of about 400 feet bgs, Tertiary Valley Springs Tuffaceous Sandstone to about 630 feet bgs, and Poverty Flat Sandstone to at least 1,000 feet bgs.
33. The landfill is located within the tectonic boundary area between the Coast Ranges and the Great Valley. Seismic hazard analysis for the site included in the JTD indicated a maximum credible earthquake (MCE) of 6.9M occurring along the San Joaquin Valley fault zone approximately one mile east of the site with a corresponding median peak ground acceleration (PGA) of 0.52g. See Finding 60.

Unsaturated Zone

34. The unsaturated zone beneath the site generally consists of the weathered terrace deposits described in Finding 32. All landfill cells were constructed for at least five feet of separation from the highest anticipated groundwater elevation. See Findings 41 and 42.
35. Soil gas at the site is monitored by single and multi-tiered (i.e., shallow, middle and deep) gas monitoring probes installed along the landfill perimeter opposite the waste. The present monitoring system is the result of an August 2009 upgrade to comply with Title 27 solid waste regulations that included decommissioning of previous probes except for GP-2 and GP-3. The upgraded network includes 12 multi-tier soil gas monitoring probes (GP-1R, and GP-4

11. Surface soils at the site have been classified as Dam Luis and Calla-Carbona Complex clay loam alluvial soils. See 2002 U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey of Stanislaus County, California, Western Part (CA642).

12. A May 2017 geotechnical investigation conducted along the site perimeter confirmed interbedded layers of silt, clay, and sand to at least 60 feet bgs. The upper layers were primarily comprised of silt and clay with the deeper layers sandier. See March 2018 *Geotechnical Analysis Report for Infill and Vertical Expansion, Fink Road Landfill*, prepared by Golder Associates, Inc.

through GP-14) along the perimeter of the site¹³ and three additional dual completion probes, designated GP-15, GP-16, and GP-17 installed near the WTE plant in March 2018. See MRP Section Table 10 and Attachment D: Gas Monitoring & Controls.

36. Quarterly soil gas monitoring conducted under its Solid Waste Facilities Permit indicates that all perimeter soil gas probes at the site have been at or near non-detect levels for methane for several years. The maximum methane concentration detected in the Fourth Quarter 2019, for example, was 0.3 percent by volume. No VOC sampling of the probes has been historically conducted at the site. The MRP under these WDRs requires that the Discharger conduct quarterly monitoring for specified field gases and VOC sampling as warranted based on levels of total organic vapors. See MRP Section A.3.a.ii.
37. No soil pore water monitoring devices were historically installed beneath unlined unit LF-1 (the unit pre-dates Chapter 15, Article 5 regulations adopted in 1991) and retrofitting the unit with vadose zone monitoring devices is not technically or economically feasible. As such, LF-1's soil pore gas and groundwater monitoring systems provide the earliest detection of a release from the unit. See Title 27, section 20415, subdivision (d)(5). See Attachment D and MRP Table 10
38. The unsaturated zone soil pore liquid monitoring network for the other units at the Facility generally consists of lysimeters installed beneath landfill cells and/or LCRS sumps their associated background monitoring points/devices. The system also includes pan lysimeters installed beneath the subdrain at SI-1. Impacted liquid has been historically detected in some of the lysimeters, primarily those associated with non-compositely lined landfill cells, and adequately addressed through repairs and other corrective action measures. See Attachment F and MRP **Table 12** and **Table 13**.

Surface & Groundwater Conditions

39. Surface drainage for the northern quarter of the site is to the South Fork of Little Saldo Creek a tributary of the San Joaquin River. The remaining three quarters of the site drains to the east via a closed conduit under Interstate 5 and the California Aqueduct and thence via an open channel to Crow Creek, a tributary of the San Joaquin River. Both drainages are in the Delta-Mendota Canal Hydrologic Unit (541.10) of the San Joaquin River Basin.

¹³. See October 2009 technical report Construction Observation Report for the Installation of Landfill Gas Perimeter Probes at the Fink Road Landfill, prepared by _____.

40. The first encountered groundwater under most of the site occurs in small perched zones that follow surface topography. Depths to groundwater range from 12 to 85 feet below native ground surface. Individual monitoring well groundwater elevation fluctuates from 15 feet seasonally to little or no seasonal changes. Groundwater elevations range generally from about 195 feet MSL (SE corner of site) to about 265 feet MSL (SW corner of site). With the exception of the southern portion of the site in the area of LF-3 and the surface impoundments, groundwater flows to the northeast at a gradient of about 0.018 ft/ft. Along the southern part of the site at LF-3, groundwater flows to the east at a gradient of about 0.030 ft/ft, and north of LF-3 (Cells 1-3) in the area of SI-1 and SI-2, groundwater flows to the southeast at a gradient of about 0.28 ft/ft. Corresponding groundwater velocities are estimated to range from about 22 ft/yr in the area of LFs-1 & 2, 34 ft/yr in the area of SI-1 & SI-2, and 37 ft/yr in the area of LF-3.

Groundwater Separation

41. Title 27, section 20240(c), a siting requirement, requires that existing landfill units be operated to maintain at least five feet of separation between the lowest elevation of landfill wastes and highest anticipated elevation of groundwater. Exemptions from this prescriptive standard may be approved upon a showing of infeasibility provided adequate separation is maintained per Title 27, sections 20080(b) and 20260(a).
42. Previous WDRs (Order 73-108) required at least 20 feet of groundwater separation at unlined unit LF-1 when it was constructed/developed and (Orders 88-038, 90-296 and 94-257) 10 feet of separation at Cells 1 & 2 at both LF-2 and LF-3. Cells constructed under subsequent WDRs (Orders 98-184, r5-2004-0158 & r5-2008-0144), including LF-2, Cells 3 - 6 and LF-3, Cells 3 & 4 were required to be constructed with at least five feet of separation. This Order requires at least five feet of separation at existing and future landfill cells.

These WDRs require that the Discharger maintain at least the prescriptive minimum five feet of groundwater separation at both landfill units absent Executive Officer approval of alternative minimum separation. In addition, the MRP under these WDRs requires that the Discharger estimate and report groundwater separation at the lowest waste elevations of each landfill cell. See Finding 6, Facility Specification F.1 and C.2 and MRP Section D.1.e.

43. In some areas (i.e., both onsite and offsite), LF-1 and LF-2 are monitored contiguously, including upgradient and along the northeastern site perimeter. See MRP Sections A.1.a (Table 9) and A.1.b (Table 10). Title 27 regulations generally require that WMUs have separate groundwater monitoring systems and a separate Point of Compliance along the down gradient perimeter of each unit, absent an approved, site-specific demonstration for a shared monitoring system

and/or Point of Compliance. In general, the Discharger is required to demonstrate that the units are contiguous and separate monitoring of each unit is not feasible. See Title 27, sections 20405 (b) and 20415(e)(3). The Discharger is also typically required to demonstrate that the proposed contiguous monitoring program meets Title 27 performance standards for monitoring.

These WDRs that the Discharger monitor LF-1 and LF-2 separately, to the extent feasible, until such time as lateral expansion of LF-2 requires removal of monitoring wells between the units. The WDRs also require the Discharger to monitor the LF-1 and LF-2 contiguously in areas where separate monitoring is not currently feasible as well as after lateral expansion of LF-2 renders separate monitoring of the units unfeasible. See Finding 49 and Monitoring Specification G.5.

Groundwater Monitoring

44. There are currently 27 groundwater monitoring wells at the site, including five upgradient wells along the western site perimeter (BGs 1 - 4 and MW-12); 12 downgradient wells along the eastern site perimeter (MWs 13, 14, 18, 19, 25, 26, 27S, 27D, 29 & 30); six side-gradient wells along the southern site perimeter (16, 16A, 17, 20, 21 & 31); and two wells within the site interior between landfill units (MWs 9B and 22). Other wells historically installed within the site perimeter have since been abandoned to make room for construction of new cells (e.g., MW-9, 9A, 28S & 28D). See Attachment D.
45. The Discharger is not currently proposing to install any additional wells at the site, however, these WDRs require that additional monitoring wells be installed at the following approximate locations, as feasible:
 - a. Downgradient of LF-1 between LF-1 and LF-2, Cell 5
 - b. Upgradient of future LF-2, Cell 7
 - c. Upgradient of SI-2 between LF-2 and SI-2

These WDRs include a time schedule for installation of the above wells and require that the Discharger submit a work plan for review and approval at least 60 days prior to installation or abandonment of groundwater monitoring wells. See Attachment G; MRP Sections A.1.a and A.1.b, and Standard Monitoring Specifications I.23 and I.24, SPRR.

46. Groundwater detection monitoring of constituents that can be evaluated statistically (i.e., general minerals and inorganic constituents naturally occurring in background) is conducted using an interwell approach (i.e., by comparing of downgradient sample results with concentration limits derived from statistical

evaluation of historical upgradient data) in accordance with Title 27 regulations, while groundwater detection monitoring of non-statistical parameters (i.e., organic and inorganic constituents not naturally present in background) is conducted using a non-statistical, intrawell approach (i.e., by comparing of sample results from a given monitoring well with the method detect limit for that inorganic constituent). See MRP, Section C4.

47. Sample collection and analysis is currently conducted in accordance with a 2014 Sample Collection and Analysis Plan submitted under previous WDRs.¹⁴ These WDRs require that the Discharger submit an updated Sample Collection and Analysis Plan consistent with the requirements of this Order, including the MRP (and any future revision thereof). See Monitoring Specification G.8 and Standard Monitoring Specification I.7, SPRR.
48. 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 State Water Resources Control Board (SWRCB).

(See Title 27, § 20415, subds. (e)(7), (10).)

These WDRs require that the Discharger submit a technical report (Monitoring Data Evaluation Methods Report) describing the statistical and nonstatistical data analysis methods used to evaluate background, detection and corrective action monitoring data at the site, including documentation of the software program used. The report may be submitted as part of the updated WQPS Report required under this order. See Finding 49, Monitoring Specifications G.6 and G.7, and Provision H.6.0.

49. Title 27, section 20390 requires that the Central Valley Water Board establish a Water Quality Protection Standard (WQPS) in the WDRs for each unit, including

¹⁴. See 14 February 2014 *Sampling and Analysis Plan, Version 3*, prepared by SCS Engineers.

Constituents of Concern (COCs), Concentration Limits, Point of Compliance, and Monitoring Points.

In 2016, with Water Board staff approval, the Discharger installed four new background wells (BG-1 through BG-4) estimated to be sufficiently upgradient of the site so as to be free of any landfill influence. The wells were also installed to assess whether spatial variability of general minerals and other inorganic constituents historically detected at the site may be natural, and to calculate concentration limits for the site.

On 28 December 2018, the Discharger submitted a revised Water Quality Protection Standard (WQPS) Report using monitoring data from the new background monitoring wells.¹⁵ To address the upgradient variability, the revised WQPS Report proposed separating and pooling background data into north (BG-1 & 2) and south (BG-3 & 4) groups using the Interwell Tolerance statistical method described in MRP, Section C.2. In a 19 April 2019 letter, Staff approved the report and proposed method for calculating concentration limits on the condition that the method by which the data was split into groups also be re-evaluated each year.

These WDRs incorporate the above approach but require that the annual WQPS Report updates be consistent with the requirements of this Order, including the need for an additional background well upgradient of future LF-2 Cell 7. See Finding 43 and Monitoring Specification G.7, and Provision H.6.0. See MRP Section E.4.b.

Groundwater Impacts and Corrective Action

50. Groundwater impacts including volatile organic compounds (VOCs) and mildly elevated concentrations of inorganic constituents were first detected in MW-9 downgradient of LF-1 in 1991, indicating a release from the unit. VOCs detected consisted primarily of chlorinated VOCs, Freon compounds, and BTEX. Three of these VOCs exceeded drinking water standards, including 1,1-DCA, benzene, and methylene chloride. Maximum concentrations of these VOCs detected in MW-9 during 1997 were 9.0 µg/l, 1.3 µg/l and 24 µg/l respectively.

In 2006, five VOCs were detected in monitoring well MW-9 immediately downgradient of LF-1, including 1,1-DCA (0.9 µg/l), cis-1,2 DCE (1.1 µg/l),

15. Monitoring well MW-12 along the western perimeter of LF-1 was historically used to calculate concentration limits at the site but found to be too close to the landfill to resolve issues of spatial variability at the site.

chlorobenzene (1.2 µg/l) and methylene chloride (0.9 µg/l). Total VOCs detected were approximately 4.0 µg/l. As of the Second Half 2019, the concentration of total VOCs detected immediately downgradient of LF-1 (i.e., in MWs-9, 9A and/or 9B) had declined to non-detect levels.

51. Elevated concentrations of inorganic constituents have also been historically detected at the site, consisting primarily of general minerals. It is unknown to what extent this spatial variability is natural or attributable to impacts from LFG and/or leachate from LF-1.¹⁶

Corrective action measures to address the release from LF-1 included closure of the unit in 1996 (described in Finding 72), and the implementation of LFG controls beginning in 1998. No release to groundwater has been confirmed at any of the other units at the site.

52. Impacted liquid historically detected in lysimeters beneath LF-2, Cell 2; LF-3, Cells 1 & 2; SI-1 and SI-2 in the late 1990s was subsequently addressed through source control measures, including reconstruction of SI-1 (described in Finding 63); reconstruction of the LCRS for LF-3, Cells 1 & 2; and the implementation of LFG controls at LF-2. Since the implementation of these corrective action measure in the late 1990s, lysimeters at the site have been historically dry or unimpacted.

Landfill Gas Controls

53. Beginning in 1998, as part of a corrective action program to address the release from LF-1, the Discharger installed a landfill gas (LFG) control system at LF-1, including 22 vertical LFG extraction wells and associated facilities (e.g., collection piping, condensate traps, blower and flare station). The system started-up in 2002 and operates 24 hours per day and 7 days per week (24/7). In 2004, six additional LFG extraction wells were installed to the base of LF-1 to increase LFG extraction. The system was also connected to LF-2's LCRS (Cells 1 – 5) providing enough methane to run the flare 24/7.

In July 2019, the Discharger completed an extension of the system to LF-2, including installation of 37 vertical and 14 horizontal LFG extraction wells at LF-2, Cells 1 – 3. The work also included extension of LF-2's LCRS risers and modification of the LFG extraction system's main header pipe to include flows

¹⁶. In 2007, a study of arsenic concentrations in the area of the landfill concluded that natural background concentrations of arsenic ranged from non-detect up to about 4.42 µg/L.

from LF-2. The expanded system started up in August 2019. See Attachment D: Gas Controls & Monitoring.

The MRP under these WDRs requires LFG monitoring at representative locations to monitor the effectiveness of the system. See MRP Section A.8.a.

WMU Design and Construction

54. LF-1 was constructed without a liner and LCRS.
55. The existing containment system for LF-2 was generally constructed as follows:
 - a. Cell 1 was constructed with a Title 27 prescriptive clay liner (i.e., one foot thick, $k \leq 1 \times 10^{-6}$ cm/sec) and a six-inch gravel LCRS.
 - b. Cell 2 was constructed with a prescriptive Subtitle D composite liner system including 60 mil HDPE geomembrane overlying two feet of compacted clay soil ($k \leq 1 \times 10^{-7}$ cm/sec).
 - c. Cell 3 was constructed similar to Cell 2 except for the substitution of geosynthetic clay liner (GCL) as an approved engineered alternative design to the two-foot prescriptive clay layer.
 - d. Cells 4, 5 & 6 were constructed similar to Cell 3 with the addition of one foot of compacted clay beneath the GCL layer.
56. Landfill excavation slopes were graded to maximum of 2.0 H:1V or flatter. The base grades included 1.0 to 2.0 percent slopes along the floor and a minimum of 1.25 percent grade along leachate collection pipes. All LF-2 cells were be constructed with a six-inch gravel LCRS overlain and underlain by geosynthetic filter and cushion layers respectively. Future Cell 7 will also be constructed in accordance with the above design, as approved under previous WDRs. See also Construction Specification D.3 and Attachment I.

Existing exterior side slopes range from about 2.5H:1V and 2H:1V (horizontal to vertical), and approximately 10 to 25 feet in height, throughout the site.

57. The LF-2 expansion liner designs, including infill, LF-1, and LF-3 abutment/overlap areas will be as follows from top to bottom:
 - a. Infill Area –18-inch operations layer, 8 oz/sy nonwoven geotextile, 6-inch gravel LCRS and Subtitle D composite liner equivalent (60-mil HDPE/GCL)
 - b. LF-1 Top Deck: 1-foot operations layer, 8 oz/sy nonwoven geotextile, 6-inch gravel LCRS, 60-mil LLDPE and GCL

- c. LF-1's Eastern Side Slopes: 1-foot operations layer, geocomposite, 60-mil LLDPE, GCL and 1-foot foundation layer (i.e., LF-2 containment system will incorporate LF-1's final cover vegetative cover layer in this area).
- d. LF-3 Northern Side Slopes: 1-foot operations layer, geocomposite, 60-mil LLDPE, GCL, 1-foot minimum foundation layer (LF-2 containment system will constitute LF-3's final cover in this area).

All proposed excavation slopes and base grading for the Infill and Vertical Expansion areas will consistent with previously approved LF-2 designs for Cells 6 and 7.

- 58. The existing and proposed LCRS pipe network was evaluated to verify that the pipes will maintain capacity and structural integrity with the increased loading from the proposed Infill and Vertical Expansion. Based on these calculations, all of the existing and proposed LF-2 and LF-3 LCRS pipes are/will be adequately sized to handle twice the anticipated leachate volume and will maintain structural integrity.¹⁷
- 59. The containment system for LF-3 was generally constructed as follows:
 - a. Cell 1 was constructed with a Title 27 prescriptive clay liner underlain by an additional one foot of compacted clay soil ($k \leq 1 \times 10^{-6}$ cm/sec) and overlain by an eight-inch gravel LCRS.
 - b. Cell 2 was constructed with a Subtitle D prescriptive liner overlain by a six-inch gravel LCRS.
 - c. Cells 3 and 4 were base lined with Subtitle D-equivalent primary and secondary composite liners (GCL substituted for clay layers) separated by a geosynthetic (geonet) LCRS/leak detection layer and overlain by a six-inch gravel LCRS layer. The excavation slopes were constructed with a primary composite liner overlain by two feet of sandy soil as the LCRS layer.

Future Cell 5 will have the same design as Cells 3 and 4 above. All LF-3 cells were/will be constructed with a six-inch gravel LCRS overlain and underlain by

¹⁷. The LCRS for LF-2 cells includes six-inch diameter, HDPE perforated pipes along the floor. The pipes have a minimum standard dimension ratio (SDR) of 11 to withstand anticipated waste loading.

geosynthetic filter and cushion layers respectively. See Construction Specification D.4 and Attachment I: Landfill Cell Construction.

60. Static slope stability analysis (two-dimensional limit equilibrium using the Slide software program) for the LF-2 vertical expansion project based on seismic hazardous analysis indicated stable interim and final cover slopes with a minimum static safety factor of 1.5. Pseudo-static analysis was also conducted using the same program to identify critical interfaces with the lowest yield accelerations (i.e., failure surfaces). Dynamic analysis was also conducted (using SHAKE91 software) to model the expected ground response (acceleration-time history). The results indicated stable slopes under design seismic conditions with a maximum expected permanent displacement of less than 7.0 inches compared to the EPA-recommended maximum of 12 inches. These WDRs require that the Discharger maintain the final cover slopes in this condition. See Post-Closure Maintenance Specification E.8.
61. All Class II and Class III units at the site were designed to withstand a design earthquake equal to the MCE per Title 27, Section 20370.
62. All classified WMUs at the site, including Class III units LF-1 and LF-2, were designed to withstand a 1,000-year storm event including top deck perimeter swales/berms, drop inlets/over-side drains; roadside ditches. The perimeter drains in the surface impoundment area drain to the unlined sedimentation basin in the southeast part of the site. See Attachment K: Surface Water Monitoring.
63. SI-1 was reconstructed in 1998 as a corrective action measure and to increase its capacity to handle leachate flows from LF-3. SI-1 was double-lined with an 80 mil HDPE primary liner overlying and an 80 mil HDPE/GCL secondary composite liner separated by a geosynthetic (geonet) leak detection layer.

A subdrain was also constructed beneath the base of SI-1 to ensure adequate separation from high groundwater. The subdrain design consists of, from top to bottom, a one-foot thick gravel drainage layer and an 8 ounce-per-square foot geotextile. Groundwater collected in the subdrain flows by gravity to a sump plumbed to a riser pipe. Groundwater from the sump is discharged to SI-1. The Discharger is also required to monitor the subdrain system in accordance with the requirements of unsaturated zone monitoring.
64. SI-2 was constructed similar to SI-1 except that the clay component of the secondary composite liner consisted of two feet of compacted clay ($k \leq 1 \times 10^{-6}$ cm/sec) rather than GCL.

Landfill Operations

65. Waste disposal operations at both active landfill units (i.e., LF-2 and LF-3) are conducted by the area fill method. The active face is approximately 100 feet in length by 100 feet in width. The slope of the active face is 4:1 or 25 percent. Lifts are placed in two-foot thick (minimum) lifts and compacted with approximately five passes (or more) with a landfill waste compactor.
66. MSW (and other wastes co-disposed of with MSW) are generally covered with at least 6 inches of compacted soil (i.e., daily cover) and/or alternative daily cover (ADC) at the end of each operating day to control moisture infiltration, vectors, fires, odor, blowing litter, and scavenging. The refuse to cover soil ratio is 5:1. Sources of cover soil come from excavation of future cells and from an existing off-site stockpile west of the WTE plant. Boiler ash discharged to LF-3 in the wet season is similarly handled (no daily cover is applied at LF-3 during the dry season).

The primary ADC method used in landfill operations at the site are tarps.¹⁸ Other LEA-approved ADC materials currently used include composite or wood roofing shingles and wood byproducts from composting facilities (i.e. compost overages). These materials are generally used in places not covered with tarps.

67. Special handling procedures are employed for certain other wastes in accordance with applicable regulations. For hazardous and other wastes requiring special handling (e.g., asbestos, ash and medical waste), haulers are required to be informed and comply with applicable State and County handling procedures. Upon arrival at the landfill, the scale house attendant calls the active disposal area and informs staff that a waste requiring special handling has arrived. In the case of a dead animal carcass, for example, a hole is prepared in the existing active face for the placement of the waste. After unloading the waste into the hole, an equipment operator will back-fill the hole with other waste so as to reduce the potential for contacting the carcass with the heavy equipment. Similarly, ACW is monofilled at LF-2.

¹⁸. The operator employs the Tarp-O-Matic system, including nine 40-foot by 100-foot tarps and a 100 ft. x 100 ft. pull tarp to cover the active face each day. At the end of each working day, a dozer hooks onto the Tarp-O-Matic or two dozers hook onto the pull tarp and lay tarps over exposed refuse. The tarps are removed each morning in the reverse manner to which they were placed.

Boiler ash is transported by truck to LF-3. Due to quenching of the ash prior to discharge, the Discharger has implemented a load-checking plan to prevent the discharge of free liquid to LF-3.

Fill Sequencing

68. MSW is currently being placed in LF-2, Cell 5, which will be filled to an interim grade of approximately 350 feet MSL level with LF-2 Cells 1, 2, 3, and 4. Cells 6, 7 and the infill (i.e., LF-2 lateral expansion) areas between LF-1 and LF-2 and LF-2 and LF-3 will then be sequentially filled to the 350 foot MSL interim grade. After all these fill areas have reached interim grade, filling will commence across the surface of LF-2 including waste placement over LF-1 and LF-3 until final grades are reached in 2050.
69. The Discharger is currently operating in LF-3 Cells 3 and 4 which will be filled up to an elevation of approximately 400 feet and then partially closed to allow for LF-2 expansion over the northwest slope. Construction of LF-3, Cell 4 (constructed in February 2018) and will begin receiving ash for disposal sometime in mid to late 2020 after which Cell 5, the last LF-3 disposal cell, will be constructed.

Landfill Closure

70. A landfill's containment system includes its base liner, and, after closure, its final cover. Title 27, section 20950, subdivision (a)(2)(A).1 states, in part:

Closure — for landfills . . . and surface impoundments closed as landfills, the goal of closure, including but not limited to the installation of a final cover, is to minimize the infiltration of water into the waste, thereby minimizing the production of leachate and gas. For such Units, after closure, the final cover constitutes the Unit's principal waste containment feature....
71. The Title 27 prescriptive final cover designs for existing, non-compositely lined and new/late expansion Subtitle D compositely lined MSW landfills are outlined in Attachment H.
72. LF-1 was closed in 1996 with the Title 27 prescriptive final cover design described in Finding 71. In areas overlapped by LF-2 expansion, LF-3's partial final cover will consist of LF-2's side slope containment system (see Finding 1.d). Based on the fill volume estimates from Infill and Vertical Expansion base grading and final grading plans, both LF-2 and LF-3 are expected to reach capacity in 2050 and closed by 2052. The maximum area to be closed in 2052 will include about 121.1 acres of LF-2 and be about 38.2 acres of LF-3.
73. The JTD/PCPCMP includes a preliminary plan to close the remainder of LF-3 (i.e., west slopes), and all of LF-2, with a contiguous final cover consisting of the following elements, from top to bottom:

- a. Erosion Resistant/Vegetative Cover Layer – One-foot vegetative cover soil or other material (e.g., cobble or gravel) capable of resisting foreseeable erosion.
- b. Drainage Layer (side slopes only) – Geocomposite drainage layer (need for this to be evaluated at time of final closure)
- c. Barrier Layer - minimum 40-mil LLDPE geomembrane
- d. Foundation Layer – Minimum two feet of foundation soil (unless lesser thickness demonstrated per Title 27) compacted to specifications.

A conceptual grading plan for the contiguous final cover over the units is shown in Attachment J. Preliminary Final Cover Grades.

The above final cover design does not include a low hydraulic conductivity (LHC) layer and therefore does not meet the Title 27 prescriptive design for a Subtitle D landfill. These WDRs require that the Discharger submit a revised PCPMP for the landfill reflecting the Title 27 prescriptive standard design or a specified equivalent engineered alternative design that includes an LHC layer. See Closure and Postclosure Specification E.1.

74. The Central Valley Water Board is authorized to approve an engineered alternative to Title 27 prescriptive standards (see, e.g., Title 27, § 20330, subd. (c)), provided that the Discharger demonstrate that compliance with the prescriptive standard would be unreasonably and unnecessarily burdensome in comparison to the proposed alternative. (Title 27, § 20080, subds. (b), (c); State Water Board Resolution 93-62).

Landfill Post-Closure Maintenance

75. Title 27, section 20950, subdivision (a)(2) provides in relevant part that “ *the goal of post-closure maintenance ... is to assure that the Unit continues to comply with the performance standard of [Title 27, section 20950(a)(2)(A). 1] until such time as the waste in the Unit no longer constitutes a potential threat to water quality.....*”
76. The PC/PCMP in the JTD included plans for “routine” (e.g., monthly) post-closure maintenance and monitoring of then-existing landfill facilities and monitoring systems, including final cover, drainage controls, LFG controls, and gas and

groundwater monitoring systems.¹⁹ Plans for monitoring reflected requirements of previous WDRs.

77. The most recent aerial topographic survey of the facility was last completed on 1 September 2017. Consistent with Title 27 requirements, this Order requires that the Discharger complete and submit an aerial topographic survey of the site (including immediate surrounding areas) and iso-settlement map of the landfill final cover's LHC layer every five years. See Standard Post-Closure Maintenance Specification G.22, SPRR and the MRP).

Cost Estimates and Financial Assurances

LFs-1, 2 & 3

78. The Discharger are required to demonstrate financial assurances for closure and post-closure maintenance to CalRecycle per Title 27, Section 22210(b) for all landfill units at the site (LF-1, LF-2 & LF-3) because each operated on or after 1 January 1988. The Discharger are also required to demonstrate financial assurances to CalRecycle for corrective action for per 22220(b) for all three units because each operated on or after 1 July 1991.²⁰
79. The closure, post-closure and corrective action cost estimates for the landfill units at the site reported in the JTD, escalated to 2019 dollars, were as follows:

Table 3 - Financial Assurance Cost Estimates

Financial Assurance Requirement	Est. Cost (2019 Dollars)
Closure (Title 27, §§ 21820, 22206)	\$14,713,351
Post-Closure Maintenance (Title 27, §§ 20950(f), 21840, & 22210–22211, 22212)	\$11,141,880 (\$371,396 per year)

¹⁹. When the landfill was closed in 1994, there were 19 groundwater monitoring wells at the site (MWs-1S through 5S, 7S through 16S, 1D through 4D, and 7D).

²⁰. The Discharger is also required to fund a non-water release corrective action for each unit with CalRecycle because the landfill units operated on or after to 1 July 2011.

Financial Assurance Requirement	Est. Cost (2019 Dollars)
Corrective Action (Title 27, §§ 20380(b), 22222)	\$1,466,737

The closure and postclosure maintenance costs will be funded incrementally per Title 27 as areas are filled to the final grade. These WDRs therefore require that the Discharger submit updated financial assurance cost estimates for closure and post-closure maintenance as part of the revised PCPCMP required under Closure and Postclosure Specification E.1.

80. The Discharger maintains an Enterprise Fund as the approved financial assurance mechanism for both closure and post-closure maintenance. and corrective action. This mechanism (last approved by CalRecycle in July 2019) requires reporting of estimated annual amounts of the pledge (rather than account balances) for each financial assurance type. For closure and post-closure maintenance combined amount funded was \$20,049,158 in 2019 dollars.

Surface Impoundments

81. The August 2019 JTD includes a cost estimate of \$68,783 for closure (i.e., removal) of the two surface impoundments at the site. No information is provided on funding and funding mechanism, however. These WDRs therefore require that the Discharger submit an updated corrective action (i.e., known or reasonably foreseeable release) cost estimates report for the surface impoundments at the site for Central Valley Water Board review and approval. See Financial Assurances Specification F.7 and Provision H.6.0.
82. This Order also requires that the Discharger establish a Title 27-compliant funding mechanism with the Central Valley Water Board for surface impoundment closure and corrective action financial assurances and maintain, adequate funding of the mechanism consistent with currently approved cost estimates, as annually adjusted for inflation. See Financial Assurance Specifications 0 and 0.

California Environmental Quality Act

83. The issuance of this Order, which prescribes requirements and monitoring of waste discharges at an existing facility, with negligible or no expansion of its existing use, is exempt from the procedural requirements of the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq., pursuant to California Code of Regulations, title 14, section 15301 (CEQA Guidelines). The discharges authorized under this Order are substantially within

parameters established under prior WDRs, particularly with respect to character and volume of discharges.

84. A 4 June 1985 Environmental Impact Report (EIR) for the landfill was approved by the Stanislaus County Board of Supervisors as lead agency in accordance with the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq. and State Guidelines. The project was found to have possible significant impacts on water quality, including degradation by leachate from fill or erosion of exposed slopes. Possible ponding or flooding from runoff was also noted. The Central Valley Water Board reviewed the EIR and adopted previous WDRs implementing Chapter 15 (now Title 27) requirements to mitigate or avoid the possible significant impacts on water quality, including landfill containment system design, precipitation and drainage controls, flood controls, erosion controls, and ground water monitoring to detect a release at the earliest opportunity.²¹
85. A Negative Declaration for the planned LF-2 expansion project was approved by the Stanislaus County Board of Supervisors as lead agency in 2009. The Central Valley Water Board was consulted with in the development of the Negative Declaration and the discharges and other activities authorized under this Order fall within the scope of the project as contemplated in the Negative Declaration. Additionally, there are no substantial changes to either the proposed project or the attendant circumstances under which it will be undertaken, and no new information requiring revision of the Negative Declaration. The Negative Declaration is therefore conclusively presumed compliant with CEQA for use by the Central Valley Water Board as a “responsible agency” under CEQA. Accordingly, no further environmental review is required under CEQA. (See Cal. Code Regs., tit. 14, § 15162.)

Other Regulatory Matters

86. This Order is issued in part pursuant to Water Code section 13263, subdivision (a), which provides as follows:

The regional board, after any necessary hearing, shall prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge..., with relation to the conditions existing in the disposal area ... into which, the discharge is made or proposed. The requirements shall implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be

²¹. See Findings 17, 18, 31 and 32, WDR Order 88-038.

protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of [Water Code] Section 13241.

87. This Order implements the Central Valley Water Board's revised May 2018 *Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan)*, which designates beneficial uses for surface water and groundwater and establishes water quality objectives (WQOs) necessary to preserve such beneficial uses. (See Wat. Code, § 13241 et seq.)
88. According to the Basin Plan, the designated beneficial uses of the surface waters are municipal and domestic supply (MUN); agricultural supply (AGR); industrial process supply (IND); water contact recreation (REC-1); non-water contact recreation (REC-2); warm fresh water habitat (WARM); cold fresh water habitat (COLD); migration of aquatic organisms (MIGR); spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD).
89. According to the *Basin Plan*, designated beneficial uses of groundwater at the Facility include municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).
90. This Order implements the prescriptive standards and performance goals of Title 27.
91. The State Water Resources Control Board's *Statement of Policy with Respect to Maintaining High Quality Waters in California*, Resolution 68-16 (*Antidegradation Policy*) prohibits the Central Valley Water Board from authorizing degradation of "high quality waters" unless it is shown that such degradation: (1) will be consistent with the maximum benefit to the people of California; (2) will not unreasonably affect beneficial uses, or otherwise result in water quality less than as prescribed in applicable policies; and (3) is minimized through the discharger's best practicable treatment or control.
92. Consistent with Title 27, this Order requires that the Discharger to maintain the Facility to contain waste within WMUs, thereby preventing degradation of water quality. To the extent that there are releases from Facility WMUs, including the existing historical release described in Finding 50, the Discharger is required to address such releases through appropriate corrective action measures. (See

Title 27, §§ 20385, 20415, 20430 & 21090.).²² Accordingly, this Order complies with the *Antidegradation Policy*.

93. For the purposes of California Code of Regulations, title 23 (Title 23), section 2200, the Facility has a threat-complexity rating of **1-B**, where:
- a. Threat Category “1” reflects waste discharges that 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.
 - b. Complexity Category “B” reflects any discharger not included in Category A, with either (1) physical, chemical or biological treatment systems (except for septic systems with subsurface disposal), or (2) any Class II or Class III WMUs.

94. Water Code section 13263, subdivision (b)(1) provides that:

[T]he regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the

²² With regard to corrective action, the landfill was graded and closed with an engineered alternative final cover to promote runoff and minimize infiltration of precipitation into the landfill as required under Title 27. These measures should minimize any leachate generation in the landfill that could potentially threaten or impact groundwater. The Order also requires that the Discharger continue LFG extraction from the landfill and operation of the new GWETS, which was designed to remediate groundwater impacts at the site to Concentration Limits. Continued post-closure maintenance, monitoring, and reporting are also required to ensure the integrity of the landfill cover as the principle waste containment system of this unlined WMU.

reports and shall identify the evidence that supports requiring that person to provide the reports.

95. The technical reports required under this Order, as well as those required under the separately issued MRP, are necessary to ensure compliance with prescribed WDRs and the provisions of Title 27.

Procedural Matters

96. All local agencies with regulatory jurisdiction over land-use, solid waste disposal, air pollution and public health protection have approved the use of the Facility's site for the discharge of waste to land as provided for herein.
97. The Discharger interested agencies and interested persons were notified of the Central Valley Water Board's intent to prescribe the WDRs in this Order and provided an opportunity to submit their written views and recommendations at a public hearing. (Wat. Code, § 13167.5; Title 27, § 21730.)
98. At a public meeting, the Central Valley Water Board heard and considered all comments pertaining to the discharges regulated under this Order.
99. The Central Valley Water Board will review and revise the WDRs in this Order as necessary.

REQUIREMENTS

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267, that WDR Order R5-2008-0144 is hereby rescinded (except for enforcement purposes); and that the Stanislaus County Department of Environmental Resources, its agents, successors, and assigns, in accordance with Water Code division 7 (§ 13000 et seq.), shall comply with the following.

- A. Discharge Prohibitions**—Except as otherwise expressly directed within this section below, the Discharger shall, for landfill units and Title 27 surface impoundments, comply with all applicable Standard Prohibitions (§ C) of both the Landfill SPRRs (referenced in Finding 5.j) and Industrial SPRRs (referenced in Finding 5.m), respectively, which are incorporated herein, as well as the following Discharge Prohibitions.
1. The discharge of new or additional waste of LF-1 is prohibited.
 2. The discharge to LF-3 of any wastes other than boiler ash from the offsite WTE is prohibited.
 3. The discharge of designated wastes to any WMU at the Facility is prohibited, except as specified in Discharge Specification 0.
 4. The discharge of hazardous wastes to any WMU at the Facility is prohibited, except as specified in Discharge Specification 0.
 5. Leachate from a Subtitle D lateral expansion of an existing (i.e., pre-Subtitle D federal deadline) MSWLF unit or waste footprint (e.g., LF-2, Cell 1) shall not drain to and be collected by the existing unit/footprint unless constructed with a Subtitle D composite liner and LCRS.
 6. Leachate collected from LF-3 shall not be returned to that unit and shall not be discharged to LF-2.
 7. Leachate from LF-2 shall not be returned to that unit and shall not be discharged to SI-1.
 8. Leachate and LFG condensate shall not be used at the Facility for dust control.
 9. LFG condensate shall not be discharged to SI-1.
 10. The discharge of solid wastes to the Class II surface impoundments at the site is prohibited, except for solids settled out and accumulated from authorized discharges to an impoundment.

11. The Class II surface impoundments shall not be used for indefinite storage.

B. Discharge Specifications—Except as otherwise expressly directed within this section below, the Discharger shall, for landfill units and Title 27 surface impoundments, comply with all applicable Standard Discharge Specifications (§ D) of both the Landfill SPRRs and Industrial SPRRs (§ D), respectively, which are incorporated herein, as well as the following Discharge Specifications.

1. The Discharge of waste to WMUs at the Facility shall be consistent with Attachment G and these Discharge Specifications.
2. The Discharger shall promptly remove and relocate all waste discharged at the Facility in violation of this Order. If unable to do so, they shall submit a report to the Central Valley Water Board: explaining how the violative discharge(s) occurred, and why the waste(s) cannot be removed; and proposing waste acceptance program updates to prevent reoccurrences.
3. Treated wood waste shall only be discharged to LF-2 consistent with Discharge Specification B.1 and Finding 17. The Discharger shall manage such waste in accordance with Health and Safety Code sections 25143.1.5 and 250150.7, and otherwise comply with California Code of Regulations, title 22, section 67386.3. In the event of a verified release from an authorized WMU containing treated wood waste, the Discharger shall suspend all discharges of treated wood waste until corrective action is terminated.
4. The waste acceptance program for the Facility shall include soluble designated levels for all inorganic constituents of concern for wastes discharged to both active landfill units at the site (i.e., LF-2 and LF-3).²³
5. Any TWW load suspected of being a designated waste based on LEA-approved waste acceptance criteria shall be tested at a state-certified laboratory for soluble constituents of concern to verify that the TWW is a nonhazardous solid waste (i.e., does not contain soluble constituents in excess of soluble designated levels) prior to discharge to LF-2. The de-ionized waste extraction test (DI WET) may be used for this determination.
6. The Discharge of asbestos containing wastes (ACW) shall be limited to LF-2 Cells 5, 6 and 7 as described in Finding 16.

²³. Soluble designated levels for each inorganic COC shall be determined using the Designated Level Methodology.

7. The Discharge of designated waste at the Facility shall be limited to boiler ash discharged to LF-3 consistent with Discharge Specification B.1 as described in Finding 19.
8. The Discharger shall use only the following as an alternative daily cover (ADC) for landfill WMUs:
 - a. The materials described in Finding 66 or
 - b. Other materials demonstrated to meet the standards of Title 27, section 20705, and approved in writing by the Central Valley Water Board.
9. The Discharger shall not apply ADC materials to areas with drainage beyond contiguous landfill WMUs unless:
 - a. The Discharger demonstrates that resulting runoff will not pose a threat to surface water quality (accounting for sediment and suspended solids removal in a sedimentation basin); and
 - b. The Central Valley Water Board approves of the demonstration in writing.
10. The discharge of leachate from LF-2 shall be limited to SI-2 and the discharge of leachate to SI-2 shall be limited to leachate from LF-2.
11. The discharge of leachate from LF-3 shall be limited to SI-1 and the discharge of leachate to SI-1 shall be limited to leachate from LF-3.
12. The discharge of LFG condensate shall be limited to SI-2.
13. The Discharge of liquid waste from SI-1 and SI-2 is prohibited except by evaporation or to an authorized offsite facility.
14. The Discharger shall record onsite rainfall to track the magnitude of storm events and shall record surface impoundment freeboard levels in accordance with the attached monitoring and reporting program.
15. A freeboard of at least two (2.0) feet shall be maintained in the surface impoundments at all times. To ensure compliance with this requirement, the Discharger shall maintain at least 2.3 feet (2.0 feet plus the amount needed to hold the design storm to the nearest tenth of a foot) of freeboard at all times except in the event of a storm equal to or exceeding the 1,000-year, 24-hour design storm event in which case at least two (2.0) feet of freeboard must be maintained.

The Discharger shall immediately notify Central Valley Water Board staff by telephone and email and immediately take measures to regain required surface impoundment freeboard in the event that they are exceeded.

16. The commingling of inert and non-inert liquids in SI-1 shall be kept to a minimum to prevent unnecessary buildup of hydraulic head on the liner and the reduction of freeboard.
17. Leachate collected and recovered from the LCRS of a Class II surface impoundment shall be either returned to the impoundment from which it came or pumped directly to the above-ground tank farm pending disposal at an authorized offsite facility.
18. Solids and semi-solid wastes removed from the Class II surface impoundments shall be tested in accordance with the approved Surface Impoundment O&M Plan submitted under Facility Specification C.4.b. Inert solids and semi-solids from the impoundments may be beneficially reused onsite provided that they are not discharged to the any of the units.
19. The Discharge of designated or hazardous waste residues from clean-out of SI-1 or SI-2 shall be limited to an authorized offsite facility.
20. Storm water runoff from the Facility shall be discharged in accordance with applicable storm water regulations.
21. The Discharger shall obtain and maintain coverage under applicable State Water Board or Central Valley Water Board permits for all non-Title 27 discharges to land or surface water.

C. Facility Specifications— Except as otherwise expressly directed within this section below, the Discharger shall, for landfill units and Title 27 surface impoundments, comply with all applicable Standard Facility Specifications (§ E) and Standard Storm Water Provisions (§§ D, L) of both the Landfill SPRRs and Industrial SPRRs, respectively, which are incorporated herein, as well as the following Facility Specifications.

1. A minimum separation of five feet shall be maintained between the bottom of wastes and the highest anticipated elevation of underlying groundwater at each WMU per Section 20240(c) of Title 27, absent approval of alternative minimum separation under Facility Specification C.1.
2. Annually, prior to the anticipated rainy season but no later than 31 October, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation

and drainage control facilities shall be completed to prevent storm water flows from:

- a. Contacting or percolating through wastes,
 - b. Causing erosion or inundation of the landfill cover or other WMUs of the site, or
 - c. Causing sedimentation and clogging of the storm drains.
3. The LFG extraction system shall be operated, and modified or expanded, if necessary, to prevent, to the extent possible, further impacts to groundwater from LFG.
 4. By **31 March 2021**, the Discharger shall submit the following Facility O&M plans:
 - a. An updated LFG Extraction System O&M Plan; and
 - b. An updated Surface impoundment O&M Plan.

Each of the above Facility O&M plans shall describe the subject portion of the Facility and include plans and procedures necessary to maintain each system/unit in good working order and to maximize its effectiveness in achieving its purpose; and how it will be operated so as not to violate these WDRs. The Surface Impoundment O&M Plan shall include a schedule for cleanout of each impoundment and testing protocols for classification of waste residues for disposal or onsite reuse (if inert). See Provision H.6.0.

5. The Discharger shall inspect, maintain, and operate all Facility control, treatment, and/or disposal systems (i.e., LFG extraction system/flare station and surface impoundments) in accordance with their respective O&M plans, as approved by Water Board staff.
6. LFG extraction and flaring shall not be terminated without express written approval by the Executive Officer. Central Valley Water Board staff shall be notified of all corrective action system shutdowns lasting longer than one week. For the purposes of this provision, "terminated" does not include:
 - a. LFG extraction well shutdowns of less than one week (e.g., routine maintenance); and
 - b. Planned periods of LFG extraction well nonoperation, if previously-approved in writing by Central Valley Water Board staff.

7. The Discharger shall continue implementation of the Corrective Action Program under this Order until such time as impacts to groundwater in all corrective action monitoring wells have been reduced to Concentration Limits and the Discharger has completed the requisite “proof period” under Title 27, Section 20430(g). See Monitoring Specification G.12.

D. Construction Specifications— Except as otherwise expressly directed within this section below, the Discharger shall, for landfill units and Title 27 surface impoundments, comply with all applicable Standard Construction (§ F) and Storm Water (§ L) Specifications in both the Landfill SPRRs and Industrial SPRRs, respectively, which are incorporated herein, as well as the following Discharge Specifications.

1. Except as authorized below in Section D.2, the Discharger shall not commence liner construction (other than preparatory earthmoving and grading) until the Central Valley Water Board has approved in writing all necessary construction plans, specifications and construction quality assurance plans related to the new liner(s). See Provision H.6.0.
2. The Discharger shall submit revised design plans for expansion of LF-2 consistent with the requirements of this Order prior to initiating construction expansion liner systems. See Provision H.6.0.
3. LF-2, Cell 7 shall be constructed in accordance with the containment system designs described in Finding 1.d and Attachment I, or as otherwise specified in revised design plans submitted under this Order.²⁴
4. LF-3, Cell 5 shall be constructed in accordance with the containment system designs described in Finding 1.c and Attachment I, or as otherwise specified in revised design plans submitted under this Order.
5. The Discharger may propose changes to approved liner designs provided that:
 - a. Previously approved components are not eliminated;
 - b. The engineering properties of previously approved components are not substantially reduced; and

²⁴. The design report for LF-2, Cells 6 & 7 was approved under previous WDRs.

- c. The proposed liner system will result in water quality equal to or greater than the design(s) prescribed per Title 27, section 20310 et seq., and this Order.

The proposed changes shall not be implemented until the Central Valley Water Board approves of them in writing, Proposed changes that do not meet the above criteria are considered “material,” and will require the revision of this Order.

- E. **Closure and Post-Closure Maintenance Specifications**— Except as otherwise expressly directed within this section below, the Discharger shall, for landfill units and Title 27 surface impoundments, comply with all applicable Standard Closure and Post-Closure Specifications (§ G) and closure-related Standard Construction Specifications (§ F) in both the Landfill SPRRs and Industrial SPRRs, respectively, which are incorporated herein, as well as the following Discharge Specifications.

Closure (LFs-2 & 3)

1. The Preliminary Closure and Postclosure Maintenance Plan (PCPCMP) for the Facility shall include closure and postclosure maintenance cost estimates consistent with meeting the requirements of this Order, including, but not necessarily limited to, costs of installing a Title 27 prescriptive cover or one of the commonly approved engineered alternative final cover designs outlined in Attachment H of this Order.

By **1 February 2021**, the Discharger shall submit a revised Preliminary Closure and Postclosure Maintenance Plan (PCPCMP) for LF-2 and LF-3 consistent with the requirements of this Order, including the above requirement. See Provision H.6.0.

2. The Discharger shall submit a Partial Final Closure and Postclosure Maintenance Plan for LF-2 and LF-3 for Executive Officer approval **at least two years prior to reaching final waste grades** on areas of the units to be partially closed (e.g., slopes underlying LF-2 lateral expansion). See Provision H.6.0. See also Standard Closure Specification G.1, Landfill SPRRs.
3. Except for partial final closure of LF-3 slopes associated with LF-2 lateral expansion, closure of LF-2 and LF-3 shall require submission of a Central Valley Water Board approved Final Closure and Postclosure Plan and revision of these WDRs.
4. By **1 May 2021**, the Discharger shall submit a separate PCPMP, including closure and postclosure cost estimates for the surface impoundments at

the site. See Provision H.6.0. See also Financial Assurances Specification F.4.

Postclosure

- 5.** The Discharger shall not change the approved, as-built landfill final cover design, including drainage controls, absent Central Valley Water Board approval of the proposed changes, except as follows:
 - a. Previously approved components are not eliminated;
 - b. The engineering properties of previously approved components are not substantially reduced; and
 - c. The proposed changes will result in water quality equal to or greater than the design(s) prescribed per Title 27, section 20310 et seq., and this Order.

Proposed changes that do not meet the above criteria are considered “material,” and will require the revision of this Order.

- 6.** The Discharger shall not alter the design or disturb containment components of any portion of the final cover (e.g., LHC or barrier layer) over a landfill unit, other than preparatory work, until the Central Valley Water Board has approved in writing all necessary construction plans, specifications and construction quality assurance plans related to the final cover repairs or revisions.
- 7.** Earthen materials used in repair of the LHC layer shall consist of a mixture of clay and other suitable fine-grained soils which have the following characteristics, and which, in combination, can be compacted to attain the required hydraulic conductivity when installed.
 - a. At least 30 percent of the material, by weight, shall pass a No. 200 U.S. Standard sieve.
 - b. The materials shall be fine grained soils with a significant clay content and without organic matter, and which is a clayey sand, clay, sandy or silty clay, or sandy clay under a soil classification system having industry-wide use [e.g., the “SC”, “CL”, or “CH” soil classes under ASTM Designation: A2487-93 Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)]. See Title 27, section 20320(d).
- 8.** All final cover slopes, including side slopes and top deck areas, shall be maintained and repaired, as necessary, to withstand their design

earthquake magnitudes (i.e., MPE, MCE). See Finding 60 and Standard Construction Specification F.8 of Landfill and Industrial SPPRs.

9. The Discharger shall maintain the final cover over the closed landfill units, including monitoring and control systems (e.g., monitoring wells, precipitation and drainage controls, LFG controls) in accordance with the requirements of this Order (including MRP) and currently approved PCMP throughout the post-closure maintenance period. See also Standard Closure and Post-Closure Specifications G.26 through G.29.
10. The erosion resistant/vegetative cover layer shall be maintained with native or other vegetation capable of providing effective erosion resistance.
11. The PCMP may incorporate by reference (rather than repeat) post-closure maintenance plans already described in one of the subject Facility O&M plans required under Facility Specification C.3.
12. The Discharger shall perform all post-closure maintenance activities specified in the facility's PCMP that are not specifically referred to in this Order.
13. The PCMP shall include all components required per Title 27, section 21769, subdivision (c), and include detailed cost estimates for:
 - Completion of all actions required for repair of the WMU's containment system (final cover), if needed based on the results of inspection;
 - a. Preparation of detailed design specifications;
 - b. Updating the PCMP; and
 - c. The annual and 30-year cost of post-closure maintenance, in current dollars.
14. Whenever changed conditions increase the estimated costs of closure and post-closure maintenance, the Discharger shall promptly submit an updated PCMP to the Central Valley Water Board, CalRecycle and the LEA.
15. Any proposed change in post-closure use shall be in accordance with Section 21190 of Title 27.

- F. Financial Assurances**—Except as otherwise directed below, the Discharger shall comply with all Standard Financial Assurance Provisions (SPRRs, § H), as well as the following.

Landfills

1. The Discharger shall maintain with CalRecycle assurances of financial responsibility for the estimated costs of closure, postclosure maintenance, and corrective action, adjusted annually for inflation, as provided in the most-recently approved PCMP (LF-1) and PCPMP (LF-2 & LF-3) or amendments thereto. See Findings 78 to 80 and Post-Closure Maintenance Specification E.13.c.
2. A report regarding financial assurances for landfill closure and/or postclosure maintenance, as applicable, or a copy of the financial assurances report submitted to CalRecycle, shall be submitted to the Central Valley Water Board annually, no later than **1 June of each year**. See Provision H.6.0.
3. If CalRecycle determines that the Discharger post-closure maintenance financial assurances for the Facility are inadequate based on the cost estimates in the currently approved PCMP, the Discharger shall within 90 days of such determination:
 - a. Obtain a new financial assurance mechanism for the amount specified by CalRecycle; and
 - b. Submit a report documenting such financial assurances to CalRecycle and the Central Valley Water Board.

Surface Impoundments

4. By **1 May 2021**, the Discharger shall submit an updated corrective action (i.e., known or reasonably foreseeable release) cost estimates report for the surface impoundments at the site Central Valley Water Board review and approval. See Provision H.6.0.
5. The Discharger shall maintain with the Central Valley Water Board assurances of financial responsibility for the estimated costs of closure specified in the most recently approved surface impoundment PCPMP and corrective action specified in the most recently approved corrective action cost estimates report, adjusted annually for inflation. See Closure and Postclosure Specification E.4, Financial Assurances Specification F.4 and Standard Financial Assurances Specification H.2.

6. The Discharger shall establish an approved financial assurance mechanism pursuant to the CalRecycle-promulgated sections of Title 27, but with the RWQCB named as beneficiary, to ensure funds are available for closure and corrective action associated with the surface impoundments at the site. See Title 27, Chapter 6, Subchapter 3 (“Allowable Mechanisms”), Article 2.
 7. A report regarding surface impoundment closure and corrective action financial assurances shall be submitted to the Central Valley Water Board annually, no later than **1 June of each year**. See Provision H.6.0.
 8. If the Central Valley Water Board determines that the Discharger’s closure and/or corrective action financial assurances for the surface impoundments are inadequate, the Discharger shall, within 90 days of such determination:
 - a. Obtain a new or revised financial assurance mechanism satisfying CalRecycle requirements for the amount specified by the Central Valley Water Board; and
 - b. Submit a report documenting such financial assurances to the Central Valley Water Board and CalRecycle.
- G. Monitoring Specifications**—Except as otherwise directed below, the Discharger shall comply with all applicable Standard Monitoring Specifications (SPRRs, § I) and Standard Response to Release Specifications (SPRRs, § J), as well as the following:
1. The Discharger shall comply with all provisions of the separately issued MRP R5-2020-XXXX and any subsequent revisions thereto.
 2. The Discharger shall comply with the Water Quality Protection Standard (WQPS) set forth in the operative MRP (see also Title 27, § 20390); and shall verify the compliance of each WMU with each subsequent monitoring event.
 3. For all WMUs, the Discharger shall implement a groundwater, surface water and unsaturated zone detection monitoring program (DMP), including background monitoring, in accordance with Title 27, sections 20385, 20415 and 20420. Unsaturated zone monitoring at the site shall include both soil pore gas and soil pore liquid monitoring for physical or analytical evidence a release.
 4. For each WMU subject to corrective action, the Discharger shall implement a corrective action program (CAP), including corrective action

monitoring, in accordance with Title 27, sections 20385, 20415 and 20430, and Section I of the SPRRs.

5. Absent approval of shared monitoring of units consistent with Title 27 regulations, each WMU shall have a separate groundwater monitoring system. Unless otherwise specified in the MRP under this Order, approval of shared monitoring shall require a technical demonstration to the satisfaction of the Central Valley Water Board per Title 27 as follows:
 - a. Section 20405 (b) - That the subject units are contiguous and that monitoring along a shared boundary would impair the integrity of a containment or structural feature of any of the Units; and/or
 - b. Section 20415(e)(3) - That the subject units are contiguous, and that the proposed shared monitoring system will comply with Title 27 performance standards for background, detection and corrective action monitoring per Title 27, section 20415, subdivisions (b)(1), (2); and/or
 - c. Title 27, sections 20380(e) – That the proposed shared monitoring system qualifies as an engineered alternative design per Title 27, section 20080(c)-(d).

The above demonstration may be included in the updated WQPS Report submitted under Monitoring Specification G.7. See also Finding 43.

6. By **31 October 2020**, the Discharger shall submit an updated Monitoring Data Evaluation Methods Report consistent with the requirements of this Order per Finding b and MRP section E, and Provision H.6.0.
7. By **31 October 2020**, and annually thereafter, the Discharger shall submit an updated WQPS report per Finding 49, MRP Section C.1, and Provision H.6.
8. By **1 February 2021**, the Discharger shall submit an updated Sample Collection and Analysis Plan per Finding 47 and Provision H.6.0. The plan may be submitted as part of the Second Semiannual 2020 monitoring report (described in MRP Section D.1) or 2020 Annual Report (described in MRP Section D.2.).
9. By **31 May 2021**, the Discharger shall submit a work plan for installation of monitoring wells at locations needed to comply with Title 27 performance standards, as indicated in MRP Table 5 and Table 6. See Provision H.6.0.

10. Constituents of concern (COC) in water passing through each WMU's Point of Compliance shall not exceed concentration limits specified (or referenced) in the MRP.
11. Absent an approved demonstration under Monitoring Specification G.5.a above, the Point of Compliance shall be a vertical plane situated at the hydraulically downgradient limit of each WMU, extending through the uppermost underlying aquifer. (See Title 27, §§ 20164, 20405.)
12. By **15 September 2020**, the Discharger shall submit a proposal and schedule for establishing additional storm water sampling locations necessary to meet Title 27 performance standards for detection of a release and assess the effectiveness of precipitation and drainage controls and erosion controls. See Provision H.6.0.
13. Detection monitoring shall be conducted for at least three years after completion of corrective action of a unit (including any applicable "proof period") to demonstrate that groundwater down gradient of the unit is in compliance with the Water Quality Protection Standard. See Title 27, sections 20380(d) and 20430(g).

H. Provisions—Except as otherwise expressly directed below, the Discharger shall comply with the Standard Provisions (SPRRs, § K), as well as the following.

1. Notwithstanding Section G.1, the provisions of this Order shall supersede any contrary provision in MRP R5-2020-XXXX and revisions thereto.
2. The Discharger shall comply with all applicable provisions of Title 27 not specifically referenced in this Order.
3. The Discharger shall ensure that operating personnel are familiar with this Order (including all attachments and SPRRs) and MRP R5-2020-XXXX (or any revision thereto) both of which shall always be kept onsite and made available to operating personnel and regulatory agency personnel.
4. All reports and monitoring data shall be submitted online in an appropriately formatted file via the State Water Board's [GeoTracker Database](https://geotracker.waterboards.ca.gov/), at (<https://geotracker.waterboards.ca.gov/>). (Title 23, §§ 3892(d), 3893.) Additional information regarding electronic submittals is accessible through the "Information" tab on the GeoTracker homepage. After uploading a document via GeoTracker, the submitting party shall notify Central Valley Water Board staff via email at centralvalleysacramento@waterboards.ca.gov, including the following information body of the email:

Attention: Title 27 Compliance & Enforcement Unit, or
 Title 27 Permitting & Mining Unit
Report Title: [title of submitted report]
Discharger: County of Stanislaus Department of
 Environmental Resources
Facility: Fink Road Landfill
County: Stanislaus
CIWQS ID: 224472

5. All reports and workplans that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geological sciences, shall:
 - a. Be prepared by, or under the direction of, professionals registered to practice in California pursuant to Business and Professions Code sections 6735, 7835 and 7835.1; and
 - b. Bear the signature(s) and seal(s) of the responsible registered professional(s) described above.

6. The Discharger shall submit the following technical reports for Central Valley Water Board review and approval:

Table 4—Compliance Schedule

Task	Compliance Date
a. Construction	--
i. Construction and design plans, including quality assurance (CQA) plan.	90 days prior to proposed construction date
ii. Upon completion of WMU construction or repair, including associated control systems, a certification report demonstrating construction in accordance with approved construction plans.	Within 60 days of completing construction
b. Closure & Post-Closure	--
i. A revised Preliminary Closure and Postclosure Maintenance Plan (PCPMP) for LF-2 and LF-3 per Closure and Postclosure Maintenance Specification E.1.	1 February 2021

Task		Compliance Date
ii.	A Partial Final Closure and Postclosure Maintenance Plan for LF-2 and LF-3 per Closure and Postclosure Maintenance Specification E.2.	At least 2 years before reaching final waste grades
iii.	A Postclosure Maintenance Plan for LF-1.	1 May 2021
c.	Financial Assurances	--
i.	An updated Corrective Action Cost Estimates Report for the surface impoundments at the site per Financial Assurance Specification F.4.	1 May 2021
ii.	Submit proof of required WMU financial assurances per Financial Assurance Specifications F.2 and F.6.	1 June 2020 & annually thereafter
d.	Monitoring	--
i.Á	A Monitoring Data Evaluation Methods Report per Monitoring Specification G.6.	31 October 2020
ii.	An Updated Water Quality Protection Standard Report per Monitoring Specification G.7.	31 October 2020 & annually thereafter
iii.	An updated Sample Collection and Analysis Plan per Monitoring Specification G.8.	1 February 2021
iv.	A work plan for the installation of additional groundwater monitoring wells per Monitoring Specification G.9.	31 May 2021
v.	A proposal and schedule for establishing additional storm water sampling locations necessary to adequately monitor the WMUs at the site per Monitoring Specification G.12	15 September 2020
e.	Facility	--
i.	An updated LFG Extraction System O&M Plan per Facility Specification C.4.a.	31 March 2021
ii.	An updated Surface Impoundment O&M Plan per Facility Specification C.4.b.	31 March 2021

ENFORCEMENT

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

ADMINISTRATIVE REVIEW

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m. on the 30th day after the date of this Order; if the 30th day 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](#) are available on the Internet (at the address below) and will be provided upon request.

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

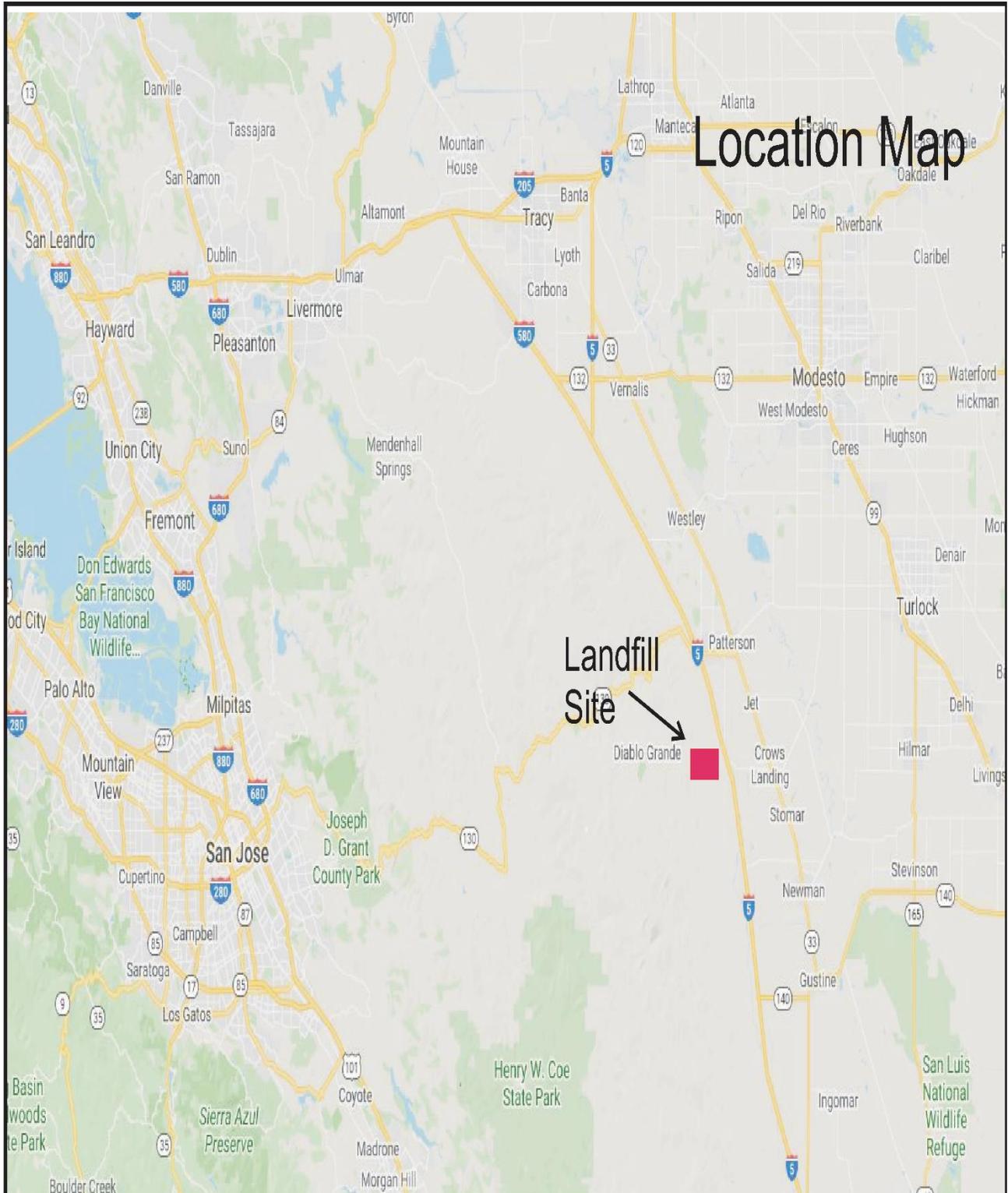
ATTACHMENTS

ATTACHMENT A—Location Map
ATTACHMENT B—Area Map
ATTACHMENT C— Site Map
ATTACHMENT D—Gas Monitoring & LFG Controls
ATTACHMENT E—Groundwater Monitoring SYSTEM
ATTACHMENT F—Leachate & Unsaturated Zone Monitoring
ATTACHMENT G—Authorized Waste Discharges
ATTACHMENT H—Commonly-Approved Final Cover Designs
ATTACHMENT I—Preliminary Closure Grades
ATTACHMENT J—Approved Landfill Cell Designs
ATTACHMENT K—Surface Water Monitoring & Controls

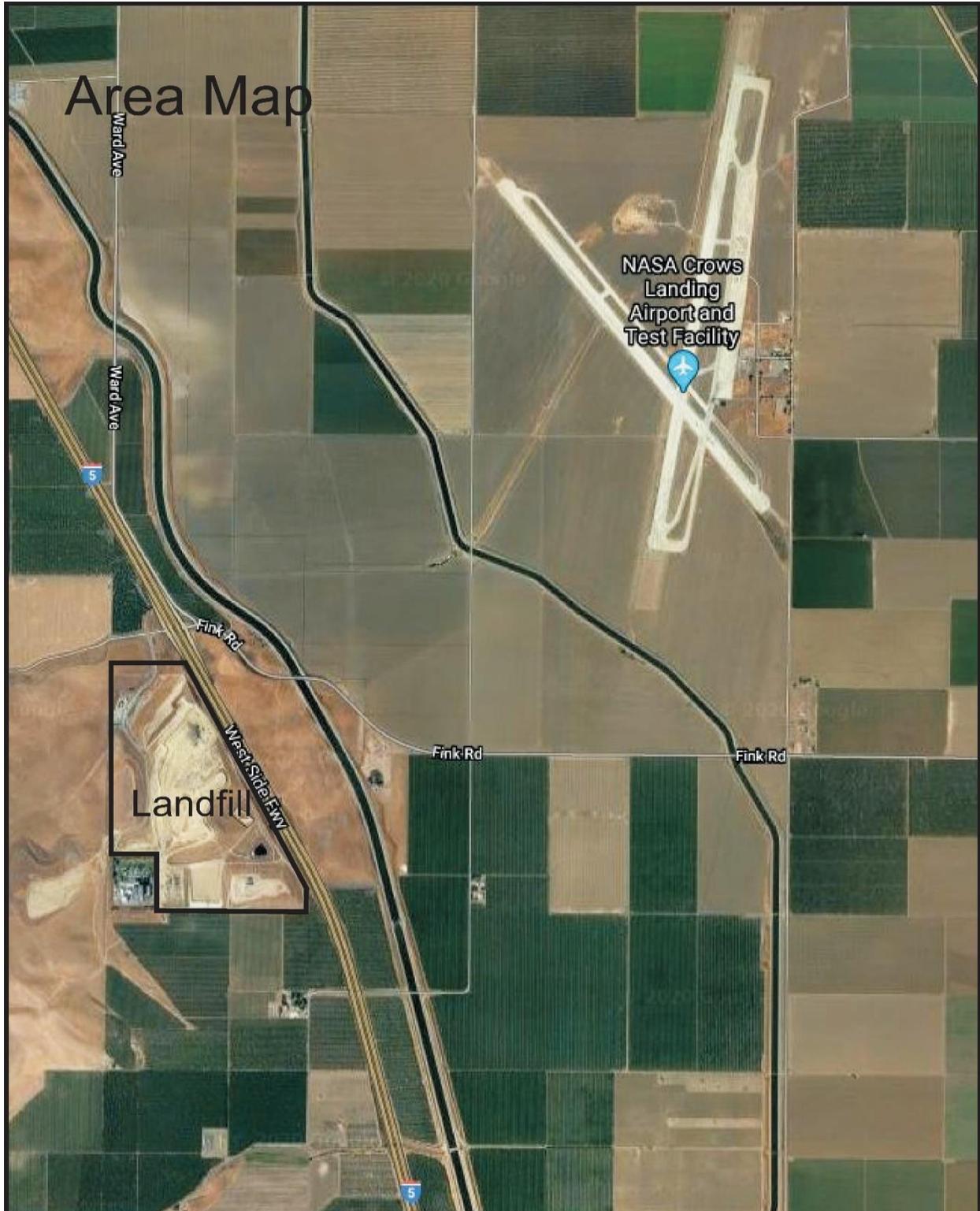
Information Sheet

Monitoring and Reporting Program R5-2020-####

ATTACHMENT A—LOCATION MAP



ATTACHMENT B—AREA MAP

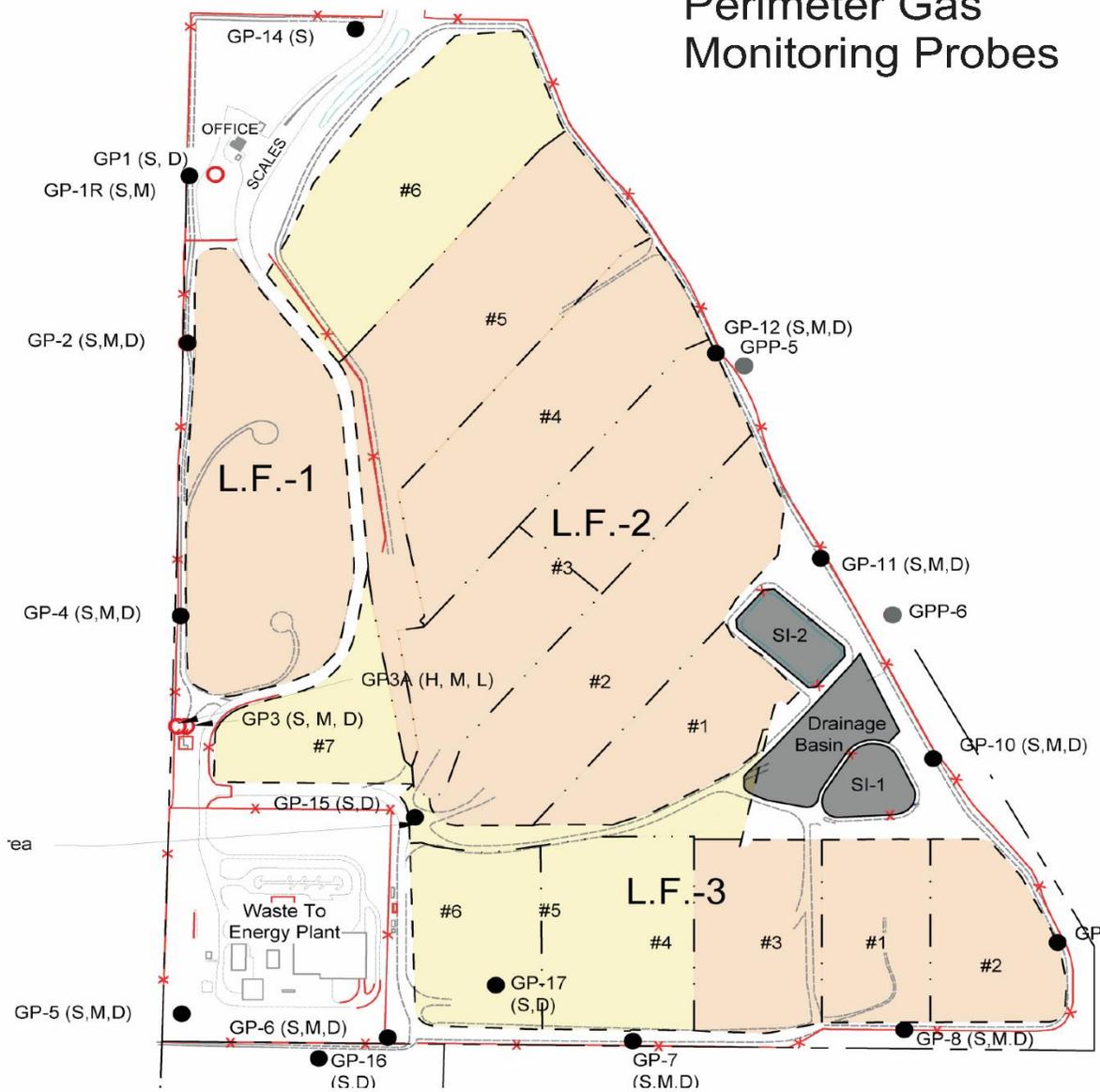


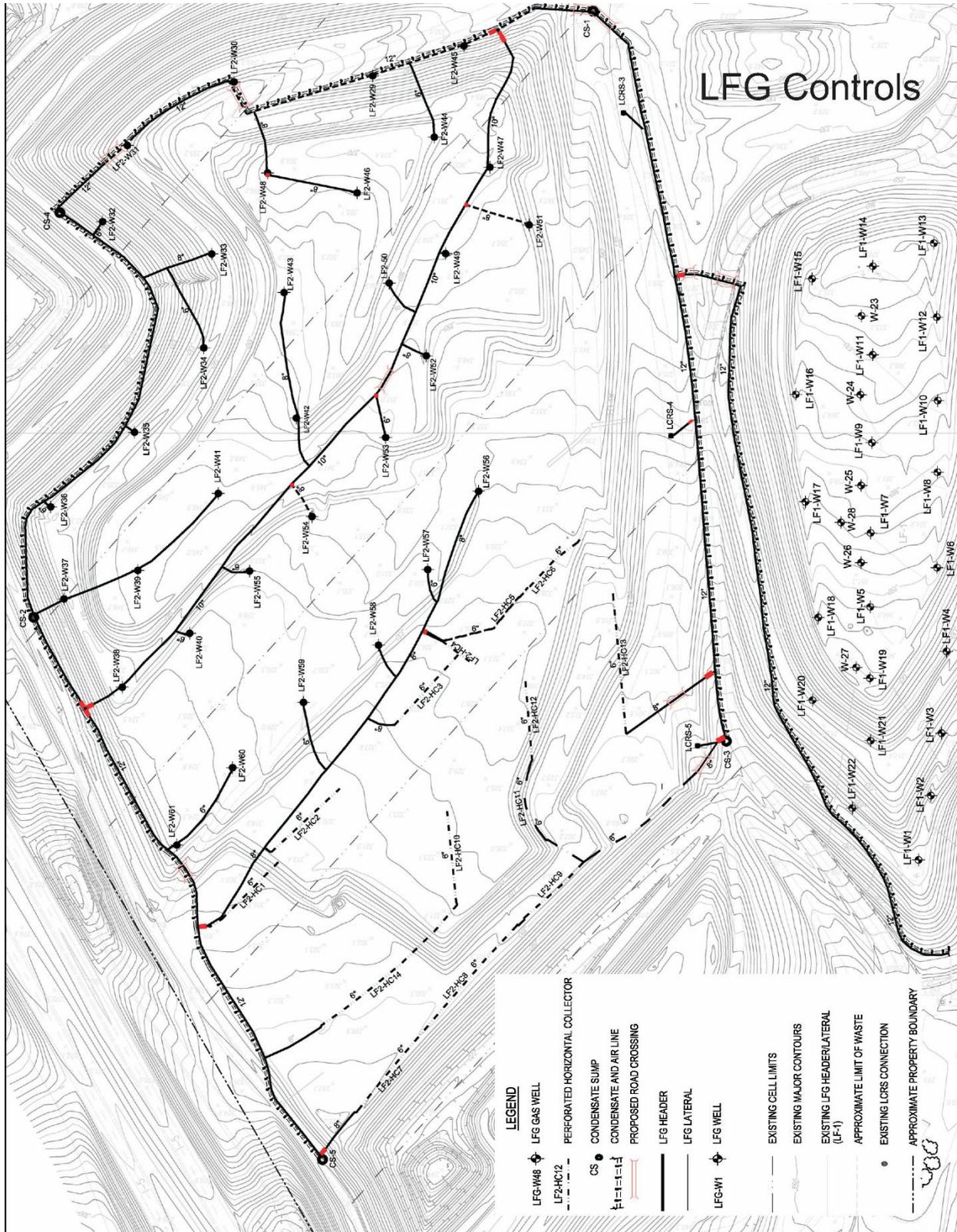
ATTACHMENT C— SITE MAP



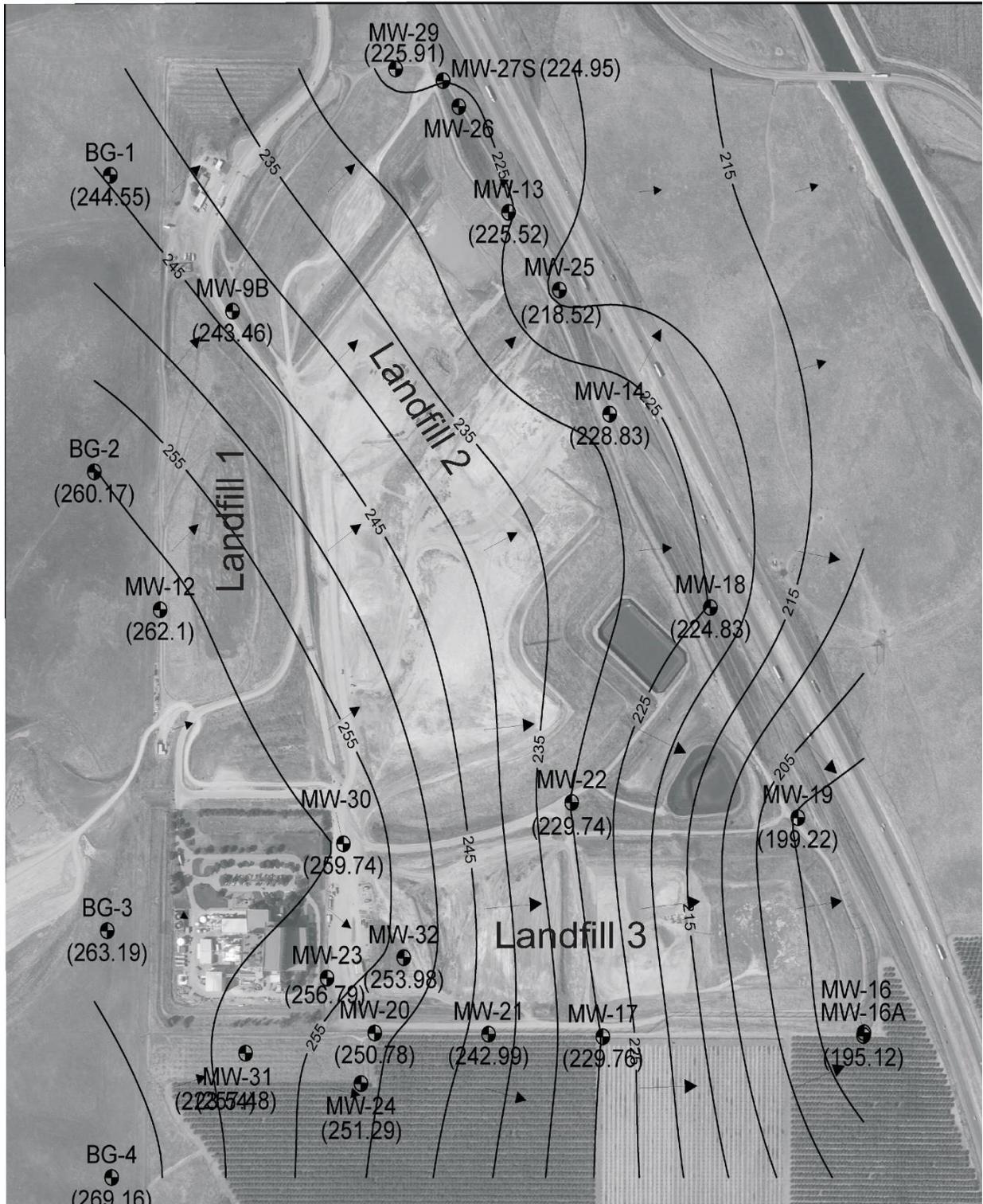
ATTACHMENT D—GAS MONITORING & LFG CONTROLS

**Perimeter Gas
Monitoring Probes**

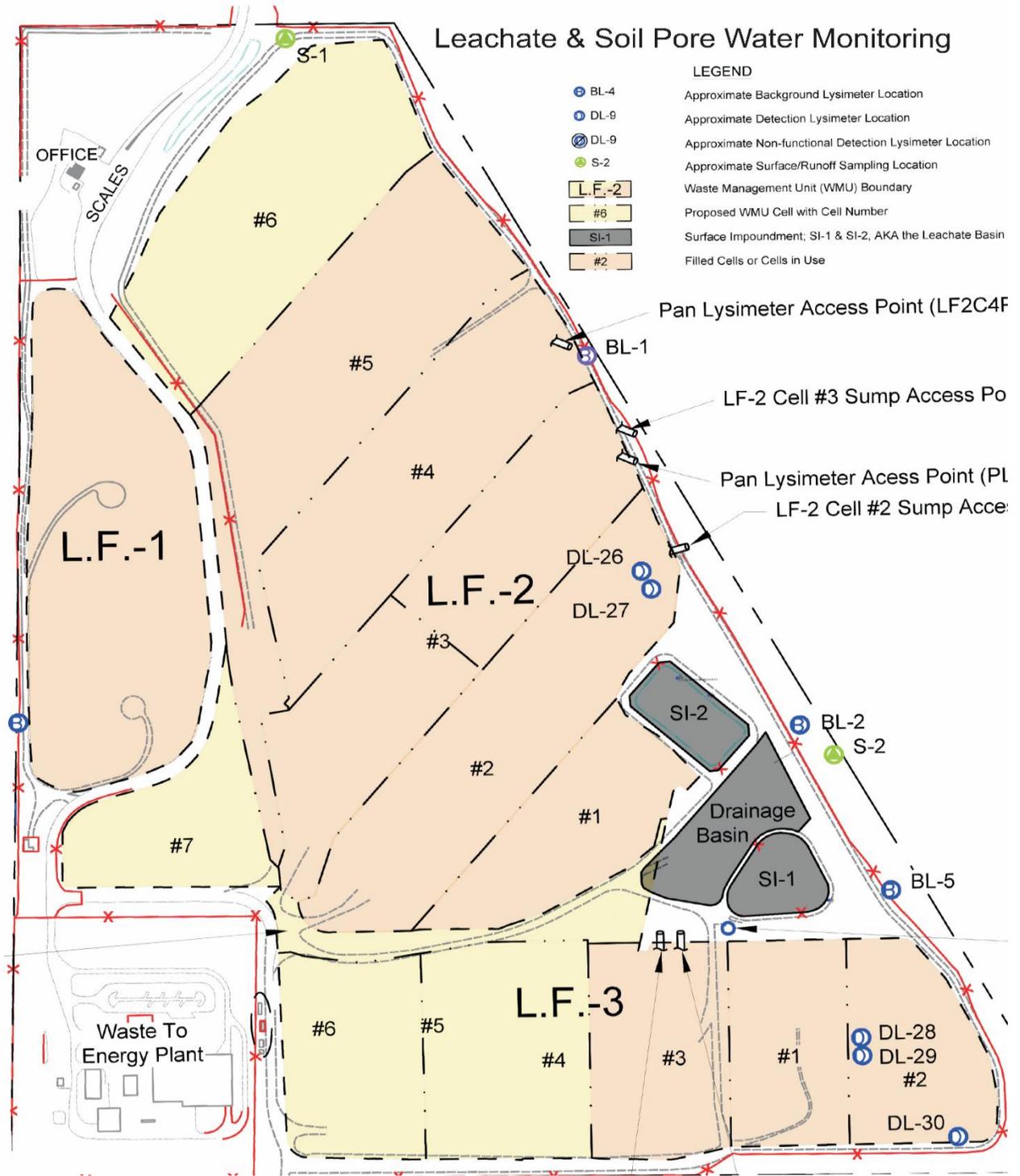




ATTACHMENT E—GROUNDWATER MONITORING SYSTEM



ATTACHMENT F—LEACHATE & SOIL PORE WATER MONITORING



ATTACHMENT G—AUTHORIZED WASTE DISCHARGES

Waste Type	Sub Waste Type	Unit:			
		LF-2	LF-3	SI-1	SI-2
Inert & Nonhazardous Solid Wastes	MSW	Yes	No	No	No
	Commercial	Yes	No	No	No
	Industrial	Yes	No	No	No
	C&D	Yes	No	No	No
	Green Waste	Yes	No	No	No
	Treated Wood Waste (TWW)	Yes	No	No	No
Designated Solid Wastes	C-Soil	No	No	No	No
	Treated Wood Waste (TWW)	No	No	No	No
	Boiler ash from offsite WTE	No	Yes	No	No
Hazardous Wastes	ACW (>1% friable asbestos)	Yes	No	No	No
	Special Wastes	No	Yes	No	No
	Boiler ash from offsite WTE	No	Yes	No	No
	Other Industrial (e.g., sludge, ash)	No	No	No	No
Liquid Wastes	Leachate & LFG Condensate:	No	No	Yes	Yes
	Bulk Liquids	No	No	Yes	Yes
	Containerized Liquids	Yes	No	No	No
	Wastewater & Brines	No	No	Yes	Yes
Semi-Solid Wastes	WWTP & WTP Sludges	Yes	No	No	No
	Dredge Material & Drilling Mud	Yes	No	No	No
Wastes Requiring Special Handling	Treated Medical Waste	Yes	No	No	No
	Dead Animals	Yes	No	No	No

ATTACHMENT H—COMONLY-APPROVED FINAL COVER DESIGNS

Prescriptive Final Cover - Non-Compositely Lined Landfill

Component	Top Deck & Side Slopes
Erosion Resistant Layer	1 feet vegetative cover soil
Low Hydraulic Conductivity (LHC) Layer	1-foot compacted clay soil ($k \leq 1 \times 10^{-6}$ cm/sec)
Foundation Layer	2 feet soil and/or appropriate waste materials

Notes: The permeability of the LHC layer shall not exceed that of the underlying clay soil liner or natural geologic materials, as applicable, to prevent “bathtub effect”. Also, all engineered soil layers shall be compacted to a minimum of 90% of maximum dry density. See WDR Construction Specifications.

Engineered Alternative Final Cover – Non-Compositely-Lined Landfill

Component	Top Deck & Side Slopes
Erosion Resistant Layer	1 feet vegetative cover soil
Drainage Layer	Geocomposite (only on > 4H:1V side slopes)
LHC Layer	40 mil LDPE Geomembrane ($k \leq 1 \times 10^{-7}$ cm/sec)
Foundation Layer	2 feet soil and/or appropriate waste materials

Notes: The Discharger may substitute GCL for the LHC layer (and LLDP or VLDPE in lieu of LDPE geomembrane) provided it is demonstrated that the design meets Title 27 slope stability requirements.

Prescriptive Final Cover Design – Compositely-Lined Landfill

Component	Top Deck & Side Slopes
Erosion Resistant Layer	1 feet vegetative cover soil
Barrier Layer (for base liner equivalency)	Geomembrane ($k \leq 1 \times 10^{-7}$ cm/sec)
Low Hydraulic Conductivity (LHC) Layer	1-foot compacted clay soil ($k \leq 1 \times 10^{-6}$ cm/sec)
Foundation Layer	2 feet soil and/or appropriate waste materials

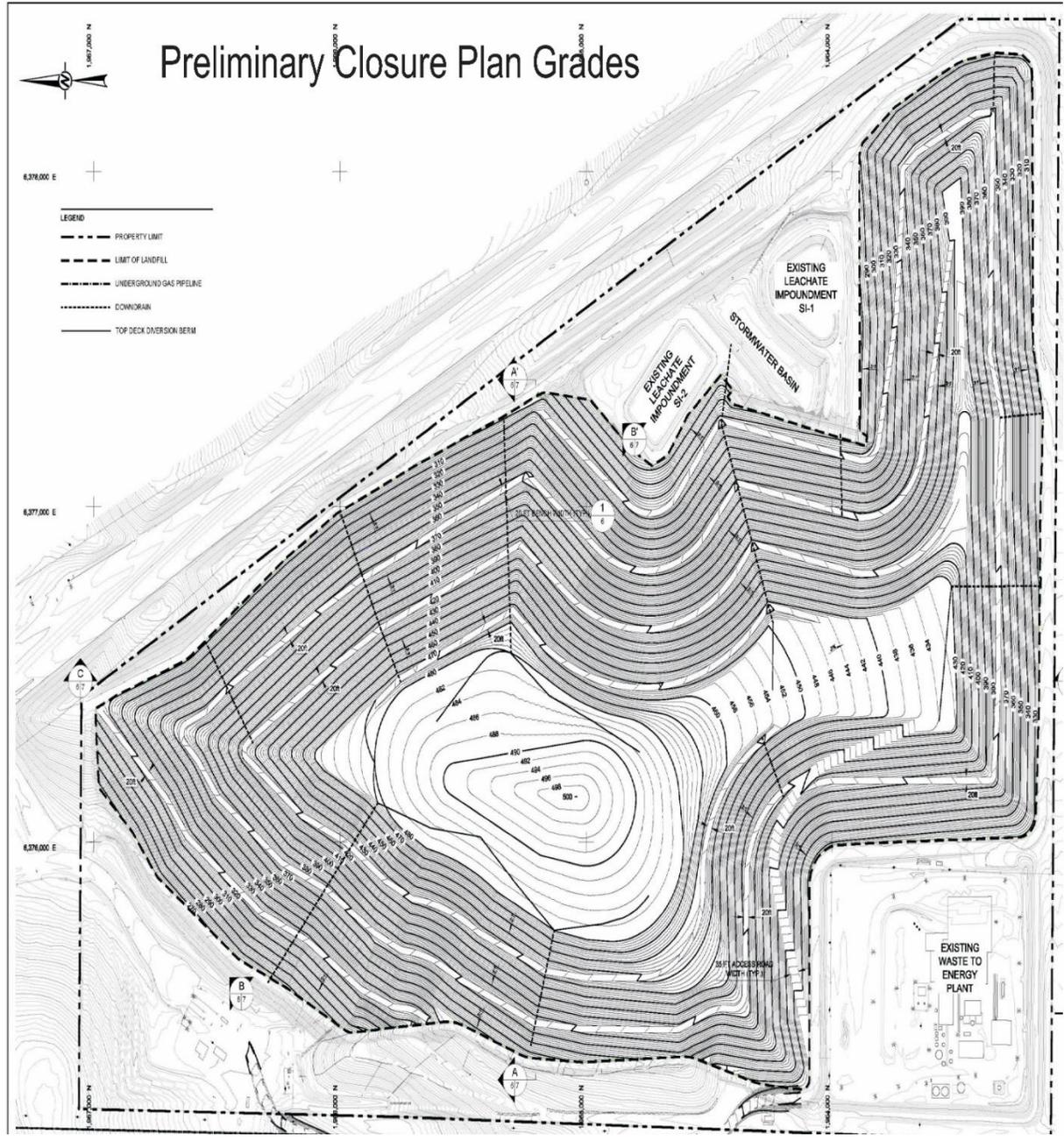
Notes: Composite final cover required for base liner equivalency to prevent “bathtub” effect.

Engineered Alternative Final Cover – Compositely-Lined Landfill

Component	Top Deck & Side Slopes
Erosion Resistant Layer	1 feet vegetative cover soil
Drainage Layer	Geocomposite (only on > 4H:1V side slopes)
Barrier Layer (for base liner equivalency)	40 mil LDPE Geomembrane ($k \leq 1 \times 10^{-7}$ cm/sec)
LHC Layer	GCL
Foundation Layer	2 feet soil and/or appropriate waste materials

Notes: The Discharger may propose GCL for the LHC layer (and LLDP or VLDPE in lieu of LDPE geomembrane) provided it is demonstrated that the design meets Title 27 slope stability requirements.

ATTACHMENT I—PRELIMINARY CLOSURE GRADES



ATTACHMENT J—APPROVED LANDFILL CELL DESIGNS

CLASS III DESIGN

LF-2 Cells 5 to 7

Component	Base	Excavation Slopes
Operations Layer	24 inches of soil	24 inches of sandy soil
Filter Fabric	Geotextile (8 oz/yd ²)	
LCRS	6-inches gravel	
Cushion Layer	Geotextile (12 oz/yd ²)	geotextile
Composite Liner	60-mil HDPE Geomembrane	60-mil HDPE Geomembrane (DST) ³
	Geosynthetic Clay Liner	Geosynthetic Clay Liner
	12-inches CCL ($k \leq 1 \times 10^{-6}$ cm/sec)	n/a
Foundation Layer	Prepared subgrade	Prepared subgrade

CLASS II DESIGN

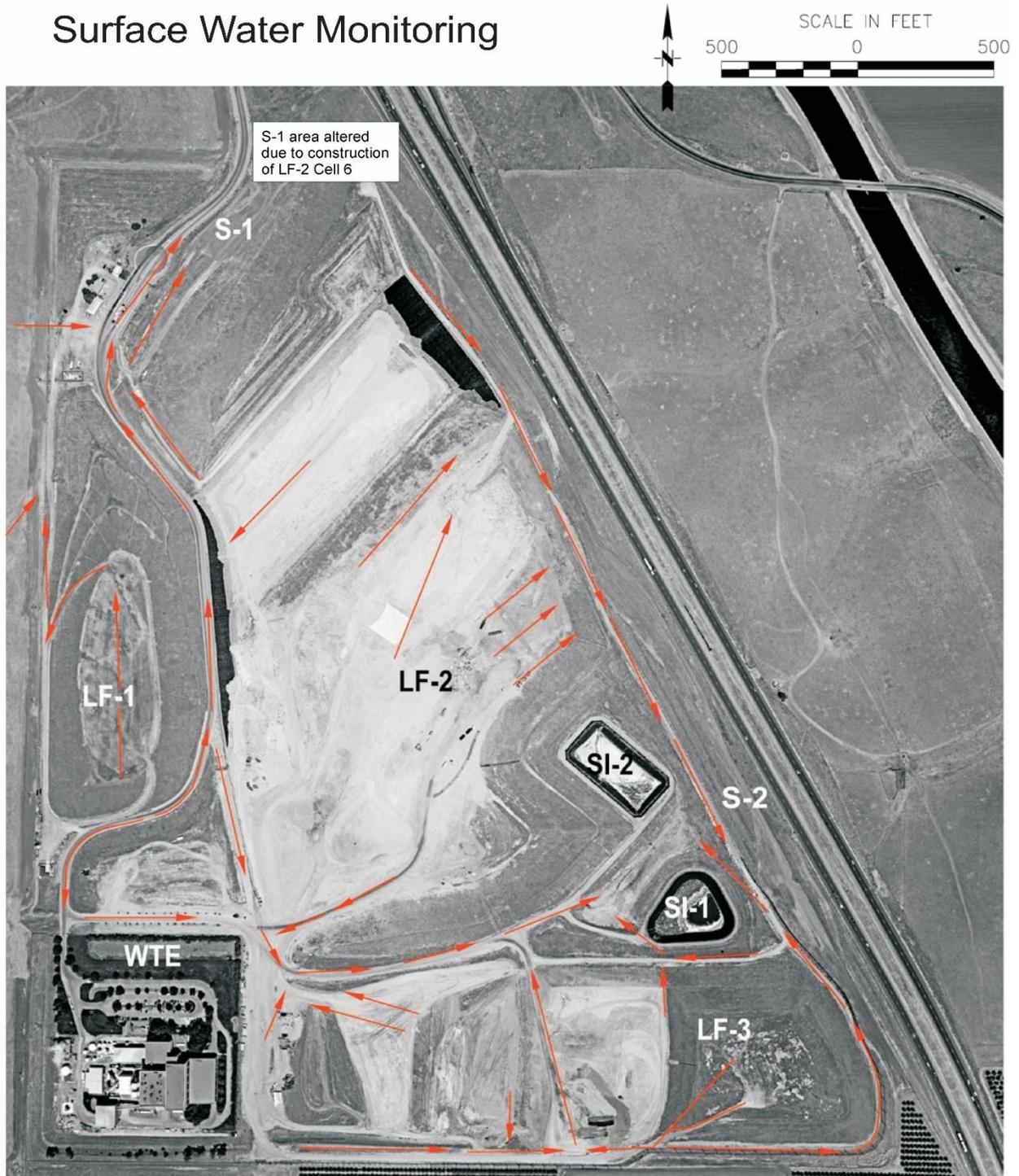
LF-3 Cells 4 & 5

Component	Base	Excavation Slopes
Operations Layer	15 inches of soil	24 inches of sandy soil ($K > 10^{-3}$ cm/sec)
Filter Fabric	Geotextile (8 oz/yd ²)	
Primary LCRS	6-inches gravel	
Primary Composite Liner	60-mil HDPE Geomembrane	60-mil HDPE Geomembrane
	Geosynthetic Clay Liner	Geosynthetic Clay Liner
Secondary LCRS/Leak Detection Layer	Geocomposite	n/a
Secondary Composite Liner	60-mil HDPE Geomembrane	
	Geosynthetic Clay Liner	
Foundation Layer	Prepared subgrade	Prepared subgrade

Table Notes: LCRS design includes 6-inch HDPE collection pipe in central trough.

ATTACHMENT K—SURFACE WATER MONITORING & DRAINAGE CONTROLS

Surface Water Monitoring



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

[TENTATIVE] WASTE DISCHARGE REQUIREMENTS ORDER R5-2020-
FOR
STANISLAUS COUNTY, DEPT. OF ENVIRONMENTAL RESOURCES
FINK ROAD LANDFILL
STANISLAUS COUNTY

INFORMATION SHEET

The Fink Road Landfill is a 203-acre MSW landfill Facility located on a 219-acre site near the Interstate 5 freeway about 3.5 miles west of Crows Landing and four miles south of Patterson. The USGS coordinates are latitude 37.3919°N, longitude 121.1374° W. The Facility includes three landfill units (LF-1, LF-2 and LF-3) and two Class II surface impoundments (SI-1 and SI-2).

Landfill Wastes

LF-1. an unlined Class III unit operated from 1971 to June 1993, accepted primarily MSW, C&D and treated medical wastes. LF-1 was closed with a Title 27 prescriptive clay soil cover in 1997, LF-2, a compositely lined Class III MSW landfill unit, has been in operation since 1993 accepting the same types of wastes historically discharged to LF-1 as well other nonhazardous wastes from commercial, industrial and agricultural sources. Leachate from LF-2 is discharged to SI-2. LF-3, a Class II non-MSW landfill, has been in operation since 1988 accepting only boiler ash from an adjacent, offsite Waste-to-Energy (WTE) plant operated by Covanta Stanislaus Inc. The boiler ash consists primarily of incinerated MSW and other wastes imported from companies in the Silicon Valley about 45 miles west of the site on the other side of the Diablo Mountains. Leachate from LF-3 is discharged to SI-1.

Site Description

The Facility is on a low hill overlooking the San Joaquin Valley in the eastern foothills of the Diablo Mountains, which are part of the Coast Range. Land uses in the vicinity of the Facility include industrial (i.e., the landfill), irrigated agriculture, ranching, water conveyance (e.g., State Water Project), transportation corridor (Interstate 5 freeway) and aviation (private airport owned by NASA). The site is underlain by weathered terrace deposits (e.g., interbedded clays, silts and sands, and gravelly clay) to a depth of about 60 feet bgs and then bedrock. Permeabilities of the terrace deposits generally range from 1×10^{-4} cm/sec to 1×10^{-9} cm/sec. Depths to groundwater ranges from 12 to 85 feet bgs, including small perched zones that follow surface topography. Groundwater generally flows to the northeast in the area of LF-1 and LF-2, to the east in the area of LF-3, and to the southeast in the area of SI-1 and SI-2.

Corrective Action

Groundwater impacts consisting of VOCs and mildly elevated concentrations of inorganic constituents have been historically detected down gradient of LF-1, indicating a release from the unit. VOCs detected consisted primarily of chlorinated VOCs, Freon compounds, and BTEX. Corrective action measures implemented to address the release included landfill closure in 1996 (see WDR Finding 72) and the installation of LFG controls in 1998. See WDR Finding 53. Since the implementation of these measures, the concentration of total VOCs detected immediately downgradient of LF-1 in MW-9A and/or 9B) has declined to non-detect levels as of the Fourth Quarter, 2019 monitoring period.

Corrective action measures have also been historically implemented to address the detection of impacted liquid in some of the lysimeters including those beneath LF-2 Cell 2; LF-3 Cells 1 & 2; and SI-1 and SI-2. In the late 1990s source control measures, including reconstruction of SI-1 (described in Finding 63); reconstruction of the LCRS for LF-3 Cells 1 & 2; and the extension of LFG controls to LF-2 (see WDR Finding 53) were implemented, for example. Since the implementation of these corrective action measure in the late 1990s, lysimeters at the site have been historically dry or unimpacted.

WMU Design

LF-1 is unlined and has no LCRS. LF-2 currently consists of six cells, with one additional cell, Cell 7 planned for future construction.²⁵ LF-3 currently consists of four cells (Cells 1 to 4) with an additional cell (Cell 5) planned for future construction in about 2022 or 2023. The lowest elevation of wastes at LF-2 and LF-3 generally occur at the LCRS sumps of each cell, or if the cell is not equipped with an LCRS sump, the toe of the cell. See WDR Finding 23 and Attachment 1: Landfill Base Grades.

SI-1 and SI-2 are double-lined Class II surface impoundments that accept leachate from LF-3 and LF-2, respectively, as well as any liquid recovered from their own leak detection systems. SI-2 also accepts liquid recovered from an underdrain installed to maintain adequate separation from high groundwater.

Once the above LF-2 and LF-3 cells are all filled to interim grades, the Discharger plans to vertically and laterally expand LF-2, overlapping portions of LF-1 and LF-3 and in-filling between the units. The expansion project is expected to begin in about 2027 concurrent with partial final closure of the western slopes of LF-3 that it overlaps.

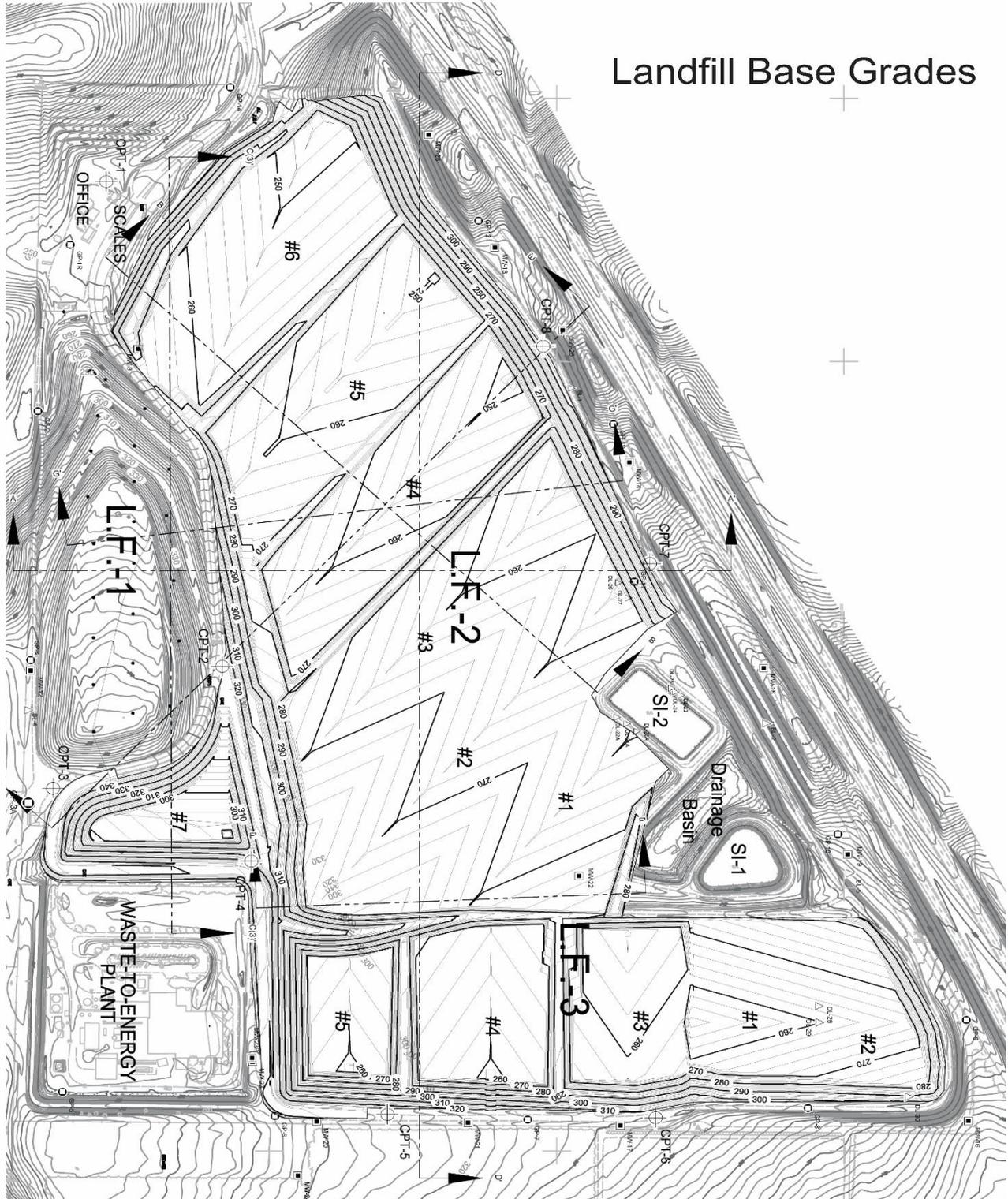
²⁵ The Discharger estimates that LF-2 Cell 7 will be constructed in the year 2022.

Revised WDRs

These WDRs prescribe requirements for WMU operation, construction, corrective action, closure and post-closure maintenance and monitoring consistent with Title 27 and applicable Subtitle D regulations. The MRP attached to the WDRs generally requires semiannual monitoring for landfill monitoring parameters and five-year monitoring for landfill and surface Impoundment constituents of concern.

JDM

ATTACHMENT 1—LANDFILL BASE GRADES



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING ORDER R5-2020-XXXX

MONITORING AND REPORTING PROGRAM
FOR
COUNTY OF STANISLAUS
FINK ROAD LANDFILL
STANISLAUS COUNTY

Preface

Adopted pursuant to Water Code section 13267, this Order establishes a Monitoring and Reporting Program (MRP) incorporating the prescriptive monitoring and reporting requirements and performance standards of California Code of Regulations, title 27 (Title 27), section 20005 et seq. Although incorporated as part of Waste Discharge Requirements Order (WDRs Order) R5-2020-XXXX, this MRP Order is separately enforceable, and may be separately revised by the Executive Officer under authority delegated pursuant to Water Code section 13223. Except as otherwise provided below in this MRP Order, each of the Findings set forth in the WDRs Order are incorporated herein.

A. Monitoring Requirements

The Discharger shall comply with the detection monitoring program (DMP) and corrective action monitoring program (CMP) provisions of Title 27, as applicable, for groundwater, surface water, and the unsaturated zone, as specified herein, in accordance with the Monitoring Specifications in Section G of the WDRs and Standard Monitoring Specifications in Section I of both the Landfill SPRRs and Industrial SPRRs. All detection and corrective action monitoring systems, including background monitoring, shall be designed and constructed consistent with the monitoring specifications of this Order and certified by a California-licensed professional civil engineer or geologist (Qualified Professional) as meeting the requirements of Title 27.

- 1. Groundwater Detection Monitoring**—The Discharger shall implement and maintain a groundwater DMP at all units for which a release to groundwater has not been confirmed, as described in WDR Finding 50 (i.e., LF-2, LF-3, SI-1 and SI-2). Groundwater DMP monitoring points shall be located and maintained along the Point of Compliance and in other water bearing zones and locations necessary to meet Title 27

performance standards for detection monitoring (i.e., provide the earliest possible detection of a release from the unit).

The Discharger shall also install and maintain a sufficient number of piezometers and/or groundwater water monitoring wells to provide the groundwater elevation monitoring data necessary to accurately plot the groundwater elevation contours and adequately define the direction(s) of groundwater flow and corresponding flow gradient(s) in the shallow and deep zones beneath the Facility. See Standard Monitoring Specification G.19, Landfill SPRRs.

- a. **Landfill Monitoring Points**—The groundwater detection monitoring points for the landfill units at the site shall (at a minimum) include those listed in Table 5 below.

Table 5—Groundwater Detection Monitoring Points – Landfill Units

Landfill Unit	Program	Wells	Direction	Location
LF-2	Background	MWs-9B, 30 & ---	Upgradient	Between LF-1 & LF-2
LF-2	Background	---	Upgradient	West of LF-2, Cell 7
LF-1 & LF-2 (contiguous)	Background	MW-12 & BG-2	Upgradient	Western perimeter of LF-1
LF-2	Detection	MWs-13, 14, 25, 26, 27S & 29	Downgradient	NE Perimeter of LF-2
LF-3	Background	MW-23 & MW-30	Upgradient	Western perimeter of LF-3
LF-3	Background	BG-3	Upgradient	Offsite to west
LF-3	Detection	MWs-16/16A, 17, 20 & 21	Side gradient	Southern perimeter
LF-3	Detection	---	Downgradient	Eastern perimeter of LF-3

Table 5 Notes: Additional monitoring well required at specified location where “---” entry in Wells column per WDR Monitoring Specification G.9.

- b. Surface Impoundment Monitoring Points**—The groundwater detection monitoring points for the surface impoundment units at the site shall (at a minimum) include those listed in Table 5 below.

Table 6—Groundwater Detection Monitoring Points – Surface Impoundments

WMU	Program	Wells	Direction	Location
SI-1	Background	MW-22	Upgradient	Between LF-1 & LF-2
SI-1	Detection	MW-19	Downgradient	SE site perimeter
SI-2	Background	---	Upgradient	Western perimeter of LF-1
SI-2	Detection	MW-18	Side gradient	Eastern site perimeter
SI-2	Detection	---	Downgradient	NE Perimeter of LF-2

Table 6 Notes: Additional monitoring well required at specified location where “---” entry in Wells column. See WDR Monitoring Specification G.9.

Any monitoring wells or piezometers installed after the adoption of this Order shall become groundwater detection action monitoring points subject to monitoring under this section, unless otherwise approved by Water Board staff. Any existing or future monitoring wells (or piezometers) properly abandoned or replaced as approved by Water Board staff may be removed as groundwater monitoring points subject to monitoring under this section. See Standard Monitoring Specification I.23, SPRR.

- c. Groundwater Detection Monitoring Schedule**—Ground water samples shall be collected from each well in Table 5 and Table 6 above and analyzed for the Field Parameters and Monitoring Parameters listed in Table 7 and the Five-Year COCs referenced in Table 8 and listed in Attachment B of this MRP. Sampling shall be conducted in accordance with the frequencies listed in Table 7 for each parameter/constituent group.

Table 7—Groundwater Detection Monitoring Schedule – Monitoring Parameters

Parameter (See Attachment A)	Units	Sampling Frequency
Field Parameters	(various)	Quarterly
General Parameters	mg/L	Semiannually
General Minerals—Major Anions	mg/L	Annually
General Minerals—Major Cations	mg/L	Annually

Parameter (See Attachment A)	Units	Sampling Frequency
VOCs, Short List	µg/L	Semiannually
Dissolved Metals, Short List	µg/L	Semiannually

Table 8—Groundwater Detection Monitoring Schedule –COCs

COC Group (see Attachment B)	Units	Sampling Frequency
Dissolved Inorganics, Extended List	µg/L	Every 5 Years
VOCs, Extended List	µg/L	Every 5 Years
Semi-Volatile Organic Compounds	µg/L	Every 5 Years
Chlorophenoxy Herbicides	µg/L	Every 5 Years
Organophosphorus Compounds	µg/L	Every 5 Years

Piezometer monitoring may be limited to groundwater elevation (unconfined zones) or hydraulic head (confined/semi-confined zones), as applicable at a given monitoring point.

Detection Monitoring Data Analysis - Using groundwater elevation data from monitoring, the Discharger shall determine (calculate or estimate) the ground water flow rate and direction in the uppermost aquifer; and, to the extent feasible, any zones of perched water or other saturated zones monitored pursuant to Title 27, section 20415, subdivision (b)(1).

Detection monitoring data collected above shall be analyzed in accordance with the detection monitoring data analysis methods described in the currently approved Monitoring Data Analysis Methods Report or Water Quality Protection Standard Report.

- 2. Groundwater Corrective Action Monitoring**—The Discharger shall implement and maintain a groundwater corrective action monitoring program (CMP) at all units for which a release to groundwater has been confirmed under the DMP, as described in WDR Finding 50 (i.e., LF-1) or as otherwise determined under this MRP. Groundwater CMP monitoring points shall be located and maintained along the Point of Compliance and in other water bearing zones and locations necessary to meet Title 27 performance standards for corrective action monitoring (i.e., define the

nature and extent of the release and monitor the effectiveness of corrective action measures).

- a. **Groundwater Corrective Action Monitoring Points**—The groundwater corrective action monitoring points for the landfill units at the site shall (at a minimum) include those listed in Table 9 below.

Table 9—Groundwater Corrective Action Monitoring Points

Landfill Unit	Program	Wells	Location	Notes
LF-1	Background	MW-12 & BG-2	Upgradient	Western perimeter of LF-1
LF-1	Corrective Action	MWs-9B, 30 & --- ¹	Downgradient	Between LF-1 & LF-2
LF-1 & LF-2 (contiguous)	Corrective Action	MWs-13, 14, 25, 26, 27S & 29	Downgradient	NE Perimeter of LF-2

Table 9 Notes: Additional monitoring well required at specified location where “---” entry in Wells column per WDR Monitoring Specification G.9.

Any monitoring wells installed upgradient, side-gradient or down gradient of LF-1, or downgradient of LF-2, after the adoption of this Order shall become groundwater corrective action monitoring points for LF-1 subject to monitoring under this section, unless otherwise approved by Water Board staff. Any existing or future monitoring wells (or piezometers) properly abandoned or replaced as approved by Water Board staff may be removed as groundwater monitoring points subject to monitoring under this section. See Standard Monitoring Specification I.23, SPRR.

- b. **Groundwater Corrective Action Monitoring Schedule**—The groundwater corrective action monitoring schedule shall be the same as for groundwater detection monitoring. See **Table 7** and **Table 8**.

Data analysis methods for corrective action monitoring shall include applicable detection and evaluation monitoring protocols, such as verification testing and notification of any new or previously unconfirmed

constituents of the release to meet corrective action objectives.²⁶ (See SPRRs, §§ 1.45-1.47.)

Annually (or more frequently, if appropriate), groundwater chemistry shall also be evaluated at least annually for cation/anion balance, and the results graphically presented using an appropriate method (e.g., Stiff diagram, Piper diagram, and/or Schoeller plot).

3. Unsaturated Zone Monitoring—The Discharger shall monitor soil pore gas and soil pore liquid at the lined and unlined units at the site consistent with Title 27 performance standards, as indicated below.

a. Soil Pore Gas

i. **Monitoring Points**—The Discharger shall conduct soil pore gas monitoring to monitor gas migration in the unsaturated zone, the effectiveness of LFG extraction as a corrective action measure at LF-1, and to detect a release of LFG from LF-2 and LF-3 in the event it occurs. The soil pore gas detection and corrective action monitoring points shall be the gas probes listed in Table 10 and shown in WDR Attachment D.

Table 10—Soil Pore Gas Monitoring Points

Gas Wells	Completion Type	Probe Screen Interval (Relative to Waste Column)	Adjacent Unit	Location (Relative to Adjacent Unit)
GP-1R	Triple	Shallow, Medium & Deep		
GP-4 to GP-14	Triple	Shallow, Medium & Deep		
GP-15 to GP-17	Dual	Shallow & Deep		

²⁶ Incorporation of detection and evaluation monitoring protocols into the CMP may alternatively be viewed as running concurrent detection, evaluation, and correction action monitoring on a constituent-by-constituent basis. A DMP may also be run independent of the CMP at any wells that have successfully completed a Title 27 proof period per WDR Monitoring Specification G.11.

- ii. **Soil Pore Gas Monitoring Schedule**—Soil pore gas shall be monitored for LFG constituents in accordance with Table 11.

Table 11—Soil Pore Gas Monitoring Schedule

Parameters	Units	Monitoring Frequency
Field Parameters	---	---
Weather	(not applicable)	
Atmospheric Pressure	Inches Hg	Semiannually
Atmospheric Temperature	°F	Semiannually
Gas Temperature	°F	Semiannually
Gas Pressure	Inches H ₂ O	Semiannually
Field Gases	%	Semiannually
Organic Vapors	ppmv	Semiannually
Monitoring Parameters	---	---
VOCs	µg/cm ³	Semiannually

Table 11 Notes: All field gas monitoring shall be conducted using appropriate field meter(s). VOC sampling shall be required in all probes in which methane detected above 1% by volume and/or total organic vapors detected above 1 ppmv during monitoring event. VOC analysis shall be conducted using USEPA Method TO-15.

- b. **Soil Pore Liquid**—The Discharger shall conduct soil pore liquid monitoring at the lined landfill units and at the surface impoundments to detect a release from the units at the earliest opportunity, as indicated below.
- i. **Monitoring Points**—The soil pore liquid monitoring points for the lined landfill units and the surface impoundments shall be as listed in Table 12 and Table 12 Notes: *LF-2 Cells 1 & 2 not installed with pan lysimeters given the units were not constructed with LCRS sumps (leachate from cells drains by pipe directly to SI-2). See Attachment F.*

Table 13 below.

Table 12—Soil Pore Water Monitoring Points – Landfill Units

WMU	Cell(s)	Program	Lysimeter
LF-1	---	---	---
LF-2	1	Background	DLs-20A, 21A & 22A
LF-2	2	Background	DLs-26 & 27
LF-2	1 & 2	Detection	N/A – see notes
LF-2	3 - 6	Background	BL-1
LF-2	3 - 6	Detection	PLs 3 to 6
LF-2	7 (future)	Detection	PL-7 (future)
LF-3	1 & 2	Background	DLs 1 to 13
LF-3	1 & 2	Detection	DL-28 to 30
LF-3	3 & 4	Detection	PLs 3 & 4
LF-3	5 (future)	Detection	PL-5 (future)

Table 12 Notes: LF-2 Cells 1 & 2 not installed with pan lysimeters given the units were not constructed with LCRS sumps (leachate from cells drains by pipe directly to SI-2). See Attachment F.

Table 13—Soil Pore Water Monitoring Points – Surface Impoundments

WMU	Program	Lysimeter
SI-1	Background	BL-5
SI-1	Background	Subdrain
SI-2	Background	BL-2
SI-2	Detection	DLs-23 to 25

- ii. **Soil Pore Liquid Monitoring Schedule**—The soil pore liquid monitoring schedule shall be the same as that for leachate monitoring in **Table 14**. Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the Facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

4. Leachate Monitoring—Leachate monitoring shall be conducted to detect physical evidence of a release from the landfill units (i.e., seeps) per Standard Monitoring Specification I.48, SPRR, the concentrations and volumes/rates of landfill leachate produced, and any leakage from the primary containment system of a surface impoundment.

a. Leachate Seeps

- i. **Monitoring Points**—The monitoring points for leachate seep monitoring shall include the *landfill cover deck, slopes and perimeter*.
- ii. **Monitoring Schedule**—Leachate seep monitoring shall be conducted according to the schedule set forth in **Table 14**.

Detection of Leachate—If leachate is observed emanating from the landfill, the Discharger shall: (i) within seven days, verbally notify Central Valley Water Board staff; and (ii) immediately, sample and test leachate in accordance with the Field Parameters and Monitoring Parameters specified in **Table 14**. **Reporting**—Reporting for leachate seeps shall be conducted as required in Section D.3 of this MRP, below.

b. LCRS Sumps

- i. **Monitoring Points**—All landfill and surface impoundment

LCRS sumps. See WDR Attachment F and Table 12 notes.

- ii. **Monitoring Schedule**— All Unit landfill LCRS sumps/vaults and surface impoundment leak detection sumps shall be inspected monthly for the presence of leachate. Upon detection of leachate in a previously dry sump or vault, leachate shall be sampled immediately and analyzed for the constituents listed in Table 14 below. Annual sampling per Table 14 shall also be conducted at each sump/vault containing leachate.

Table 14—Leachate Monitoring Schedule

Parameter	Units	GeoTracker Code	Sampling Freq.
Field Parameters	---	---	---
Leachate Depth	Feet & inches		Each Occurrence & Monthly
Leachate Elevation	Feet & tenths MSL	ELEV	Each Occurrence & Monthly
Total Flow (estimate or meter reading)	Gallons		Each Occurrence/ Continuous
Flow Rate (estimate)	Gallons/Day	FLOW	Each Occurrence & Quarterly
Specific Conductance	µmhos/cm	SC	Each Occurrence & Quarterly
pH	pH units	PH	Each Occurrence & Quarterly
Monitoring Parameters	---	---	---
(Same as Groundwater Detection Monitoring)	See Table 7	---	Each Occurrence & Semi-annually
Five-Year COCs			
(Same as Groundwater Detection Monitoring)	See Table 8	---	Each Occurrence & Annually

The Discharger shall also monitor leachate flows and totals to the Class II surface impoundments (SI-1 and SI-2) on a daily or continuous basis (i.e., by meter). LCRS Sump and leak detection sampling shall be conducted in accordance with the currently approved Sample Collection and Analysis Plan. Leachate monitoring shall be incorporated into all future expansions at the landfill.

iii. **LCRS Testing**—All LCRSs shall be tested annually to demonstrate operation in conformance with waste discharge requirements. The results of these tests shall be reported to the Board and shall include comparison with earlier tests made under comparable conditions. All visible portions of synthetic liners shall be inspected on a quarterly basis and their condition reported quarterly to the Board.

5. **Surface Water Monitoring**—Storm water monitoring shall be conducted to detect evidence of a release from the landfill units, evidence of landfill cover and WMU side slope erosion, and to monitor the effectiveness of precipitation and drainage controls at the site. Runoff from the units at the Facility shall be collected from each monitoring point listed in **Table 15** below when there is sufficient liquid at each monitoring point to collect a representative sample of the liquid at that point. Each sample shall be analyzed in accordance with the methods and frequency specified in **Table 16**.

Table 15—Storm Water Monitoring Points

WMUs	Monitoring Program	Direction	Monitoring Point(s)	Location
All	Background	Upstream of units	---	Representative point upstream of all units
LF-1	Detection	Downstream of toe	S-1 & ---	Perimeter drain
LF-2	Detection	Downstream of commonly drained cells	S-3 & ---	
LF-3	Detection	Downstream of commonly drained cells	---	

WMUs	Monitoring Program	Direction	Monitoring Point(s)	Location
SI-1 & SI-2	Detection	Downstream	---	Sedimentation Basin

Table 15 Notes: Additional monitoring points required at appropriate location where “---” entry in “Monitoring Points” column per WDR Monitoring Specification G.12.

Table 16—Storm Water Monitoring Schedule

	Parameter (See Attachment A)	GeoTracker Code	Units	Sampling Frequency
Field Parameters	Specific Conductance	SC	µmhos/cm	Semiannually
	pH	PH	pH units	Semiannually
	Turbidity	TURB	NTU	Semiannually
Monitoring Parameters	General Parameters	(various)	mg/L	Semiannually
	General Minerals - Major Anions - Major Cations	(various)	mg/L	Annually
	VOCs, Short List	(various)	µg/L	Annually
	Dissolved Inorganics, Short List	(various)	µg/L	Annually
	Five-Year COCs (See Attachment B)	(various)	(various)	Every Five Years (Due in 2022)

- 6. Solid Waste Monitoring**—The Discharger shall monitor all wastes discharged to the Class II and III landfill units as follows and report to the Board:

Table 17—Solid Waste Monitoring

Parameter	Units	Monitoring Frequency
Quantity discharged	Cubic yards	Monthly
Type of material discharged	—	Monthly
Source of material	—	Monthly
Minimum elevation of discharge	Feet (MSL)	Monthly
Remaining Capacity of Cell	%	Quarterly

Table 17 Notes: The above information shall be calculated and the results reported in the semiannual monitoring reports required under MRP Section B.2.i.

- 7. Facility Monitoring**—The Discharger shall monitor all wastes discharged to the Class II and III landfill units on a monthly basis and report to the Board as follows:
- a. Regular Visual Inspections**—The Discharger shall perform regular visual inspections listed in Table 18 in accordance with the schedule specified in Table 19. Results of these regular visual inspections shall be included in Semiannual Monitoring Reports (SMRs) per Section D.1 of this MRP Order.

Table 18—Regular Visual Inspections

Category	Observations
Within Unit	<ul style="list-style-type: none"> Evidence of ponded water at any point on unit outside of any contact storm water/leachate diversions structures on the active face of unit (record affected areas on map). Evidence of erosion and/or of day-lighted refuse.
Unit Perimeter	<ul style="list-style-type: none"> Evidence of leachate seep, estimated size of affected area and flow rate (record affected areas on map). Evidence of erosion and/or of day-lighted refuse.

Category	Observations
Receiving Waters	<ul style="list-style-type: none"> • Floating and suspended materials of waste origin—presence or absence, source and size of affected areas. • Discoloration and turbidity—description of color, source and size of affected areas.

Table 19—Regular Visual Inspection Schedule

Category	Wet Season (1 Oct. to 30 April)	Dry Season (1 May to 30 Sept.)
Inactive or Closed Units	Monthly	Quarterly
Active Units	Weekly	Monthly

- b. Annual Facility Inspections**—Prior to **30 September** of each year, the Discharger shall inspect the Facility to assess repair and maintenance needs for drainage control systems, cover systems and groundwater monitoring wells; and preparedness for winter conditions (e.g., erosion and sedimentation control). If repairs are made as result of the annual inspection, problem areas shall be photographed before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by 31 October.

Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

- c. Major Storm Events**—Within seven days of any storm event capable of causing damage or significant erosion (Major Storm Event), the Discharger shall inspect the Facility for damage to any precipitation, diversion and drainage facilities, and all landfill side slopes. Necessary repairs shall be completed within 30 days of the inspection. The Discharger shall take photos of any problem areas before and after repairs. Notification and reporting requirements for major storm events shall be conducted as required in Section B.6 of this MRP.
- d. Five-Year Iso-Settlement Surveys for Closed Landfills**—The Discharger shall conduct a five-year iso-settlement survey of each closed and partially-closed landfill unit and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover’s low)-hydraulic-

conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map. (Title 27, § 21090, subs. (e)(1)-(2).) See Section 0 for iso-settlement survey reporting requirements.²⁷

8. **Additional Corrective Action Monitoring**—In addition to groundwater corrective action monitoring conducted in Section A.1 above, the Discharger shall monitor the LFG extraction system at LF-1 and LF-2 to demonstrate the effectiveness of LFG extraction as a corrective action measure at LF-1 and as an LFG (i.e., operational) control measure at LF-2. in accordance with Title 27, section 20430 and this MRP.
 - a. **LFG Extraction System (Excluding Flare)**—The Discharger shall operate and maintain the landfill gas (LFG) extraction system for each unit (or for the units combined as the system is currently configured), to remove LFG from the landfill units and prevent, to the extent possible, migration into the unsaturated zone beneath the landfill units.
 - i. **Monitoring Points**—LFG extraction and monitoring shall be conducted at the LFG extraction wells shown in WDR Attachment D.2. Additionally, LFG monitoring shall also be conducted at any new or replacement LFG extraction wells installed after adoption of this Order; a representative sampling port along LF-1 header; the connection between LF-1 and LF-2 header pipes; and a representative sampling port along LF-2 header.
 - ii. **Monitoring Schedule**—LFG monitoring shall be conducted in accordance with **Table 20**. Field monitoring shall be conducted with appropriate measuring devices for each parameter.

²⁷ The next iso-settlement survey shall be conducted in the first half of 2020.

Table 20—Landfill Gas Extraction Monitoring Schedule

Parameter	Units	Sampling Frequency	Notes
Field Parameters ¹	---	---	---
Flow rate	cu ft/min	Monthly	Only required if well flow control valve is metered.
Vacuum	Inches of H ₂ O	Monthly	(none)
LFG Temperature	°F	Monthly	(none)
Field Gases	%	Monthly	See list of field gases in Table 11.
Monitoring Parameters ²	---	---	---
VOCs (USEPA Method TO-15)	µg/cm ³	Semiannually	(none)

b. Landfill Gas Flare Station

- i. Monitoring Points—The inlet to the Landfill Gas Flare Station shall be monitored in accordance with Table 21.

Table 21—Landfill Gas Flare Monitoring Schedule

Parameter	Units	Sampling Frequency
Field Parameters ¹	---	---
Atmospheric Temperature	°F	Monthly
Atmospheric Pressure	PSIG	Monthly
Temperature into LFG Plant	°F	Monthly
Pressure into the LFG plant	Inches of H ₂ O vacuum	Monthly

Parameter	Units	Sampling Frequency
Totalized flow	Cubic feet	Monthly
Flow rate	CFM	Monthly
Total VOCs	$\mu\text{g}/\text{cm}^3$	Monthly ¹
Monitoring Parameters ²	---	---
Methane	% by volume	Semiannually
VOCs USEPA Method TO-15)	$\mu\text{g}/\text{cm}^3$	Semiannually

In the event of a shutdown of the landfill gas extraction system and/or flare, the Discharger shall notify Board staff via e-mail, fax, or telephone within 24 hours of knowledge and shall provide weekly status updates. This requirement excludes shutdown events where the landfill gas system restarts itself or whether the system is restarted manually within 24 hours. All shutdowns, regardless of the type of restart, shall be summarized in the semiannual reports.

Evaluation of the effectiveness of the LFG extraction system shall include whether separate LFG controls, including blower and flare station, are needed for each unit to achieve corrective action goals per Title 27, section 20430. See Facility Specification C.4.a.

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

- B. Reporting Requirements**—The results of monitoring required at least semiannually (i.e., semiannually or more frequently) under this Order shall be reported semiannually, while the reporting frequency for monitoring required less frequently than semiannually (e.g., annually or every five years) shall be the same as the monitoring frequency. The following monitoring reports containing

the results of monitoring required under this Order shall be submitted by the specified due dates.

Table 22—Summary of Required Reporting

Report	End of Reporting Period	Due Date
Semiannual	30 June	1 Aug.
Monitoring Reports (SMRs)	31 Dec.	1 Feb.
Annual Monitoring Report (AMRs)	31 Dec.	1 Feb.
Seep Reporting	(continuous)	Immediately (Notice within 7 Days)
Annual Facility Inspection Report	31 Oct.	15 Nov.
Major Storm Event Report	(continuous)	7 Days after Discovery of Damage
Iso-Settlement Survey and Mapping Report	Every 5 Years	1 July 2020

1. Semiannual Monitoring Reports (SMRs)—The Discharger shall comply with the detection monitoring program (DMP) and corrective action monitoring program (CMP) provisions of Title 27, as applicable, for groundwater monitoring—On 1 August and 1 February of each year, the Discharger shall submit a Semiannual Monitoring Reports (SMRs) in accordance with the provisions below.

- a. For each groundwater monitoring point addressed by the report, a description of:
 - i. The time of water level measurement;
 - ii. The type of pump (or other device) used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - iii. The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate;

- the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
- iv. The type of pump (or other device) used for sampling, if different than the pump or device used for purging; and
 - v. A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b.** A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c.** An estimated quarterly groundwater flow rate and direction in: (1) the uppermost aquifer; (2) any zones of perched water; and (3) any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report. (See Title 27, § 20415, subd. (e)(15).)
 - d.** Times of expected highest and lowest elevations of the water levels in the wells. (See Title 27, § 20415, subd. (e)(15).)
 - e.** Estimated minimum groundwater separation at LF-1, LF-2. And LF-3 based on groundwater elevation monitoring data and the maximum depth of waste at each unit, including LCRS sump, as applicable.
 - f.** Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water.
 - i. Concentrations below the laboratory reporting limit shall not be reported as “ND” unless the reporting limit is also given in the table. Otherwise they shall be reported “<” the reporting limit (e.g., <0.10).
 - ii. Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I “Standard Monitoring Specifications” for requirements regarding MDLs and PQLs.
 - g.** Laboratory statements of results of all analyses evaluating compliance with requirements.

- point or background monitoring point, at a scale appropriate to show trends or variations in water quality.
- iv. The graphs shall plot each datum, rather than plotting mean values.
 - v. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b. An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - c. All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
 - d. Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
 - e. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - f. A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
3. **Seep Reporting**—Upon discovery of seepage from any disposal area within the Facility, the Discharger shall immediately report such seepage to the Central Valley Water Board via telephone or email; and within seven days, submit a written report with the following information:
- a. Map(s) depicting the location(s) of seepage;
 - b. Estimated flow rate(s);

concentration limits, shall be submitted in a revised WQPS Report for review and approval. The WQPS report shall:

- a. Identify all distinct bodies of surface water and groundwater that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release (See Title 27, §§ 20415, subd. (e)(8)(E), 20420, subds. (j)(1)-(3).
- f. Be updated annually for each monitoring well using new and historical monitoring data.
- g. Be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27.

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the WQPS.

The monitoring parameters are listed in Table 7 (groundwater), Table 11 (unsaturated zone) and Table 16 (surface water).

The surface and groundwater COCs for both landfill units at the facility are listed in Attachment B. The Discharger shall monitor all COCs **every five years**, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC event was conducted in the Third

Quarter 2015. The five-year COCs are therefore due to be monitored again in the Second Semester 2020.

- 2. Concentration Limits**—Proposed concentration limits for all monitored water bearing media (i.e., surface water and groundwater) shall be included in the revised/updated WQPS Report required under WDR Monitoring Specification G.7. For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined by calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or by an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

a. Detection Monitoring

- i. Non-Naturally Occurring COCs—The concentration limits for non-naturally occurring constituents of concern, including organic compounds (e.g., VOCs and dissolved metals not detectable in background), shall be the laboratory detection limit.
- ii. Naturally Occurring COCs—The Discharger shall use interwell statistics for naturally occurring constituents. Each unit shall be separately monitored absent an approved demonstration per WDR Monitoring Specification G.5. The data analysis method for calculating concentration limits for naturally occurring COCs under this Order shall be the interwell Tolerance Limit Method at 95% confidence and 95% coverage based on background data or as otherwise proposed in the currently approved WQPS Report or separate technical report reference therein. Concentration limits for naturally occurring COCs shall be updated annually and included in the Annual Monitoring Report submitted under this MRP.

The landfill concentration limits for detection monitoring listed in MRP Attachment C are temporarily approved pending submission of the next updated WQPS Report per Section C.2.c below.

- b. Corrective Action Monitoring**—For wells in the corrective action program, the concentration limits represent cleanup levels to achieve background concentrations. The concentration limits for corrective action monitoring shall generally be the same as those for detection monitoring absent approval of a proposal for

concentration limits greater than background (CLGBs) under Title 27 Section 20400(c) and revision of the WDRs. Time series plots and/or an intrawell statistical procedure (e.g., Mann-Kendall test) shall be used for trend analysis to monitor corrective action progress.

As noted in WDR Finding 47, the JTD included an August 2019 revised WQPS Report describing data analysis methods used for groundwater monitoring, including calculation of concentration limits using the Interwell Tolerance Method referenced above. Interwell inorganic concentration limits would then be calculated and annually updated for each group using the Interwell Tolerance Method (using the mean parameter value plus three standard deviations for normally distributed parameters and using non-parametric tolerance limits for non-normally distributed parameters). According to the Discharger, this method produced the least amount of false-positive results, while at the same time identifying inorganic exceedances in site wells with recorded VOCs detections.

The concentration limits listed in MRP Attachment C are also temporarily approved for corrective action monitoring pending submission of the next updated WQPS Report per Section C.2.c below.

- c. **Updated WQPS Report**—These WDRs require that, beginning 31 January 2021, and annually thereafter, the Discharger submit a revised/updated WQPS Report to reflect the requirements of this Order, including, but not limited to, the need for further evaluation of grouping of background wells for pooling of background data and for separate detection/corrective action monitoring of LF-1 and LF-2 units until such time as expansion of LF-2 renders it infeasible to separately monitor the units.²⁸ The revised/updated WQPS report

²⁸. The Discharger shall use currently-approved Concentration Limits for general minerals and inorganic constituents pending approval of the revised/updated WQPS Report submitted each year under this Order, and once approved, those under the revised/updated WQPS.

shall also include concentration limits for the two surface impoundments at the site.

3. **Retesting Procedures to Confirm Release**—If monitoring results indicate measurably significant evidence of a release per Section I.45 of the SPRRs, the Discharger shall:
 - a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.
 - b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedures as required in Standard Monitoring Specification I.47 of the SPRRs.
4. **Point of Compliance (POC)**—For purposes of the WQPS, the POC of each WMU shall be the vertical surface located at the hydraulically down-gradient limit of the Unit that extends through the uppermost aquifer underlying the unit. Title 27 alternatively also allows for the Discharger to demonstrate that the Point of Compliance be located along the downgradient perimeter of contiguous units (or contiguous portions thereof) provided the requisite demonstration is made. It is anticipated that such demonstration will be made after expansion of LF-2 renders monitoring along the downgradient perimeter of LF-1 infeasible. The following are monitoring locations at the point of compliance:
5. **Monitoring Points**—A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium are listed in Section A of this MRP.
 - a. **Groundwater**—The groundwater monitoring points for the landfill units shall be as listed in Table 5 and for the surface impoundments as listed in Table 6 herein.
 - b. **Unsaturated Zone**—The unsaturated zone monitoring points for the landfill and surface impoundment units shall be their lysimeters.
 - c. **Surface Water**—See Table 15 and Table 16.
6. **Compliance Period**—The compliance period for each WMU shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger

shall conduct a water quality monitoring program subsequent to a release from the WMU. The compliance period shall restart each time the Discharger initiates an evaluation monitoring program. (See Title 27, § 20410.)

ENFORCEMENT

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

ADMINISTRATIVE REVIEW

Any person aggrieved by this Central Valley Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. The State Water Board must receive the petition by 5:00 p.m. on the 30th day after the date of this Order; if the 30th day 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](http://www.waterboards.ca.gov/public_notices/petitions/water_quality) (http://www.waterboards.ca.gov/public_notices/petitions/water_quality) applicable to filing petitions are available on the Internet (at the address below) and will be provided upon request.

ATTACHMENTS

Attachment A – Detection & Corrective Action Monitoring Parameters
Attachment B—Five-Year Constituents of Concern (COCs)
Attachment C—Landfill Concentration Limits

ATTACHMENT A—DETECTION & CORRECTIVE ACTION MONITORING PARAMETERS

Field Parameters

Parameter	GeoTracker Code
Groundwater Elevation.....	GWELEV
Temperature.....	TEMP
Specific Conductance.....	SC
pH.....	PH
Turbidity	TURB
Dissolved Oxygen	DO
Oxidation-Reduction Potential.....	REDOX

General Parameters

Parameter / Analytical Method	GeoTracker Code
Chemical Oxygen Demand Method E410.4	COD
Total Alkalinity Method SW2320B	ALKH
Total Dissolved Solids Method SM2540C	TDS
Total Hardness Method E130.2.....	HARD
Total Organic Carbon Method SM5310B	TOC

General Minerals—Major Anions

Constituent / Analytical Method	GeoTracker Code
Bicarbonate Alkalinity Method E310.1	BICACO3
Chloride Method E300.0	CL
Nitrate – Nitrogen Method E300.0	NO3
Sulfate Method E300.0	SO4

General Minerals—Major Cations

Constituent / Analytical Method	GeoTracker Code
Calcium Method E200.7	CA
Magnesium Method E200.7	MG
Potassium Method E200.7	K
Sodium Method E200.7	NA

Dissolved Inorganics—Short List

Constituent / Analytical Method	GeoTracker Code
Arsenic Method E200.8	AS
Barium Method SW6010B	BA
Iron Method SW6010B	FE
Manganese Method SW6010B	MN

Volatile Organic Compounds—USEPA Method 8260B, Short List

Constituent	GeoTracker Code
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Acetone	ACE
Acrylonitrile.....	ACRAMD
Benzene	BZ
Bromochloromethane	BRCLME
Bromodichloromethane	BDCME
Bromoform (Tribromomethane).....	TBME
Carbon disulfide	CDS
Carbon tetrachloride.....	CTCL
Chlorobenzene	CLBZ
Chloroethane (Ethyl chloride).....	CLEA
Chloroform (Trichloromethane)	TCLME
Dibromochloromethane (Chlorodibromomethane)	DBCME
1,2-Dibromo-3-chloropropane (DBCP).....	DBCP
1,2-Dibromoethane (Ethylene dibromide; EDB)	EDB
o-Dichlorobenzene (1,2-Dichlorobenzene).....	DCBZ12
m-Dichlorobenzene (1,3-Dichlorobenzene).....	DCBZ13
p-Dichlorobenzene (1,4-Dichlorobenzene).....	DCBZ14
trans-1,4-Dichloro-2-butene.....	DCBE14T
Dichlorodifluoromethane (CFC-12)	FC12
1,1-Dichloroethane (Ethylidene chloride)	DCA11
1,2-Dichloroethane (Ethylene dichloride)	DCA12
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride).....	DCE11
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene).....	DCE12C
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene).....	DCE12T
1,2-Dichloropropane (Propylene dichloride)	DCPA12
cis- 1,3-Dichloropropene	DCP13C
trans- 1,3-Dichloropropene.....	DCP13T
Di-isopropylether (DIPE)	DIPE
Ethanol.....	ETHANOL
Ethyltertiary butyl ether.....	ETBE
Ethylbenzene	EBZ

2-Hexanone (Methyl butyl ketone)	HXO2
Hexachlorobutadiene	HCBU
Methyl bromide (Bromomethene).....	BRME
Methyl chloride (Chloromethane)	CLME
Methylene bromide (Dibromomethane).....	DBMA
Methylene chloride (Dichloromethane).....	DCMA
Methyl ethyl ketone (MEK: 2-Butanone).....	MEK
Methyl iodide (Iodomethane).....	IME
Methyl t-butyl ether.....	MTBE
4-Methyl-2-pentanone (Methyl isobutylketone)	MIBK
Naphthalene	NAPH
Styrene.....	STY
Tertiary amyl methyl ether	TAME
Tertiary butyl alcohol	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1-Trichloroethane (Methylchloroform)	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethylene (Trichloroethene)	TCE
Trichlorofluoromethane (CFC- 11)	FC11
1,2,3-Trichloropropane	TCPR123
Vinyl acetate.....	VA
Vinyl chloride.....	VC
Xylenes	XYLENES

ATTACHMENT B—FIVE-YEAR CONSTITUENTS OF CONCERN (COCS)

Dissolved Inorganics/Metals

Parameter / Analytical Method	GeoTracker Code
Aluminum Method 6010	AL
Antimony Method 7041	SB
Arsenic Method 7062	AS
Barium Method 6010	BA
Beryllium Method 6010	BE
Cadmium Method 7131A.....	CD
Chromium Method 6010	CR
Cobalt Method 6010	CO
Copper Method 6010	CU
Cyanide Method 9010C.....	CN
Iron Method 6010	FE
Lead Method 7421	PB
Manganese Method 6010	MN
Mercury Method 7470A.....	HG
Nickel Method 7521	NI
Selenium Method 7742	SE

Silver	
Method 6010	AG
Sulfide	
Method 9030B	S
Thallium	
Method 7841	TL
Tin	
Method 6010	SN
Vanadium	
Method 6010	V
Zinc	
Method 6010	ZN

Volatile Organic Compounds—USEPA Method 8260, Extended List

Constituent	GeoTracker Code
Acetone	ACE
Acetonitrile (Methyl cyanide)	ACCN
Acrolein	ACRL
Acrylonitrile	ACRAMD
Allyl chloride (3-Chloropropene)	CLPE3
Benzene	BZ
Bromochloromethane (Chlorobromomethane)	BRCLME
Bromodichloromethane (Dibromochloromethane)	DBCME
Bromoform (Tribromomethane)	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane (Ethyl chloride)	CLEA
Chloroform (Trichloromethane)	TCLME
Chloroprene	CHLOROPRENE
Dibromochloromethane (Chlorodibromomethane)	DBCME
1,2-Dibromo-3-chloropropane (DBCP)	DBCP
1,2-Dibromoethane (Ethylene dibromide; EDB)	EDB
o-Dichlorobenzene (1,2-Dichlorobenzene)	DCBZ12
m-Dichlorobenzene(1,3-Dichlorobenzene)	DCBZ13
p-Dichlorobenzene (1,4-Dichlorobenzene)	DCBZ14
trans- 1,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane (CFC 12)	FC12
1,1 -Dichloroethane (Ethylidene chloride)	DCA11
1,2-Dichloroethane (Ethylene dichloride)	DCA12
1,1 -Dichloroethylene (1, I-Dichloroethene; Vinylidene chloride)	DCE11
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)	DCE12C
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)	DCE12T
1,2-Dichloropropane (Propylene dichloride)	DCPA12
1,3-Dichloropropane (Trimethylene dichloride)	DCPA13
2,2-Dichloropropane (Isopropylidene chloride)	DCPA22
1,1 -Dichloropropene	DCP11
cis- 1,3-Dichloropropene	DCP13C
trans- 1,3-Dichloropropene	DCP13T
Di-isopropylether (DIPE)	DIPE
Ethanol	ETHANOL
Ethyltertiary butyl ether	ETBE
Ethylbenzene	EBZ
Ethyl methacrylate	EMETHACRY
Hexachlorobutadiene	HCBU
2-Hexanone (Methyl butyl ketone)	HXO2

Isobutyl alcohol	ISOBTOH
Methacrylonitrile	METHACRN
Methyl bromide (Bromomethane)	BRME
Methyl chloride (Chloromethane)	CLME
Methyl ethyl ketone (MEK; 2-Butanone)	MEK
Methyl iodide (Iodomethane)	IME
Methyl t-butyl ether	MTBE
Methyl methacrylate	MMTHACRY
4-Methyl-2-pentanone (Methyl isobutyl ketone)	MIBK
Methylene bromide (Dibromomethane)	DBMA
Methylene chloride (Dichloromethane)	DCMA
Naphthalene	NAPH
Propionitrile (Ethyl cyanide)	PACN
Styrene	STY
Tertiary amyl methyl ether	TAME
Tertiary butyl alcohol	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1 -Trichloroethane (Methylchloroform)	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethylene (Trichloroethene; TCE)	TCE
Trichlorofluoromethane (CFC-11)	FC11
1,2,3-Trichloropropane	TCPR123
Vinyl acetate	VA
Vinyl chloride (Chloroethene)	VC
Xylene (total)	XYLENES

**Semi-Volatile Organic Compounds—USEPA Methods 8270C or 8270D
 (Base, Neutral & Acid Extractables)**

Constituent	GeoTracker Code
Acenaphthene	ACNP
Acenaphthylene	ACNPY
Acetophenone	ACPHN
2 Acetylaminofluorene (2 AAF)	ACAMFL2
Aldrin	ALDRIN
4 Aminobiphenyl	AMINOBP4
Anthracene	ANTH
Benzo[a]anthracene (Benanthracene)	BZAA
Benzo[b]fluoranthene	BZBF
Benzo[k]fluoranthene	BZKF
Benzo[g,h,i]perylene	BZGHIP
Benzo[a]pyrene	BZAP
Benzyl alcohol	BZLAL
Bis(2 ethylhexyl) phthalate	BIS2EHP
alpha BHC	BHCALPHA
beta BHC	BHCBETA
delta BHC	BHCDELTA
gamma BHC (Lindane)	BHCGAMMA
Bis(2 chloroethoxy) methane	BECEM
Bis(2 chloroethyl) ether (Dichloroethyl ether)	BIS2CEE
Bis(2 chloro 1 methylethyl) ether (Bis(2 chloroisopropyl) ether)	BIS2CIE
4 Bromophenyl phenyl ether	BPPE4
Butyl benzyl phthalate (Benzyl butyl phthalate)	BBP
Chlordane	CHLORDANE
p Chloroaniline	CLANIL4
Chlorobenzilate	CLBZLATE
p Chloro m cresol (4 Chloro 3 methylphenol)	C4M3PH
2 Chloronaphthalene	CNPH2
2 Chlorophenol	CLPH2
4 Chlorophenyl phenyl ether	CPPE4
Chrysene	CHRYSENE
o Cresol (2 methylphenol)	MEPH2
m Cresol (3 methylphenol)	MEPH3
p Cresol (4 methylphenol)	MEPH4
4,4' DDD	DDD44
4,4' DDE	DDE44
4,4' DDT	DDT44
Diallate	DIALLATE
Dibenz[a,h]anthracene	DBAHA
Dibenzofuran	DBF

Di n butyl phthalate	DNBP
3,3' Dichlorobenzidine	DBZD33
2,4 Dichlorophenol	DCP24
2,6 Dichlorophenol	DCP26
Dieldrin	DIELDRIN
Diethyl phthalate	DEPH
p (Dimethylamino) azobenzene	PDMAABZ
7,12 Dimethylbenz[a]anthracene	DMBZA712
3,3' Dimethylbenzidine	DMBZD33
2,4 Dimehtylphenol (m Xylenol)	DMP24
Dimethyl phthalate	DMPH
m Dinitrobenzene	DNB13
4,6 Dinitro o cresol (4,6 Dinitro 2 methylphenol)	DN46M
2,4 Dinitrophenol	DNP24
2,4 Dinitrotoluene	DNT24
2,6 Dinitrotoluene	DNT26
Di n octyl phthalate	DNOP
Diphenylamine	DPA
Endosulfan I	ENDOSULFANA
Endosulfan II	ENDOSULFANB
Endosulfan sulfate	ENDOSULFANS
Endrin	ENDRIN
Endrin aldehyde	ENDRINALD
Ethyl methanesulfonate	EMSULFN
Famphur	FAMPHUR
Fluoranthene	FLA
Fluorene	FL
Heptachlor	HEPTACHLOR
Heptachlor epoxide	HEPT-EPOX
Hexachlorobenzene	HCLBZ
Hexachlorocyclopentadiene	HCCP
Hexachloroethane	HCLEA
Hexachloropropene	HCPR
Indeno(1,2,3 c,d) pyrene	INP123
Isodrin	ISODRIN
Isophorone	ISOP
Isosafrole	ISOSAFR
Kepone	KEP
Methapyrilene	MTPYRLN
Methoxychlor	MTXYCL
3 Methylcholanthrene	MECHLAN3
Methyl methanesulfonate	MMSULFN
2 Methylnaphthalene	MTNPH2
1,4 Naphthoquinone	NAPHQ14

1 Naphthylamine	AMINONAPH1
2 Naphthylamine	AMINONAPH2
o Nitroaniline (2 Nitroaniline)	NO2ANIL2
m Nitroaniline (3 Nitroaniline)	NO2ANIL3
p Nitroaniline (4 Nitroaniline)	NO2ANIL4
Nitrobenzene	NO2BZ
o Nitrophenol (2 Nitrophenol)	NTPH2
p Nitrophenol (4 Nitrophenol)	NTPH4
N Nitrosodi n butylamine (Di n butyl nitrosamine)	NNSBU
N Nitrosodiethylamine (Diethylnitrosamine)	NNSE
N Nitrosodimethylamine (Dimethylnitrosamine)	NNSM
N Nitrosodiphenylamine (Diphenylnitrosamine)	NNSPH
N Nitrosodipropylamine (N Nitroso N dipropylamine; Di n propylnitrosamine)	NNSPR
N Nitrosomethylethylamine (Methylethylnitrosamine)	NNSME
N Nitrosopiperidine	NNSPPRD
N Nitrosopyrrolidine	NNSPYRL
5 Nitro o toluidine	TLDNONT5
Pentachlorobenzene	PECLBZ
Pentachloronitrobenzene (PCNB)	PECLNO2BZ
Pentachlorophenol	PCP
Phenacetin	PHNACTN
Phenanthrene	PHAN
Phenol	PHENOL
p Phenylenediamine	ANLNAM4
Polychlorinated biphenyls (PCBs; Aroclors)	PCBS
Pronamide	PRONAMD
Pyrene	PYR
Safrole	SAFROLE
1,2,4,5 Tetrachlorobenzene	C4BZ1245
2,3,4,6 Tetrachlorophenol	TCP2346
o Toluidine	TLDNO
Toxaphene	TOXAP
2,4,5 Trichlorophenol	TCP245
0,0,0 Triethyl phosphorothioate	TEPTH
sym Trinitrobenzene	TNB135

Chlorophenoxy Herbicides, USEPA Method 8151A

Constituent	GeoTracker Code
2,4 D (2,4 Dichlorophenoxyacetic acid).....	24D
Dinoseb (DNBP; 2 sec Butyl 4,6 dinitrophenol).....	DINOSEB
Silvex (2,4,5 Trichlorophenoxypropionic acid; 2,4,5 TP)	SILVEX
2,4,5 T (2,4,5 Trichlorophenoxyacetic acid)	245T

Organophosphorus Compounds, USEPA Method 8141B

Constituent	GeoTracker Code
Atrazine	ATRAZINE
Chlorpyrifos	CLPYRIFOS
0,0 Diethyl 0 2 pyrazinyl phosphorothioate (Thionazin).....	ZINOPHOS
Diazinon	DIAZ
Dimethoate	DIMETHAT
Disulfoton	DISUL
Methyl parathion (Parathion methyl)	PARAM
Parathion	PARAE
Phorate.....	PHORATE
Simazine	SIMAZIN

Attachment C—Landfill CONCENTRATION LIMITS					
Constituent	Units	LF-1	LF-1—LF-2	LF-2	LF-3
Field Parameters					
Specific Conductance	µmhos/cm	2634	2634	--	2016
pH	pH Units	[6.57-8.18]	[6.57-8.18]	--	[6.55-8.47]
General Parameters					
Alkalinity, Total	mg/L				
Carbonate	mg/L	5.3	5.3	--	5.1
Total Dissolved Solids	mg/L	1100	1100	--	920
Total Organic Carbon	mg/L	2.1	2.1	--	1.1
General Minerals					
Major Anions					
Bicarbonate	mg/L	410	410	--	390
Chloride	mg/L	170	170	--	190
Nitrate - Nitrogen	mg/L				
Sulfate	mg/L	190	190	--	71
Major Cations					
Calcium	mg/L	57/43	57/43	--	57/43
Magnesium	mg/L	38/37	38/37	--	38/37
Potassium	mg/L	17/21	17/21	--	17/21
Sodium	mg/L	220/260	220/260	--	220/260
Dissolved Inorganics					
Aluminum	µg/L	PQL (50)	PQL (50)	PQL (50)	PQL (50)
Antimony	µg/L	PQL (2.0)	PQL (2.0)	PQL (2.0)	PQL (2.0)
Arsenic	µg/L	7.9	7.9	--	9
Barium	µg/L	150	150	--	420
Beryllium	µg/L	PQL (10)	PQL (10)	PQL (10)	PQL (10)
Cadmium	µg/L	PQL (1.0)	PQL (1.0)	PQL (1.0)	PQL (1.0)
Chromium	µg/L	PQL (10)	PQL (10)	PQL (10)	PQL (10)
Chromium VI+	µg/L	--	--	--	--

Attachment C—Landfill CONCENTRATION LIMITS					
Constituent	Units	LF-1	LF-1—LF-2	LF-2	LF-3
Cobalt	µg/L	PQL (50)	PQL (50)	PQL (50)	PQL (50)
Copper	µg/L	PQL (10)	PQL (10)	PQL (10)	PQL (10)
Iron	µg/L	120	120	--	66
Lead	µg/L	PQL (1.0)	PQL (1.0)	PQL (1.0)	PQL (1.0)
Manganese	µg/L	PQL (10)	PQL (10)	PQL (10)	PQL (10)
Mercury	µg/L	PQL (0.2)	PQL (0.2)	PQL (0.2)	PQL (0.2)
Nickel	µg/L	PQL (2.0)	PQL (2.0)	PQL (2.0)	3.7
Selenium	µg/L	4.9	4.9	--	8.6
Silver	µg/L	PQL (10)	PQL (10)	PQL (10)	PQL (10)
Sulfide	µg/L	PQL (0.1)	PQL (0.1)	PQL (0.1)	PQL (0.1)
Thallium	µg/L	PQL (1.0)	PQL (1.0)	PQL (1.0)	PQL (1.0)
Tin	µg/L	PQL (50)	PQL (50)	PQL (50)	PQL (50)

Attachment C Notes:

1. The Discharger shall develop CLs for both separate and contiguous monitoring of LF-1 and LF-2. (Column “**LF-1—LF-2**” refers to concentration limits based on contiguous monitoring of LF-1 and LF-2).
2. Concentration limits also required for Class II surface impoundments and above entries shown as “--”.
3. Separate CLs required for LF-2 absent approved demonstration of infeasibility per WDR Monitoring Specification G.5.