CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2017-0108

WASTE DISCHARGE REQUIREMENTS FOR COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CLASS II LANDFILL CLASS II SURFACE IMPOUNDMENT CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION CALAVERAS COUNTY

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

1. The County of Calaveras (Discharger), by and through its Department of Public Works, owns and operates the Rock Creek Solid Waste Facility (Facility), which is located about 2/3 miles directly east of the town of Milton, in Sections 11 and 14, T2N, R10E, MDB&M, at latitude 38°02'N and longitude 120°50'W, as shown in Attachment A. The Facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 (Title 27), section 20005 et seq.; and 40 Code of Federal Regulations part 258, in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.

2. The following attached documents are incorporated as part of this Order:

    a. Attachment A — Site Location Map;

    b. Attachment B — Predevelopment Topography and Land Use Map;

    c. Attachment C — Existing Site Plan;

    d. Attachment D — Existing Site Monitoring System Locations;

    e. Attachment E — Existing Landfill Gas Monitoring and Collection System;

    f. Attachment F — Existing Final Cover and Storm Water Drainage Plan;

    g. Attachment G — Information Sheet;

    h. Attachment H — Standard Provisions and Reporting Requirements for Landfills, dated December 2015 (Landfill SPRRs); and

    i. Attachment I— Standard Provisions and Reporting Requirements for Class II Surface Impoundments dated April 2016 (Class II SPRRs).

3. The Facility located on an approximately 200-acre property at 12021 Hunt Road, Milton. Fifty seven acres of the site are permitted for refuse disposal. The existing and future

landfill area is approximately 57 acres of which approximately 24 acres have been constructed. Existing landfill units consist of lined landfills covering 24 acres. The existing and future permitted landfill area is shown in Attachment B. The Facility is comprised of parcels designated as Assessor's Parcel Numbers (APN) 50-025-15 and 50-029-20.

4. On 2 December 2016, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. The information in the ROWD/JTD and subsequent information submitted by the Discharger have been used in revising these waste discharge requirements (WDRs). However, some information required in the ROWD including water quality monitoring information was unavailable, outdated, or missing and the ROWD was found to be incomplete. Nevertheless, these revised WDRs were prepared based on the ROWD/JTD, supporting documents, and additional information requests through the provisions of these WDRs to address the following findings/revisions:

   a. Postclosure maintenance requirements for closed Phase 1 waste management units (WMUs or Units);

   b. Request for revised Preliminary Closure and Postclosure Maintenance Plan (PCPMP) with associated cost estimates and financial assurances;

   c. Corrective action for non-functional unsaturated zone monitoring system;

   d. Corrective action for release of leachate and volatile organic compounds (VOCs) into unsaturated zone;

   e. Separation of underdrain liquids from landfill leachate and landfill gas condensate;

   f. Map of wells and springs within one-mile radius of Facility;

   g. Map of subdrains and seeps below WMUs;

   h. Investigation of elevated concentrations of leachate monitoring parameters in groundwater monitoring wells U-2 and HP-3;

   i. Corrective action for a release of leachate measured at groundwater monitoring well D-8;

   j. Corrective action for detection monitoring wells that do not provide representative samples due to being improperly screened;

   k. Corrective action for non-compliance with Monitoring and Reporting Program (MRP) No. R5-2011-0029 Leachate Monitoring Requirements;

   l. Revised Water Quality Protection Standards (WQPS), including updated Sampling and Analysis Plan (SAP);

   m. Requirement to submit technical report on seismic slope stability analysis of Phase-II-B liner system and Phase I final closure cover;

n. Request for submittal of a preliminary final closure cover design that complies with Title 27, section 20950, subdivision (a)(2)(A)(1), and State Water Board Resolution 93-62;

o. Specifications for placement of stormwater conveyance and storage structures in relation to Facility early detection monitoring systems;

p. Additional specifications for underdrain depth to maintain five-foot separation and GCL overlap on side slopes;

q. Requirements for specifications on liner cushion layer and LCRS gravel size and type;

r. Characterization and specifications regarding operations layer minimum hydraulic conductivity;

s. Request for technical report demonstrating how current design of side slope liner system with low permeability operations layer meets the requirements of Title 27, section 20340;

t. Specifications regarding proposed future vertical expansion of WMUs; and

u. Require additional surface water monitoring points related to the Discharger's sedimentation basins.

5. On 8 April 2011, the Central Valley Water Board issued Order No. R5-2011-0029, classifying the Facility's WMUs as Class II units for the discharge of non-hazardous waste, municipal solid waste (MSW), and designated waste. This Order continues to classify the landfill units as Class II units in accordance with Title 27 except Phase IA WMU for the purposes of a proposed future vertical expansion over Phase IA WMU.

6. The Facility consists of existing and future lined Class II landfill units divided by "phases" and a Class II surface impoundment for leachate and gas condensate collection. The Facility is permitted to receive up to 500 tons of waste per day. The landfill units and surface impoundment are shown in Attachment B. The existing and future landfill units authorized by this Order are described as follows:

WMU	Area	Liner/LCRS[1] Components[2]	Unit Classification & Status
Phase I-A	5.67 acres	24 inches of compacted clay layer with maximum permeability of $1x10^{-6}$ cm/sec overlain with 18-mil vapor barrier layer, and 12-inch thick gravel blanket leachate collection and removal system (LCRS) layer.	**Class II. Closed March 2012.** Final cover consisting of 18-inch foundation layer, 40-mil linear low density polyethylene (LLDPE) geomembrane layer, geocomposite drainage layer, and 18-inch thick soil vegetative/erosion resistant layer.
Phase I-B	3.45 acres	24 inches compacted clay with maximum permeability of $1x10^{-7}$ cm/sec overlain with 60-mil high-density polyethylene (HDPE) layer, and 12-inch thick blanket LCRS layer.	**Class II. Closed March 2012.** Final cover consisting of 18-inch foundation layer, 40-mil LLDPE geomembrane layer, geocomposite drainage layer, and 18-inch thick soil vegetative/erosion resistant layer.
Phase II-A	4.98 acres	Geosynthetic clay liner (GCL) overlain with 60 mil HDPE, 12-inch thick gravel blanket LCRS, and 12-inch thick operations layer (24 inches thick on side slopes). A secondary geocomposite leak detection layer consisting of a GCL overlain with 60-mil HDPE, and geocomposite LCRS exists beneath the central portions of the Phase II-A composite liner.	**Class II. Active.**

[1] LCRS – Leachate collection and removal system.

[2] All liner systems are composite liner systems unless otherwise noted.

WMU	Area	Liner/LCRS[1] Components[2]	Unit Classification & Status
Phase II-B	5.71 acres	Base liner system consists of one foot thick prepared subgrade with maximum hydraulic conductivity of $1x10^{-5}$ cm/s overlain with 60-mil HDPE geomembrane, geocomposite drainage layer, GCL, 60 mil HDPE geomembrane, 9-inch thick gravel LCRS, 8 oz. non-woven geotextile filter, 15-inch thick operations layer. Side slopes consist of prepared subgrade overlain with GCL, 60-mil HDPE geomembrane and 2-foot thick operations layer.	**Class II. Active.**
Phase III	24.59 acres	See WDRs section D. Design and Construction Specifications	**Class II. Future phase.**
Phase IV	12.43 acres	See WDRs section D. Design and Construction Specifications	**Class II. Future phase.**
Class II Surface Impound-ment	0.70 acres, 2 million gallons	GCL, 60-mil HDPE geomembrane, geocomposite LCRS drainage layer, and 60-mil HDPE geomembrane.	**Class II. Active.** Accepting leachate from the Phase I, II, and potentially Phase III landfill units.
Class II Surface Impound-ment	To Be Determined	Prepared subgrade overlain with GCL, 60-mil HDPE geomembrane, geocomposite LCRS drainage layer, and 60-mil HDPE geomembrane.	**Class II. Future.** Will accept leachate from the Phases 1-IV landfill units.

7. Other on-site facilities at the Rock Creek Solid Waste Landfill include: an active landfill gas extraction system, a landfill gas flare, a waste transfer station that includes a permanent household hazardous waste collection facility, recycling and resource recovery area, a scale house, and an office and maintenance building.

8. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the former “Subtitle D” of Resource Conservation and Recovery Act (RCRA). These MSW regulations are codified under 40 Code of Federal Regulations part 258. Notwithstanding the subsequent reorganization of RCRA, the federal MSW regulations will be referred to herein as either “Subtitle D,” or alternatively, “40 C.F.R. section 258.XX.” These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality,

and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.

9. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A-H of these WDRs, and in the Landfill SPRRs and Class II SPRRs (incorporated herein). Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2017-0108, and in the applicable SPRRs. Generally, requirements that are regulation-based, or otherwise applicable to all MSW landfills, are considered "standard"; for this reason, they are included in the applicable SPRRs. Any site-specific changes to a requirement in the applicable SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the applicable SPRRs.

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

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

11. The Discharger proposes to continue to discharge nonhazardous solid waste, including municipal solid waste, inert construction and demolition (C&D) debris, and nonhazardous C&D to lined Class II landfill units at the Facility. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D (40 C.F.R. part 258) as required by this Order.

12. The Discharger also proposes to continue to discharge designated waste to Class II landfill units including treated wood waste, ash, animal carcasses, dewatered sewage and water treatment sludge, petroleum contaminated soil, and tires. The Discharger also proposes to continue to discharge leachate and landfill gas condensate to a Class II surface impoundment. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62 and Subtitle D (40 C.F.R. part 258) as per this Order.

13. Water Code section 13173 defines "Designated Waste" as either of the following:

    a. Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Health and Safety Code section 25143.

    b. Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a WMU, could be released in concentrations exceeding applicable water quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

Designated waste can be discharged only at Class I WMUs; or at Class II WMUs that comply with Title 27, and have been approved by the Central Valley Water Board for containment of the particular kind of waste to be discharged.

14. The Discharger proposes to continue to discharge treated wood waste in the composite-lined units at the landfill. Title 22 of the California Code of Regulations (Title 22) defines "treated wood" as wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act. (7 U.S.C. § 136 et seq.) This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).

15. Title 22, section 67386.11 allows treated wood waste to be discharged to a composite-lined portion of a MSW landfill that is regulated by WDRs issued pursuant to the Water Code provided that the landfill owner/operator:

    a. Comply with the following prohibitions in Title 22, section 67386.3:

        i. Treated wood waste shall not be burned, scavenged, commingled with other waste prior to disposal, stored in contact with the ground, recycled without treatment (except as in paragraph a.iii, below), treated except in compliance with Title 22, section 67386.10, or disposed to land except in compliance with Title 22, section 67386.11.

        ii. Any label or mark that identifies the wood and treated wood waste shall not be removed, defaced, or destroyed.

        iii. Treated wood waste may be recycled only by reuse when all of the following apply:

            (1) Reuse is on-site.

            (2) Reuse is consistent with FIFRA approved use of the preservative.

            (3) Prior to reuse, treated wood waste is handled in compliance with Title 22, division 4.5, chapter 34.

    b. Ensure treated wood waste is managed at the landfill according to Title 22, division 4.5, chapter 34 prior to disposal.

    c. Monitor the landfill for a release of constituents of concern associated with treated wood wastes and if a verified release is detected from the unit where treated wood is discharged, the disposal of treated wood will be terminated at the unit with the verified release until corrective action remediates the release. .

    d. Handle treated wood waste in a manner consistent with the applicable sections of the California Occupational Safety and Health Act of 1973.

16. Title 27, section 20690 allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, section 20705 provides the Water Board's regulations for all daily

and intermediate cover including that it shall minimize the percolation of liquids through waste and that the cover shall consist of materials that meet the landfill unit classification (Class II or Class III). The regulations also require that for non-composite lined portions of the landfill, that any contaminants in the daily or intermediate cover are mobilized only at concentrations that would not adversely affect beneficial uses of waters of the state in the event of a release. For composite-lined portions of the landfill, the regulations require that constituents and breakdown products in the cover material are listed in the water quality protection standard.

17. The Discharger uses the following materials for ADC: earthen materials, processed green materials and/or construction demolition waste, geosynthetic blankets and tarps, and non-hazardous sludge materials originating from the treatment of municipal wastewater where the sludge material contains at least 50 percent solids (by weight). The Discharger has demonstrated that these materials will minimize percolation of liquids through waste, that they meet the unit classification where they will be discharged, and that the constituents and breakdown products are included in the water quality protection standard.

18. Landfills propose new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any ADC proposed for use at the Facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. The approved ADC materials should then be listed in the Facility's WDRs during the next regular update or revision with information about the Discharger's demonstration. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality. The demonstration can take sedimentation basins into account.

19. The Discharger proposes to return leachate and landfill gas condensate to the composite-lined landfill units from which they came for dust control purposes only. Title 27, section 20340, subdivision (g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. This section of Title 27 also references State Water Board Resolution 93-62, regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills. 40 C.F.R. section 258.28 states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the landfill unit and it is designed with a composite liner and an LCRS. Therefore, leachate and landfill gas condensate from composite lined units with an LCRS may be returned to the unit from which they came. This Order includes requirements for returning leachate and landfill gas condensate back to composite-lined units such that the liquid waste is not exposed to surface water runoff, will not cause instability of the landfill, will not seep from the edges of the units, and is returned for non-disposal purposes (i.e., dust control only).

SITE DESCRIPTION

20. The Facility is in the lower foothills of the Sierra Nevada between elevation 300 at the south end of the property and elevation 520 at the north ridge of the canyon head on the

north property line. The main feature at the site is the north-south canyon which includes the permitted landfill area. The drainage shed for the canyon is contained entirely on the property. There is a seasonal creek that flows to the south before exiting the site near Rock Creek Road. The side slopes of the canyon wall are roughly 3:1 flattening near the channel flowline in the center of the canyon.

21. The site is underlain by an interbedded sedimentary sequence, 25 to 175 feet thick. The sediments range from unconsolidated gravelly sands and sandy clays to sandstone and claystone.[3] Beneath the sedimentary sequence, a greenstone or greenstone conglomerate has been encountered in several borings at depths of 80 to 170 feet below ground surface. Granitic bedrock has been encountered beneath the greenstone conglomerate at depths of several hundred feet.

22. Hydraulic testing conducted in wells screened across the saturated portion of the sedimentary sequence found hydraulic conductivity to range from 1.2×10^{-4} to 6.7×10^{-6} cm/s.[4] Based on a series of in-situ permeability tests conducted in the lower greenstone conglomerate unit, permeability ranges from 1.5×10^{-5} to 9.8×10^{-6} cm/s.[5]

23. The lands immediately surrounding the Facility are range lands used for grazing and ranching. No irrigated pastures adjoin the landfill property. The nearest residence is approximately 1,800 feet west of the Facility's western property boundary. The community of Milton is approximately 0.6 mile from the Facility's western property boundary. Approximately 84 percent of the Facility's property boundary is adjacent to land zoned Agricultural Preserve and having a corresponding minimum parcel size of 50 acres. The remaining boundary, along the northern and southeastern segments, is adjacent to land zoned as Community Development Land—Future Single-Family Residential and having a corresponding minimum parcel size of 5 to 40 acres depending on access road level of service, environmental restrictions, and development restrictions.

24. There are more than 15 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the Facility. There are no residences within 1,000 feet of the Facility. There are four agricultural supply wells with 1,000 feet of the Facility. The Discharger regularly takes water quality samples of the offsite private wells every 2 ½ years. There is one off-site spring which the Discharger has samples. The Discharger's ROWD did not include a map of supply wells and springs within one mile of the Facility as required by Title 27, section 21750, subdivisions (g) and (h). This information is necessary to inform owners of these water sources if a known release is detected and the water sources could be affected by the release. Section H of this Order requires the Discharger to provide the locations of these water sources as well as owner information.

25. Based on a site-specific seismic analysis, the controlling maximum credible earthquake (MCE) for the site is a moment of magnitude 6.5 event along the Foothills Fault System which includes the Bear Mountain Fault, at a closest rupture distance of 7.5 miles from

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[3] Geotechnical Research Development. *Rock Creek Landfill, Preliminary Geotechnical/Geohydrological Study*, March 1996.

[4] Condor Earth Technologies, Inc., June 1992; Herzog Associates, *Report Hydrogeological Evaluation, Rock Creek Landfill Site, Calaveras County, California*. May 1989.

[5] Herzog Associates, May 1994.

the site. It is estimated that a MCE event would produce a peak ground acceleration of 0.25 g at the site with a return period of 6,108 years.

26. The Facility receives an average of 19.42 inches of precipitation per year, as measured at the New Hogan Dam between 1959 and 1986. The wet season at the Facility extends from November through March. The mean pan evaporation is 75 inches per year as measured at the New Hogan Dam.

27. The 100-year wet season precipitation is 34.6 inches based on the Department of Water Resources' bulletin, *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986.

28. The average 1,000-year, 24-hour precipitation event for the Facility is estimated to be 5.98 inches, bound by a 90 percent confidence interval of 4.39 to 8.33 inches based on data provided by the National Oceanic and Atmospheric Administration Atlas 14, Volume 6, Version 2 Precipitation Frequency Data Server.

29. The Facility is not within a 100-year flood plain based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Community-Panel Number 060633 0250 B.

30. Interim storm water sedimentation basins are located south of the Facility, as shown on Attachment B, as phased construction of the landfill progresses. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months. The sedimentation basins discharge to Rock Creek.

31. An easement for the Stockton East Water District's proposed Farmington Canal Project crosses the Rock Creek Facility at the downstream or southerly end of the project site. The easement passes approximately 400 feet from the southernmost boundary of planned waste placement. The proposed canal would cross over the existing site creek in a flume or other structure, which would physically separate the two streams of water. The beneficial uses of the water conveyed by the proposed canal include agricultural and domestic use. No other easements are recorded.

SURFACE WATER AND GROUNDWATER CONDITIONS

32. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

33. Surface water drainage from the site is to a seasonal creek, to Rock Creek and thereafter to Little John's Creek a tributary of the San Joaquin River. Surface water drainage on the site is shown in Attachment F. Stormwater drains from the east and west slopes of Phase I and Phase II WMUs into v-ditches that enter underground conveyance pipes which discharge into an area in the general vicinity of groundwater monitoring well Well-13. From the discharge points the stormwater travels through two sedimentation basins and eventually leaves the site property where it is monitored at RO-1.

34. The designated beneficial uses of the San Joaquin River, as specified in the Basin Plan, are domestic and municipal supply (MUN), agricultural supply (AGR), industrial supply (IND), groundwater recharge (GWR), water-contact recreation (REC-1), non-contact water recreation (REC-2), aesthetic enjoyment; fresh water replenishment; and preservation and enhancement of fish, wildlife and other aquatic resources.

35. The first encountered groundwater ranges from about 10 to 157 feet below the native ground surface. Groundwater elevations range from about 300 to 400 feet MSL. Perched groundwater exists at the Facility. Springs are present at the east and west facing slopes in the upper part of the canyon fill. A subdrain was installed along the toe of Phase II-A and Phase II-B east slope and Phase II-B west slope to collect groundwater originating from the springs and direct it away from the landfill liner system. The Discharger continues to monitor the water quality of the east and west subdrains as part of MRP No. R5-2017-0108.

36. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 200 and 1,000 micromhos/cm, with total dissolved solids (TDS) ranging between 100 and 550 milligrams per liter (mg/L).

37. The direction of groundwater flow is toward the southwest, generally following the direction of surface drainage in the north-south trending valley. The estimated average groundwater gradient is approximately 0.04 feet per foot. The estimated average groundwater velocity is 25 feet per year.

38. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are MUN, AGR, IND and industrial process supply (PRO).

LEACHATE MONITORING

39. The existing leachate monitoring system consists of monitoring: an outfall discharging leachate to a Class II surface impoundment (SI1-Outfall); the contents of the Class II surface impoundment (SI1-Pond); the contents of the Class II surface impoundment LCRS (SI1-Sump); the primary LCRS for Phase II WMU (LCRS-II); the secondary leak detection system for Phase II-A (LDS-IIA); and the secondary leak detection system for Phase II-B (LDS-IIB). Title 27, section 20340, subdivision (h) requires dischargers to monitor and report the total volume of leachate collected each month in its regularly scheduled monitoring report. Title 27, section 20200, subdivision (c) requires dischargers to accurately characterize waste to identify constituents of concern per Title 27, section 20395 that are reasonably expected to be in or derived from waste contained in a WMU. The Discharger's prior MRP, No. R5-2011-0029, required it to report total flow in gallons and flowrate in gallons/day of leachate collected from the primary and secondary leachate collection and removal system (LCRS) as well as characterize the leachate on an annual basis. Review of the Discharger's historical water quality monitoring reports indicates that the Discharger has not accurately reported leachate quantities removed from the primary LCRS and secondary LCRS. Furthermore, the Discharger's characterization of leachate removed from the primary LCRS is uncharacteristic of leachate removed from MSW facilities. The Discharger's leachate laboratory results show very little detection of VOCs, which is also uncharacteristic of MSW facilities, indicating that a problem may exist with the way leachate samples are

obtained, preserved, and transported for laboratory analysis. Section H of this Order requires the Discharger to correct deficiencies in the Discharger's leachate monitoring and reporting process and review and/or revise the Discharger's sampling and analysis plan for VOCs.

GROUNDWATER MONITORING

40. The existing groundwater monitoring network for WMUs, as shown on Attachment D, consists of background monitoring wells U-1 and U-2; and detection monitoring wells HP-3, D-1, D-4, D-8, D-9, D-10, D-11, D-12 and Well-13. The Discharger will install additional groundwater detection monitoring wells as necessary to monitor future WMU phases III and IV, in accordance with Title 27, section 20380 et seq.

41. At the time this Order was adopted, the Discharger's detection monitoring program (DMP) for groundwater at the landfill **did not** satisfy the requirements of Title 27. The Discharger's *2016 Second Semiannual and Annual Water Quality Monitoring Report* (2016 Annual MRP Report) shows historical groundwater elevations in detection monitoring wells HP-3, D-10, and D-12 at 15-20 feet, 10 to 15 feet, and 10 to 13 feet above the top of screen respectively. Title 27, section 20415, subdivision (b)(1)(B)(1) requires dischargers to install a detection monitoring wells that "*represent the quality of ground water passing the Point of Compliance….*" Improperly screened detection monitoring wells do not provide representative samples of water quality at the point of compliance. Section H of this Order requires the Discharger to correct groundwater monitoring wells HP-3, D-10 and D-12, either by repair or replacement, such that they are appropriately screened to provide representative samples of ground water quality passing the point of compliance.

42. The Discharger's semiannual water quality monitoring reports show high groundwater elevation in shallow groundwater monitoring well Well-13, approximately 350 feet MSL, whereas groundwater monitoring wells in the immediate vicinity report groundwater elevations of around 320 feet MSL. The higher groundwater elevation in Well-13 may be attributed to artificial groundwater recharge (groundwater mounding) from the discharge of stormwater diverted around Phase I and Phase II WMUs, conveyed through the underground pipes and discharged into the vicinity of Well-13. Title 27, section 20415, subdivision (b)(1)(B)(1) requires that monitoring points are installed to yield ground water samples that represent the quality of water passing the point of compliance. The artificial groundwater recharge by stormwater discharged in the vicinity of Well-13 does not allow the Discharger to collect representative samples since the samples are being diluted by artificial groundwater recharge. Furthermore, Title 27, section 20385, subdivision (a)(3) requires the Discharger to investigate when there is "*unexplained water table mounding beneath or adjacent to the Unit and any other change to the environment that could reasonably be expected to be the result of a release from the Unit.*" Section H (Provisions) of these WDRs requires the Discharger to submit a technical report the defines the lateral extent of the shallow groundwater at Well-13, identifies the source and direction of flow of shallow groundwater at Well-13, and requires the Discharger to submit a work plan that collects, conveys, and stores stormwater at the site in such a way that it does not prevent the Discharger from collecting representative samples from its detection monitoring system (groundwater, unsaturated zone, and surface water).

SURFACE WATER MONITORING

43. At the time this Order was adopted, the Discharger's surface water detection monitoring program (DMP) **did not satisfy** the requirements of Title 27, section 20415, subdivision (c). Section A.10 of the prior WDRs (Prohibitions), Order No. R5-2011-0029, prohibited the discharge of liquid waste or leachate to surface waters. During a 7 March 2017 inspection of the Facility, Central Valley Water Board staff observed leachate discharge from the landfill WMU to surface waters, draining towards the Discharger's sedimentation basins. Currently, the Discharger does not monitor water quality at its primary sedimentation basin #1. Section H (Provisions) of these WDRs requires the Discharger to submit a work plan to monitor background surface water quality if available as well as surface water quality entering, leaving, and within primary sedimentation basin #1. Section A.5 of this Order (Prohibitions) continues to prohibit the discharge of liquid waste or leachate to surface waters.

UNSATURATED ZONE MONITORING

44. The existing unsaturated zone monitoring system for the landfill consists of: lysimeters L-5, L-1R and L-2R; surface impoundment pan lysimeter GPL-1; subdrains SD-1, SD-2 and SD-IIB; and gas probes GP-IIB-1, GP-IIB-2 and GP-IIB-3. The Discharger's 2016 Annual MRP Report states that "*lysimeters L-1R and L-2R could not be located and are assumed buried during site construction activities.*" Lysimeters L-1R and L-2R are used to monitor the unsaturated zone under Phase I-B WMU. The 2016 Annual MRP Report also reported that the three gas probes GP-IIB-1, GP-IIB-2, and GP-IIB-3 used to monitor the unsaturated zone below Phase II-B WMU have only been sampled three times beginning in 2015—even though Phase II-B became operational in 2006 and WDRs R5-2005-0100 and WDRs R5-2011-0029 required the three gas probes to be monitored for methane and VOCs annually. Furthermore, in the last three monitoring events beginning in 2015 the Discharger reported detecting VOCs such as tetrachloroethene, trichlorofluoromethane, trichloroethene, toluene, n-heptane, dichlorodifluoromethane, and acetone in 2015, and acetone in 2016. Acetone was also detected in the primary LCRS in 2016.

45. At the time this Order was adopted, the Discharger's DMP for unsaturated zone monitoring at the landfill **did not satisfy** the requirements contained in Title 27. Therefore, Section H (Provisions) of these WDRs requires the Discharger to repair or replace lysimeters L-1R and L-2R, or install a sufficient number new unsaturated zone monitoring devices at appropriate depths that will provide unsaturated zone monitoring of Phase I-B WMU in accordance with Title 27 requirements. These WDRs also require the Discharger to: (1) accelerate monitoring of gas probes GP-IIB-1, GP-IIB-2 and GP-IIB-3 for methane and VOCs; and submit a work plan to ensure that VOCs are not released into the unsaturated zone.

46. The Discharger's unsaturated zone monitoring system includes monitoring and reporting of subdrains SD-1, SD-2 that were installed to collect any groundwater seepage along the eastern and western side slopes of Phase II WMUs as well as maintain 5-foot separation between any perched shallow groundwater beneath the WMUs and the containment system. In 2005, during construction of Phase II-B base liner the Discharger encountered a seep along the east side of the center LCRS trench running approximately 80 feet east

from the trench centerline. The Discharger analyzed the seep and determined that the seep contained constituents characterized as leachate. To remediate the release the Discharger installed a subdrain to collect the contaminated groundwater and conveyed it to a wet well where it could be monitored. The Discharger has identified the release as SD-IIB in its MRP. Subdrains SD-1, SD-2 and SD-IIB discharge into the wet well. (See Attachment D.) The current MRP R5-2011-0029 requires the Discharger to sample and report individually the quantity and quality of each subdrain discharge. However, due to the way the Discharger is operating liquid levels in the wet well the Discharger has repeatedly reported that it is unable to take discrete samples from subdrains SD-1, SD-2, and SD-IIB. Instead, the Discharger has sampled and reported a composite of the three subdrain monitoring points and reported the results as “subdrain tank.” Elevated concentrations of sodium, total dissolved solids, calcium, chloride, bicarbonate, magnesium, potassium and sulfate show historically increasing trends indicating that a release or leachate to the unsaturated zone continues to occur.

47. Currently, the Discharger is disposing of groundwater contaminated with leachate collected from the subdrains into its Class II surface impoundment. Title 27 prohibits the discharge of liquid waste into a WMU constructed for the containment of solid waste except leachate and landfill gas condensate. Leachate and landfill gas condensate may be returned to its WMU-of-origin or another WMU with a similar waste containment system, so long as the leachate and landfill gas condensate is returned for dust control purposes. The contaminated groundwater cannot be classified as leachate or landfill gas condensate. Therefore, in order to be placed in a solid waste WMU it must comply with Title 27, section 20200, subdivision (d) (“Management of liquids at landfills and waste piles”). Therefore, based on the findings above regarding liquids recovered in the subdrains, Section H (Provisions) of these WDRs requires the Discharger to:

    a. Submit a work plan to reconfigure the subdrain wet well such that the Discharger can report individually on subdrain monitoring points SD-1, SD-2, and SD-IIB quantities of the groundwater seepage collected and their individual water quality characteristics;

    b. If necessary, establish an evaluation monitoring program and submit an engineering feasibility study (EFS) in accordance with Title 27, section 20425 for the release of leachate to the unsaturated zone below Phase I and/or Phase II WMU;

    c. If necessary, submit a work plan that describes how the Discharger will convey, contain, and dispose of contaminated groundwater collected in subdrains SD-1, SD-2 and SD-IIB, in accordance with Title 27, sections 20200, subdivision (d) and 20705, subdivision (f); and

    d. Submit an as-built drawing showing locations of subdrain collection system below Phase I and Phase 2 WMUs including seeps identified during design and construction of the WMUs. The drawing shall identify specific areas where each subdrain SD-1, SD-2, SD-IIB collects seeps below the WMUs.

48. A pan lysimeter will be installed beneath the LCRS sump and a portion of the LCRS piping for each new landfill cell/module for the purpose of unsaturated zone monitoring. If the new landfill phase WMU does not have an LCRS sump, the Discharger will install an appropriate number of landfill gas probes and or lysimeters beneath the base of the

new landfill and along the edge of the containment system to monitor soil pore gas and soil pore liquid in the unsaturated zone.

GROUNDWATER DEGRADATION, NON-COMPLIANCE, AND CORRECTIVE ACTION

49. The Discharger's 2016 Annual MRP Report shows elevated concentration of sodium, potassium, bicarbonate, magnesium, chloride, sulfate, total dissolved solids, and calcium in groundwater monitoring wells U-2 and HP-3. The Discharger's groundwater equipotential contour map (Contour Map) shows groundwater monitoring well U-2 downgradient of groundwater monitoring well U-1 and side gradient to Phase I-A WMU. The contour map shows groundwater monitoring well HP-3 downgradient of Phase I-A WMU. The elevated concentrations of the monitoring parameters are consistent with that of the characteristics of landfill leachate recovered from the primary LCRS. Section H (Provisions) of these WDRs requires the Discharger to submit a work plan to determine if the elevated concentrations of the monitoring parameters are due to release of leachate from the Phase I WMU or some other manmade source or from naturally occurring hydrogeological conditions at the site. The work plan shall include installation of groundwater monitoring wells and unsaturated zone monitoring devices along western toe of Phase I at the edge of waste.

50. The Discharger's 2016 Annual MRP Report shows increasing concentrations of sodium, potassium, bicarbonate, magnesium, chloride, sulfate, total dissolved solids, and calcium in groundwater monitoring well D-8. The Discharger's groundwater equipotential contour map (Contour Map) shows groundwater monitoring well D-8 downgradient of the Discharger's Class II surface impoundment and Phase II WMU. The elevated concentrations of the monitoring parameters are consistent with that of the characteristics of landfill leachate recovered from the primary LCRS. Section H (Provisions) of these WDRs requires the Discharger to submit a work plan to determine if the elevated concentrations of the monitoring parameters are due to release of leachate from the Class II surface impoundment and/or Phase II WMU. The work plan shall include installation of additional groundwater monitoring wells and unsaturated zone monitoring devices along downgradient edge of waste of the Class II surface impoundment and Phase II WMU and any other monitoring points required to determine the lateral and vertical extent of a release of leachate.

51. The Discharger monitors groundwater seeps in subdrains SD-1, SD-2 that were installed to collect any groundwater seepage along the eastern and western side slopes of Phase II WMUs as well as maintain five-foot separation between any perched shallow groundwater beneath the WMUs and the containment system. In 2005, during construction of Phase II-B base liner the Discharger encountered a seep along the east side of the center LCRS trench running approximately 80 feet east from the trench centerline. The Discharger analyzed the seep and determined that the seep contained constituents characterized as leachate. To remediate the release the Discharger installed a subdrain to collect the contaminated groundwater and conveyed it to a wet well where it could be monitored. The Discharger has identified the discharge as SD-IIB in its MRP. Subdrains SD-1, SD-2, and SD-IIB discharge into the wet well (See Attachment D). Monitoring of the drainage continues to detect elevated concentrations of sodium, total dissolved solids, calcium, chloride, bicarbonate, magnesium, potassium, and sulfate. Historically increasing trends indicate that a release or leachate to groundwater beneath the landfill WMU continues to occur. Section H (Provisions) of

these WDRs establishes evaluation monitoring of the subdrains and implement the corrective action for the continued release of landfill leachate to the subdrains.

52. The Discharger's 2016 Annual MRP Report reported that the three gas probes GP-IIB-1, GP-IIB-2, and GP-IIB-3 used to monitor the unsaturated zone below Phase II-B WMU have only been sampled three times beginning in 2015 even though Phase II-B became operational in 2006 and WDRs R5-2005-0100 and WDRs R5-2011-0029 required the three gas probes to be monitored for methane and VOCs annually. Furthermore, in the last three monitoring events beginning in 2015 the Discharger reported detecting VOCs such as tetrachloroethene, trichlorofluoromethane, trichloroethene, toluene, n-heptane, dichlorodifluoromethane, and acetone in 2015, and acetone in 2016. Acetone was also detected in the primary LCRS in 2016. MRP No. R5-2017-0108 requires the Discharger as a corrective action measure to accelerate monitoring frequency of three gas probes GP-IIB-1, GP-IIB-2, and GP-IIB-3 in order to mitigate for the historical lapse in monitoring at these monitoring points.

WATER QUALITY PROTECTION STANDARDS

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

54. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080, subdivision (a)(1). Water Code section 13360, subdivision (a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.

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

analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

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

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

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

57. The Discharger submitted a 27 February 2007 Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed to use intrawell data analysis to calculate tolerance limits at 95 percent confidence and 95 percent coverage for the monitored constituents. Both interwell and intrawell analyses are used for groundwater monitoring well D-1. The WQPS and approved data evaluation methods are included in MRP No. R5-2017-0108.

58. In The Discharger's 2016 Annual MRP Report, the Discharger's WQPS used to calculate concentration limits for its detection monitoring program was unable to determine that there was "measurably significant" evidence of a release from a WMU as monitored at detection monitoring well D-8 as required in Title 27, section 20420, subdivision (i). Furthermore, the Discharger's WQPS was incapable of providing significant evidence of a release requiring the Discharger to initiate procedures specified for a confirmed release in the unsaturated zone at monitoring points SD-1, SD-2, SD-IIB, GP-IIB-1, GP-IIB-2, and GP-IIB-3. Furthermore, the Discharger's WQPS was incapable of triggering the Discharger to investigate increasing trends of concentrations of leachate monitoring parameters in groundwater monitoring wells U-2 and HP-3. These WDRs in accordance with Title 27, section 20420, subdivision (i)(3) finds that there is measurably significant evidence that a release of leachate and landfill gas has occurred to the unsaturated zone below the landfill WMU as measured in the subdrains and gas monitoring probes and a release of leachate has occurred to groundwater as measured in groundwater monitoring well D-8. Therefore, Section H (Provisions) of these WDRs requires the Discharger to comply with Title 27 regulations in section 20420 et seq. related to a release of leachate and gas from the landfill WMU and/or the Class II surface impoundment and make the following revisions to its WQPS and corresponding sampling and analysis plan:

    a. The Discharger shall not pool data from monitoring points U-1 and U-2 when determining upper tolerance limits since the monitoring points show significantly different water quality at the two monitoring locations;

    b. The Discharger shall not recalculate concentration limits using the intrawell monitoring method at monitoring points using the last two years of most recent data reported (e.g., last eight data points when sampling on a semiannual frequency or last sixteen points when sampling on a quarterly frequency). Furthermore, the mean of the data considered to be added to the dataset used to recalculate the most current approved concentration limits must fall within a 95 percent confidence interval using the standard error of the mean for the dataset used to calculate the current approved concentration limit in order to prevent

masking of any significant evidence of a release due to gradual upward creep of concentration limits. The Discharger shall use all other historical data when recalculating concentration limits except those data points determined statistically to be outliers. The Discharger shall not recalculate concentration limits more frequently than every two years;

c. The Discharger shall show graphically calculated concentration limits for each monitoring parameter to show historically how concentration limits were updated following review and approval;

d. The Discharger shall revise its WQPS such that it is capable of determining whether there is "measurably significant" evidence of a release and trigger appropriate responses by the Discharger to such release in accordance with Title 27, section 20385;

e. The Discharger shall reevaluate its sampling and analysis plan to determine and make corrections such that the Discharger is able to collect, preserve, and transport samples such that the samples are representative of the medium being sampled including concentrations of VOCs in all detection monitoring programs. Currently, the monitoring results reported for leachate water quality does not represent VOCs typically found in leachate at MSW landfills;

f. The Discharger shall update its sampling and analysis plan to ensure that monitoring points that are non-functional are repaired in a timely manner, and all monitoring points sampled during the monitoring and reporting period once a repair has been completed. Currently the Discharger has been reporting for years that two unsaturated zone monitoring devices L-1R and L-2R have been non-functional yet the Discharger's sampling and analysis plan has not triggered any response for repair or replacement of these monitoring points. Several other monitoring points have been non-functional such as SD-1, SD-2, SD-IIB, primary and secondary LCRS pumps and/or flow meters that the Discharger has not repaired or replaced in a timely manner such that the Discharger is able to obtain monitoring data required for the monitoring and reporting period specified in the Discharger's MRP R5-2011-0029.

LINER PERFORMANCE DEMONSTRATION

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

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

60. On 28 January 2005, the Discharger submitted a liner performance standards demonstration letter, *Base Liner Demonstration for Class II, Cell II-B at the Rock Creek Solid Waste Facility, Calaveras County, California,* which included a cost analysis for the proposed waste containment system described in Finding No. 66. The liner proposed by the Discharger includes a primary and secondary base liner system for the floor of Phase II-B and a single composite liner for the side slopes. Per the demonstration letter, a double liner system for the base of Phase II-B and future landfill units would provide protection for waters of the state through full containment of waste. This type of system exceeds the minimum of a single liner system and is also similar to other liner systems approved by the Central Valley Water Board.

61. Central Valley Water Board staff responded in a letter dated 7 February 2005, supporting the submitted performance demonstration letter. Staff determined that the Discharger's proposed double liner system design, with a good Construction Quality Assurance (CQA) program including a leak location survey, meets the performance standard for a Class II WMU.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

62. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under 40 Code of Federal Regulations part 258 (Subtitle D). Resolution 93-62 requires the construction of a specified composite liner system at new municipal solid waste landfills, or expansion areas of existing municipal solid waste landfills, that receive wastes after 9 October 1993. Resolution 93-62 also allows the Central Valley Water Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b of Resolution 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.

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

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

CLASS II LANDFILL LINER

65. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Board Resolution 93-62 for MSW.

66. On 24 February 2005, the Discharger submitted a ROWD requesting approval of an engineered alternative to the prescriptive standard for liner requirements for Phase II-B and all future landfill modules at the Facility. The engineered alternative proposed by the Discharger for Phase II-B and future phased landfill units consisted of:

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

        i. 12-inch thick prepared subgrade (constructed of select fine grain materials which shall be compacted in lifts of six inches or less to 90% of the maximum dry density and at 0 to 4 percent wet of optimum moisture content and compacted to attain a hydraulic conductivity of 1×10^{-5} cm/sec or less, or meet gradation criteria of a maximum of 3/8 inch particle size and at least 30% passing #200 sieve);

        ii. 60-mil HDPE double sided textured geomembrane secondary liner;

        iii. secondary drainage layer (Secondary LCRS) consisting 6 oz. double sided nonwoven geocomposite heat bonded to 200-mil geonet core;

        iv. geosynthetic clay liner (GCL) with minimum sodium bentonite 0.75 lbs/ft^2 and maximum hydraulic conductivity 5×10^{-9} cm/sec (Engineered alternative to 2-foot thick low permeability clay liner);

        v. 60-mil HDPE single sided textured geomembrane primary liner;

        vi. 9-inch thick gravel drainage layer consisting of ¾ inch maximum particle size rounded gravel containing less than 3% material by weight passing through a #200 sieve (Primary LCRS);

        vii. 8 oz/sy nonwoven geotextile; and

        viii. 15-inch thick operations layer.

    b. An engineered alternative composite **side slope liner system** that is comprised, in ascending order, of the following:

        i. prepared subgrade (providing a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the above lying geosynthetics)

        ii. geosynthetic clay liner (GCL) with minimum sodium bentonite 0.75 lbs/ft^2 and maximum hydraulic conductivity 5×10^{-9} cm/sec (Engineered alternative to 2-foot thick low permeability clay liner)

        iii. 60-mil HDPE single sided textured geomembrane primary liner;

        iv. 24-inch thick operations layer

67. The Discharger proposes to use an onsite soil borrow source for material to be used to construct the operations layer. However, the Discharger has not characterized the hydraulic conductivity of the soil used to construct the operations layer. An operations layer subjected to compaction and settlement with low hydraulic conductivity prevents leachate from reaching the LCRS system. Section H (Provisions) of these WDRs requires the Discharger to characterize the hydraulic conductivity of the operations layer borrow source that was used to construct Phase II and any other borrow source used to construct future phases to ensure the operations layer has sufficient hydraulic conductivity to not inhibit leachate from reaching the LCRS system.

68. The Discharger has proposed using a 9-inch thick gravel LCRS instead of a typical 12-inch thick gravel LCRS. The June 2005 construction quality assurance (CQA) report for Phase II-B did not provide the ASTM test results for drainage layer. Visual soil description (ASTM D2488) and particle size (ASTM D422 or C136) are critical in determining whether a cushion layer is necessary between the primary geomembrane and the gravel LCRS to provide puncture resistance resulting from static and dynamic loads. Section H (Provisions) of these WDRs requires the Discharger to provide the design specifications, the CQA requirements, and all test results for the drainage gravel used for construction of Phase II-B. These WDRs also include specifications that require the Discharger to include design calculations and liner specifications for future phases based on gravel size, gravel characteristics (e.g., rounded, subrounded, angular, etc.), and static loads (final waste heights) and dynamic loads (construction operations) that will ensure that the primary geomembranes is not damaged by the drainage layer throughout the life of the WMU.

69. The Discharger has adequately demonstrated that construction of a Subtitle D prescriptive standard liner using a 2-foot thick clay liner layer would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design using a Geosynthetic Clay Liner (GCL) as an equivalent replacement for the 2-foot clay liner component of the base liner system for Phase II-B landfill unit.

70. However, reevaluation of the proposed base liner design has uncovered deficiencies in the base liner design such as (a) subdrain system that does not provide 5-foot separation between groundwater and waste (b) omission of a geotextile cushion layer of sufficient thickness to protect primary liner from overlying LCRS drainage material, and (c) use of soil for an operations layer that may exhibit low hydraulic conductivity properties after placement and compaction that must be addressed prior to approval on future phases. Section H (Provisions) of these WDRs requires the Discharger to demonstrate that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment. These WDRs, section Design and Construction Specification D.14 provide the minimum prescriptive standard for any future landfill WMU waste containment system that the Discharger must comply with if the Discharger proposes to construct Phase III WMU under these WDRs.

71. Because the side slopes will have 2h:1v slopes, the Discharger's consultant proposed an engineered alternative eliminating the use of an LCRS on the side slopes using the following rationale:

a. *The operations layer to be placed on a geocomposite will be less permeable than the waste by an order of magnitude. It is expected that moisture above the side slope liner will migrate along the interface of the waste and operations layer until it enters the LCRS gravel layer on the base. With 2:1 side slopes proposed, liquid head is not likely to build up on the side slope operations layer or liner.*

b. *A geocomposite placed on the side slopes not only provides a drainage path for liquid that may migrate through the waste but also provides a pathway for landfill gas (LFG) to migrate up the slope to the perimeter of the landfill unit where it can potentially enter adjacent soils at an anchor trench or the atmosphere. This geocomposite side slope LFG migration problem has recently been documented as the expected cause of groundwater contamination at a site in the Central Valley region. Considering the relative inefficiency of the geocomposite to convey liquid to the base LCRS and the potential for LFG migration to the perimeter of the landfill, it is believed that this geocomposite drainage layer may be more detrimental to the containment of waste than beneficial.*

c. *We are aware that the CVRWQCB has approved similar side slope liner systems without a drainage layer between the HDPE geomembrane and operations at other landfill sites.*

72. The Discharger has proposed use of an operations layer on side slopes that does not allow leachate to reach the side slope liner, thus eliminating liquid head on the side slope liner system. The use of low permeability materials for operations layer on the landfill base and side slopes would also inhibit leachate from reaching the base liner LCRS causing leachate ponding above the operations layer, a condition inconsistent with landfill design performance standards. Section H (Provisions) of these WDRs requires the Discharger to submit a technical report that provides evidence through modeling and testing that using a low permeable operations layer on the base and side slopes does not:

a. Cause liquid head (soil pore liquid pressures) to build up on the base or side slope operations layer or liner;

b. Cause increased down drag on the side slope liner system; and

c. Cause internal failure of the liner system components at the liner interfaces due to static and dynamic loads.

73. The Discharger has not adequately demonstrated that construction of a Subtitle D prescriptive standard side slope liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. Title 27, section 20340, subdivision (e) requires that an LCRS "*consist of a permeable subdrain layer which covers the bottom of the Unit and extends as far up the sides as possible.*" The Discharger has not demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.

74. This Order does not approve the Discharger's proposed side slope liner system for future modules unless the Discharger can demonstrate that elimination of an LCRS is consistent with Title 27, section 20340 requirements. These WDRs provide specification

for a side slope liner system that complies with Title 27 prescriptive standards requirements.

75. In the Discharger's June 2005 ROWD, the Discharger's consultant, Shaw Emcon/OWT, Inc., Nagesh Koragappa, G.E. Registration Number 2585 prepared a *Static and Seismic Slope Stability Analysis, Phase II-B Base Liner Construction (2005 Phase II-B Slope Stability Design Report)* certifying that the Phase II-B liner would remain stable under static and seismic conditions pursuant to Title 27, section 21750, subdivision (f)(5). The Discharger's stability analysis includes components to demonstrate the integrity of the final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period. The stability analysis demonstrated that the structural components of Phase II-B will withstand the forces of the Maximum Credible Earthquake (MCE) without failure of the containment systems or environmental controls provided certain conditions are met such as a qualified engineer overseeing construction properly addressing any perched water and presence of soft/loose soil conditions beneath the liner system. Under static conditions a static factor of safety of 1.5 could be achieved (per Title 27) if the internal/interface shear strength within and between final cover components in terms of large-strain friction angle exceeded 12.2 degrees.

76. Slope stability analysis under seismic conditions for temporary slopes was performed using the rigorous analysis method using seismic hazard parameters of mean moment magnitude (M_w) of 6.39, maximum horizontal bedrock acceleration $(MHA)_{rock}$ of 0.11g at an epicentral distance of 63.4km. The consultant determined that the estimated seismic induced permanent displacement would be zero which would be acceptable so long as the static shear strength defined by a friction angle of 12.2 degrees was achieved. Slope stability analysis under seismic conditions for permanent slopes was performed using the rigorous analysis method using seismic hazard parameters of MCE moment magnitude of 6.5, maximum horizontal bedrock acceleration $(MHA)_{rock}$ of 0.25g at an epicentral distance of 12km. The consultant determined that the estimated seismic induced permanent displacement would be zero which would be acceptable so long as the internal/interface large-strain shear strength defined by a friction angle of 12.2 degrees was achieved.

77. The Discharger's consultant Shaw Environmental, Inc., Randall Wall CE Registration Number 52906, submitted as part of a *June 2006 Construction Quality Assurance Report, Phase II-B Base Liner Construction* (2006 CQA Report) interface shear test results dated 21 October 2005 and 24 October 2005 showing that the friction angle at the shear interfaces for peak strength exceeded 12.2 degrees except the interface shear test for the interface between the geocomposite drainage layer and the 60-mil double-sided textured HDPE secondary geomembrane liner which was calculated to be 11.3 degrees for large-strain displacement. Furthermore, the test results indicated the test was not performed for a large-strain displacement of three inches. Also interface shear test results for the interface between the GCL layer and the 60-mil double-sided textured HDPE primary geomembrane liner indicated that "*failure occurred internal of the GCL after 1.5 inches of displacement.*" Also the *2005 Phase II Slope Stability Design Report* specified that the test should be performed such that "*the internal shear strength of the GCL should be tested simultaneously by allowing the required gap for internal shearing of the GCL.*" The test procedure does not indicate that this requirement was fulfilled. Finally, the Discharger did not perform a slope stability analysis on the 2H:1V east and

west side slopes of Phase II-B by stating that "*based on the available subsurface information and past performance of excavated slopes within Phase II-A, it is anticipated that the proposed 2H:1V cut slopes would be stable, unless perched water conditions or soft/loose soils are encountered*." In the Discharger's 2006 CQA Report on 10 May 2006 the Discharger was required to make repairs to the southwest corner of the side slope due to subgrade erosion below the side slope liner system. The Discharger must investigate whether the installation of localized sub drains on the side slopes where seeps are discovered is sufficient to ensure side slope stability throughout the life of the WMU. Therefore, Section H (Provisions) of these WDRs requires the Discharger to certify that the limitations/conditions of the *2005 Phase II-B Slope Stability Design Report* were met during construction in order to validate the design and provide slope stability including the side slopes throughout the life of the landfill. Currently, the Discharger's static and dynamic stability analysis based on the test results does not demonstrate that the Phase II Base Liner will be stable in accordance with the requirements of Title 27. Upon submission and acceptance to the Discharger's investigation, technical report and certification required in Provisions Section H of these WDRs, and implementation of any modifications, improvements, or changes that may need to be made based on the results of the investigation and approved technical report the Discharger will have satisfied the Title 27 requirements for slope stability analysis for Phase II base liner including side slopes. The Discharger is required to perform a slope stability analysis for temporary and permanent slopes for each future phase of construction as part of the Discharger's design and CQA plans. The Discharger will also have to certify in its final construction report that the construction was performed such that the slope stability analysis remains valid throughout the life of the WMU.

78. Per its 2016 ROWD, the Discharger is considering a vertical expansion of its landfill over existing landfill WMU phases. Vertical expansion of WMUs can only occur over WMU waste containment liner systems that meet the most current federal and state regulations regarding prescriptive and performance standards at the time the proposed vertical expansion is to occur. Currently, the liner system in Phase I-A does not meet current federal and state regulations for waste containment liner systems. Therefore, these WDRs prohibit a vertical expansion over Phase I-A unless the Discharger retrofits the current Phase I-A waste containment liner. Furthermore, the Discharger would have to submit a revised ROWD for any proposed vertical expansion over any existing WMU that demonstrating that the existing waste containment liner system is capable of containing waste for an extended operational period, the WMUs will continue to meet slope stability requirements, and the WMUs will meet continue to meet siting criteria (i.e., five-foot groundwater separation, foundation stability, etc.). The ROWD must also demonstrate that the WMUs detection monitoring system (i.e., groundwater, unsaturated zone, and surface water) is functional and will continue to function over the extended operational and post closure period.

CLASS II SURFACE IMPOUNDMENT

79. The liner system for the existing Class II surface impoundment consists of, from top to bottom:

    a. A primary 60-mil High Density Polyethylene (HDPE) geomembrane.

    b. A geonet drainage layer, as a Leachate Collection and Removal System (LCRS).

c. A secondary 60-mil HDPE geomembrane.

d. A geosynthetic clay liner.

80. The LCRS drains to a sump where leachate and gas condensate is pumped back into the surface impoundment. The LCRS is designed with capacity for at least twice the maximum anticipated daily volume of leachate.

81. Title 27, section 20080, subdivision (b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, section 20080, subdivision (c)(1) or (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in section 20080, subdivision (b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative(s) provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080, subdivision (b)(2) and that any proposed engineered alternative is consistent with the performance goal in accordance with Title 27, sections 20240, 20250 and 20310.

82. The Discharger proposes a liner system which will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the postclosure maintenance period in accordance with the criteria set forth in Title 27 for Class II WMUs.

83. The Discharger adequately demonstrated that construction of the liner prescriptive standard for the Class II surface impoundment as described in Title 27, section 20330, subdivision (b) requiring use 2-foot minimum thickness clay liner would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative design using an equivalent geosynthetic clay liner (GCL) because there is no clay source on-site and the cost of importing clay from off-site or mixing on-site soils with bentonite would cost substantially more than the alternative design. The Discharger has demonstrated that the proposed engineered alternative is consistent with the performance goals of the containment structures for a Class II WMU affords equivalent protection against water quality impairment.

84. Title 27, section 20370, subdivision (a) requires Class II units to be designed to withstand the maximum credible earthquake (MCE) without damage to foundation or containment structures. These WDRs require any future Class II surface impoundment to comply with Title 27 requirements under both static and dynamic conditions.

85. Title 27, section 20375, subdivision (a) requires Class II surface impoundments to have capacity for seasonal precipitation, a 1,000-year 24-hour design storm event, and to maintain at least two feet of freeboard at all times. The 1,000-year, 24-hour storm event for the site is 5.98 inches, and is referred to hereafter as the “design storm”. For containing seasonal precipitation, the Discharger has been required to use the 100-year wet season distributed monthly to prevent overflow of the impoundment or less than two

feet of freeboard during a reasonable worst-case scenario wet season. The 100-year wet season for the site is 34.6 inches.

86. This Order requires the Class II surface impoundment to have capacity for leachate and gas condensate flows to the impoundment from a 100-year wet season of 34.6 inches distributed at least monthly, a 1,000-year 24-hour storm event (design storm) of 5.98 inches, and shall maintain at least two (2.0) feet of freeboard at all times. To ensure compliance with this requirement, the Discharger is required to maintain at least 2.5 feet 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.

87. This Order includes an Action Leakage Rate (ALR) for the Class II surface impoundment LCRS. The ALR is the maximum flow rate through the primary liner to the LCRS beyond which the Discharger is required to take actions to inspect and repair the primary liner system. The ALR is based on the recommendations in the 1992 USEPA guidance document *Action Leakage Rate for Leak Detection Systems*. The guidance recommends that ALR for lined surface impoundments be set at no more than 1,000 gallons per acre per day. Using this recommendation, the calculated ALR is 700 gallons per day for the 0.70-acre impoundment. This Order sets the ALR for the surface impoundment at 700 gallons per day. The leakage rate will be calculated based on monthly readings of the flow totalizer that records flow from the LCRS manhole back to the surface impoundment.

88. Construction will proceed only after all applicable construction quality assurance plans have been approved by the Executive Officer.

LANDFILL CLOSURE

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

    a. Two-foot soil foundation layer.

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

    c. Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).

    d. One-foot soil erosion resistant/vegetative layer.

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

91. The Discharger submitted a 1995 *Preliminary Closure and Postclosure Maintenance Plan* (PCPMP) for closure and post-closure maintenance of all landfill units at the Facility. In June 2005 the Discharger submitted a revised PCPMP. The revised 2005 PCPMP specified a final closure cover consisting of, in ascending order, the following layers:

    a. Foundation layer.

b. Minimum 2-foot-thick soil layer having an in-place hydraulic conductivity less than or equal to 1 x 10^{-7} cm/s.

c. 60-mil high density polyethylene (HDPE) geomembrane.

d. Geocomposite drainage layer (If warranted by slope stability analysis).

e. Vegetative cover soil layer.

The final closure cover proposed in the 2005 PCPMP complied with Title 27 and State Water Board Resolution 93-62 prescriptive and performance standards for final closure covers.

92. In 2010, the Discharger proposed an engineered alternative final cover consisting of, in ascending order, the following layers:

a. 18-inch foundation layer.

b. 40-mil linear low density polyethylene (LLDPE) geomembrane.

c. Geocomposite drainage layer.

d. 18-inch thick soil vegetative layer.

93. The Discharger's October 2010 *Phase I Partial Final Landfill Closure and Postclosure Maintenance Plan* included Exhibit D, *October 2010 Engineering Design Report for Phase I Partial Final Closure of the Rock Creek Landfill* prepared by Randall Wall, Registered Civil Engineer No. C52906. The engineering report provided an analysis of the proposed engineered alternative final cover using the Hydrologic Evaluation of Landfill Performance (HELP) modeling program to perform simulations for a 30-year post-closure period. The results indicated significantly higher flow rates through the proposed final cover (18.6 gallons per acre per day) than a Title 27 prescriptive cover (0.02 gallons per acre per day) that has a correspondingly low flow-through rate as composite base liner. However, the report concluded the leakage rate of 18.6 gallons per acre per year through the proposed cover was insignificant relative to the moisture-holding capacity of the waste, using less than one percent of the moisture-holding capacity over a 30-year period. The report also states that the moisture-holding capacity calculations are conservative since they do not account for the condensate that will be removed by the proposed landfill gas extraction system which was calculated at approximately 75 gallons per day.

94. Reevaluation of the Discharger's proposed engineered alternative finds that the Discharger's engineered alternative does not meet the final cover performance goals of Title 27, section 20950, subdivision (a)(2)(A)(1), as an equivalent to the prescriptive standard for the following reasons:

a. The proposed engineered alternative final cover does not meet the performance goal of closure "*to minimize the infiltration of water into the waste, thereby minimizing the production of leachate and gas*." The Discharger's proposal will continue to introduce water into the waste at through-flow rates greater than that of a Title 27 prescriptive base liner;

b. The proposed engineered alternative final cover would not "*constitute the Unit's principal waste containment feature*" due to its through-flow rate exceeding that of the composite base liner;

c. The proposed engineered alternative final cover if were to be installed as a landfill liner would not comply with Title 27 and State Water Board Resolution 93-62 standards for landfill liners; the proposed engineered alternative final cover would not provide a correspondingly low through-flow rate throughout the postclosure maintenance period.

Section H (Provisions) of these WDRs requires the Discharger to propose and install future final closure covers that comply with Title 27 and State Water Board Resolution 93-62 prescriptive and performance standards for final closure covers.

95. This Order approves any future proposed final closure cover(s) so long as it complies with the Finding and Provisions referenced above and the final closure and post-closure maintenance plan, design documents, and CQA plan be submitted for review and approval at least 180 days prior to actual closure. The Discharger must also submit a technical report as part of its final construction report that demonstrates and certifies that any testing required and any limitations or additional requirements specified in the final closure cover's slope stability analysis report was complied with during construction in order to validate the slope stability analysis report conclusions.

96. In January 2010 the Discharger's consultant, Golder Associates, Nagesh Koragappa, G.E. Registration Number 2585 prepared a *Slope Stability of Final Cover System, Phase I Partial Final Closure Report (2010 Closure Slope Stability Design Report)* certifying that the partial final closure cover design for Phase I would remain stable under static and seismic conditions. Under static conditions a factor of safety of 1.5 could be achieved as required by Title 27 if the interface shear strength at the interface between final cover components in terms of friction angle exceeded 26.6 degrees. Slope stability analysis under seismic conditions was performed using the rigorous analysis method using seismic hazard parameters of MCE moment magnitude of 6.5, maximum horizontal bedrock acceleration $(MHA)_{rock}$ of 0.25g at an epicentral distance of 12km. The consultant determined that the estimated seismic induced permanent displacement would be approximately 2.8 inches which would be acceptable so long as the static shear strength defined by a friction angle of 26.6 degrees was achieved. The Discharger's consultant Geo-Logic Associates, Bryan Fritzler CE Registration Number 055568, submitted as part of a *Final Construction Quality Assurance Report, Phase I Partial Final Closure CQA* interface shear test results dated 12 September 2011 and 16 September 2011 showing that the friction angle at the shear interfaces for peak strength exceeded 26.6 degrees. However, the interface shear test for the interface between the 220 mil double sided geocomposite drainage layer and the overlying vegetative soil noted that "*sliding may have occurred <u>within the soil substrate</u>.*" Furthermore, testing was performed at 200, 400, and 600 pounds per square foot, much higher loading than the proposed 18-inch thick vegetative soil would provide as a normal load even under saturated conditions. Finally, on 7 March 2017, Central Valley Water Board staff during a Facility inspection observed the results of a veneer slope failure of the vegetative cover. Section H (Provisions) of these WDRs requires the Discharger to investigate the February 2017 final cover veneer failure in terms of the Discharger's slope stability design, the results of the interface shear tests including failure within the

soil substrate, the test parameters using normal loads higher than the range of expected normal loads in the field, and other design parameters that may have attributed to the veneer failure, (i.e., vegetative soil properties, drainage layer thickness, etc.). Furthermore, Section H (Provisions) of these WDRs requires the Discharger to certify that the limitations of the *2010 Closure Slope Stability Design Report* were met during construction in order to validate the design and provide slope stability throughout the life of the landfill. Currently, the Discharger's static and dynamic stability analysis does not demonstrate that the side slopes of the final cover for Phase I partial final closure cover will be stable in accordance with the requirements of Title 27. Upon submission and acceptance to the Discharger's investigation, technical report and certification required in Section H (Provisions) of these WDRs, and implementation of any modifications, improvements, or changes that may need to be made based on the results of the investigation and approved technical report the Discharger will have satisfied the Title 27 requirements for slope stability analysis for Phase I partial final closure.

97. Side slopes for the closed landfill will be sloped at 3H:1V and will include 15-foot wide benches every 50 vertical feet as required by Title 27.

98. Pursuant to Title 27, section 21090, subdivision (e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.

SURFACE IMPOUNDMENT CLOSURE

99. The Discharger currently operates a 0.70-acre Class II surface impoundment that receives leachate and gas condensate from Phase I and II WMUs. The footprint of the surface impoundment is currently in an area where future Phase III WMU will be constructed. The Discharger plans to clean close the 0.70-acre Class II surface impoundment and replace it with a new Class II surface impoundment located elsewhere on the property that has sufficient storage capacity to receive leachate and gas condensate from current and all future WMU phases of construction. These WDRS require the Discharger upon closure of the Class II surface impoundment, to clean-close the unit pursuant to Title 27, section 21400, subdivision (b)(1). If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, these WDRs allow the impoundment to be closed as a landfill pursuant to Title 27, section 21400, subdivision (b)(2)(A).

LANDFILL POST-CLOSURE MAINTENANCE

100. The Discharger submitted a 1995 *Preliminary Closure and Postclosure Maintenance Plan,* which was revised in June 2005 as Volume 2 of the Discharger's JTD for closure and post-closure maintenance of the landfill. In October 2010, the Discharger submitted a *Phase I Partial Final Landfill Closure and Postclosure Maintenance Plan* (2010 Plan) for closure and postclosure maintenance of Phase 1 WMUs, which modified the revised 2005 *Preliminary Closure and Postclosure Maintenance Plan* in the following ways:

a. Proposed a modified final cover;

b. Proposed a Phase I partial final cover that is larger than shown in the preliminary plan; and

c. Proposed Installation of a landfill gas collection and control system as part of the Phase I partial final closure

101. The 2010 Plan also included inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and included a post-closure maintenance cost estimate for the entire Facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, any groundwater corrective action system, and site security. The 2010 Plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater. These WDRs require the Discharger to implement the postclosure maintenance plan specified in the 2010 Plan for the Phase I WMUs postclosure maintenance period.

102. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090, subdivision (e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.

103. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17 (Title 17), section 95471, subdivision (c); and Title 27, section 21090, subdivision (a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

104. Title 27, sections 21820 and 22206 require a cost estimate for landfill closure. The cost estimate must be equal to the cost of closing the landfill at the point in its active life when the extent and manner of operation would make closure the most expensive. When closing units in phases, the estimate may account for closing only the maximum area or unit of a landfill open at any time. The Discharger's 2005 *Preliminary Closure and Post Closure Maintenance Plan,* updated in *18 October 2010 Phase I Partial Final Closure and Post Closure Maintenance Plan* include a cost estimate for landfill closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2008 dollars was $14.2 million. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the closure cost estimate.

105. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger submitted a June 2008 letter updating the cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2008 dollars was $4.8 million. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation.

106. Title 27, section 22100, subdivision (b) requires owners and operators of disposal facilities that are required to be permitted as solid waste landfills to provide cost estimates for initiating and completing corrective action for known or reasonably foreseeable releases of waste. Title 27, section 22101 requires submittal of a *Water Release Corrective Action Estimate* and a *Non-Water Release Corrective Action Cost Estimate*. The *Water Release Corrective Action Estimate* is for scenarios where there is statistically significant evidence of a release of waste to ground or surface water when comparing point-of-compliance analyte concentrations to background concentrations. The *Non-Water Release Corrective Action Cost Estimate* is for complete replacement of the landfill final cover system, however a site-specific corrective action plan pursuant to Title 27, section 22101, subdivision (b)(2) may be provided in lieu of the final cover replacement cost estimate. Title 27, section 22221 requires establishment of financial assurances in the amount of an approved *Water Release Corrective Action Estimate* or an approved *Non-Water Release Corrective Action Cost Estimate*, whichever is greater.

107. In 1993 the Discharger estimated a cost of $300,000 for corrective action of all known or reasonably foreseeable releases. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation.

108. On 30 December 2016, CalRecycle prepared a memorandum finding that the preliminary closure and postclosure maintenance plan (PCPMP) in the Discharger's 2016 amended JTD for the Rock Creek landfill was outdated and did not meet the requirements of Title 27. Furthermore, the PCPMP did not include clean closure costs for the Discharger's existing Class II surface impoundment. Section H (Provisions) of these WDRs requires the Discharger to submit an updated PCPMP that satisfies the requirements of Title 27 and is approved by CalRecycle. The PCPMP shall include closure cost estimates, any applicable postclosure maintenance cost estimates, and corrective action cost estimates for both the landfill WMUs and the Class II surface impoundment WMU(s). The Discharger shall also provide documentation showing that financial mechanism(s) are in place to provide necessary financial assurances per Title 27 requirements.

CEQA AND OTHER CONSIDERATIONS

109. On 6 July 1989, the Discharger certified the final environmental impact report (EIR) for the Facility, State Clearinghouse No. 1987011210. A Notice of Determination was field on 11 July 1989 in accordance with the California Environmental Quality Act (CEQA), Public Resources Code section 21000 et seq., and the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.). The Central Valley Water Board considered the EIR, and incorporated its mitigation measures into the WDRs to prevent potentially significant impacts to design facilities and to water quality.

110. On 18 October 2010, the Discharger, through its Department of Public Works, issued a Notice of Exemption for the Phase I closure project at the landfill. The Notice of Exemption stated that the project is exempt from CEQA pursuant to Public Resources Code section 21080, subdivision (b), and section 15268 of the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15268), because it is a ministerial action implementing the requirements of Facility permits and Title 27 for the closure of solid waste landfills.

111. This Order implements:

a. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;

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

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

d. The applicable federal regulations of 40 C.F.R. part 258 ("Subtitle D"), as required by State Water Board Resolution 93-62.

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

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

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

113. In October 1968, the State Water Board adopted its *Statement of Policy with Respect to Maintaining High Quality of Waters in California*, State Water Board Order WQ 68-16 (Anti-Degradation Policy). Incorporated into the Central Valley Water Board's Basin Plan, the policy limits board discretion to authorize the degradation of "high-quality waters," defined as where water quality is more than sufficient to support beneficial uses designated in the Basin Plan. Whether or not a water is a "high-quality" is determined on a constituent-by-constituent basis, which means that an aquifer can be considered "high-quality" with respect to some constituents, but not others. (State Water Board Order No. WQ 91-10.)

114. The Anti-Degradation Policy applies when an activity discharges to "high quality" waters and the discharge will result in some degradation in water quality. When it applies, the Anti-Degradation Policy requires that WDRs reflect best practicable treatment or control (BPTC) of wastes, and that any degradation of "high quality" waters "(a) will be consistent with the maximum benefit to the people of the State, and (b) will not result in an exceedance of water quality objectives." If an activity will not result in the degradation of "high quality waters," the policy does not apply, and the Discharger need only demonstrate that it will use "best efforts" to control its discharge of waste.

115. The Anti-Degradation Policy <u>does not apply</u> to the discharge of waste from the Rock Creek Solid Waste Facility. The WDRs in this Order are designed to ensure that any such wastes remain contained at the Facility, and will not reach waters of the State. The requirements reflect the Discharger's best efforts to control such wastes.

116. Water Code section 13267, subdivision (b) provides that:

> In conducting an investigation…, the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharge or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

117. The technical reports required by this Order and the attached MRP No. R5-2017-0108 (incorporated herein) are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the Facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

118. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.

119. The Central Valley Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

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

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

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

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267, that Order R5-2011-0029 is rescinded except for purposes of enforcement, and that the County of Calaveras (Discharger), as well as its agents, successors and assigns, in order to meet the provisions of Division 7 of the Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in Title 23, section 2510 et seq.

2. The cessation of any corrective action measure (e.g. landfill gas extraction, groundwater extraction, etc.) is prohibited without written Executive Officer approval. If routine maintenance or a breakdown results in cessation of corrective action for greater than 24 hours, the Discharger shall notify Board staff.

3. The discharge of wastes outside of a WMU or portions of a WMU specifically designed for their containment is prohibited.

4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.

5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

6. The discharge of wastes that have the potential to reduce or impair the integrity of containment structures is prohibited.

7. The discharge of wastes which, if commingled with other wastes in the WMU, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products which in turn require a higher level of containment than provided by the Unit, or are "restricted hazardous wastes", is prohibited.

8. The Discharge of any liquid wastes to any Class II surface impoundment prior to submittal of a final construction report, completion of electronic leak survey of the primary and secondary geomembrane liners used for waste containment, receipt of Central Valley Water Board's approval of the construction, and approval of financial assurance documents by the Central Valley Water Board staff is prohibited.

9. The discharge of any waste, including liquids such as but not limited to landfill leachate, landfill gas condensate, and landfill underdrain discharges into a closed WMU is prohibited.

10. The discharge to the Facility of liquid or semi-solid waste (i.e. waste containing less than 50% of solids), except dewatered sewage, water treatment sludge, or leachate and landfill gas condensate for dust control in lined landfill areas as provided in Title 27 sections 20200(d), 20220(c), and 20340(g), is prohibited.

11. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.

12. The discharge of waste from the Class II surface impoundment, except for use for dust control in the lined Class II landfill areas, is prohibited.

13. The discharge of leachate for soil moisture conditioning is prohibited unless the leachate is “solidified” in accordance with Title 27, section 20200, subdivision (d) prior to placement of conditioned soil in a solid waste WMU.

14. Except for the Class II surface impoundment, the discharge of waste to ponded water from any source is prohibited.

15. The discharge of waste within 50 feet of surface waters is prohibited.

16. The Discharger is prohibited from constructing and/or operating containment structures for the purpose of containing liquids such as but not limited to non-contact storm water detention/sedimentation basins, and liquid conveyance structures at the Facility where the discharge from such structures interferes with the Discharger’s ability to collect and analyze representative samples from receiving waters necessary for the purpose of providing best assurance of the earliest possible detection of a release and/or demonstrating the effectiveness of a corrective action program.

17. The Discharger is prohibited from using alternative daily cover material on areas of the landfill that drain or cause percolation outside of the limits of the contiguous landfill Unit’s LCRS unless the Discharger demonstrates to Central Valley Water Board staff that runoff and/or percolation from the LEA approved ADC will not degrade or pose a threat to receiving surface and/or groundwater quality if the Discharger proposes to use the ADC on areas of the landfill that drain and/or percolate outside of the limits of the contiguous landfill unit’s LCRS. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.

18. The Discharger is prohibited from installing underground utilities in or below any low permeability layer of a WMU final closure cover.

19. The Discharger is prohibited from installing underground utilities that convey liquids in any layer of a final cover system unless the Discharger institutes periodic inspection of the underground utilities to ensure that liquids are fully contained.

20. The Discharger is prohibited from conducting post closure land uses over a closed WMU that interferes with the closed WMU’s landfill gas extraction system.

21. The Discharger is prohibited from conducting post closure land uses over a closed WMU where the final closure cover is an ET cover and the proposed post closure land use interferes with the ET cover's ability to prevent infiltration of liquids into the Unit.

22. The Discharger is prohibited from vertically expanding over Phase I-A unless the Discharger retrofits the current Phase I-A waste containment liner to meet the most

current federal and state requirements for waste containment liner systems at the time of the proposed vertical expansion. Furthermore, the Discharger is prohibited from vertically expanding over existing phases unless the Discharger submits a revised ROWD for any proposed vertical expansion that demonstrates that the waste containment liner system will meet the most current federal and state requirements for waste containment liner systems at the time of the proposed vertical expansion, is capable of containing waste for an extended operational period, and the WMUs will continue to meet slope stability requirements, the WMUs will meet siting criteria (i.e.,5 ft. groundwater separation, foundation stability, etc.) The ROWD must also demonstrate that the WMUs detection monitoring system (i.e., groundwater, unsaturated zone, and surface water) is functional and will continue to function over the extended operational period. Any approved vertical expansion requires revising these WDRs through the normal public review process and a future Board meeting.

23. The Discharger shall comply with all Standard Prohibitions listed in Section C of both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge wastes to the WMUs in accordance with the wastes listed in Table 1 below.

Table I—Waste Acceptance By Landfill Units		
Title 27 Waste Type	**Phases IIA-IV**	**Class II Surface Impoundments**
MSW	Yes	No
Inert C&D (e.g., concrete, cured asphalt, brick)	Yes	No
Nonhazardous C&D, commercial, & industrial	Yes[6]	No
Leachate and landfill gas condensate	Yes[7]	Yes
Other Liquids	No[8]	Yes[9]
Treated Wood Waste	Yes	No
Special Wastes[10]	Yes	No

[6] Nonhazardous waste such as dewatered sewage treatment sludge, water treatment sludge, and ash requires approval from the Discharger to the generator prior to disposal.

[7] Return of leachate and landfill gas condensate may occur in compositely lined modules for non-disposal dust control purposes per Title 27, section 20705, subdivision (f).

[8] Other liquids such as but not limited to liquids recovered from the underdrains below the WMUs must be managed separately from leachate and gas condensate in order to comply with Title 27, sections 20200, subdivision (d) and 20705, subdivision (f) requirements for managing other liquids at landfills.

[9] See above footnote.

[10] Special wastes as defined by Title 27 that are acceptable at the Facility are ash, animal carcasses, dewatered water treatment and sewage sludge, petroleum contaminated soil, and tires. Petroleum-contaminated soil with total petroleum hydrocarbons (TPH) concentrations less than 100 parts per million (ppm) can be used for daily cover. Petroleum-contaminated soil having a TPH concentration greater than 100 ppm shall be landfilled as waste. Petroleum contaminated soil having a TPH concentration greater than 1,000 ppm cannot be accepted without further testing to demonstrate that it would not be characterized as a hazardous waste, per Title 22.

2. Wastes shall be discharged only into WMUs specifically designed for their containment and/or treatment, as described in this Order. Class II landfills shall include liner systems which prevent the movement of fluid, including waste, landfill gas condensate, and leachate from the WMUs.

3. The discharge of waste shall remain within the designated disposal area at all times. The discharge of any waste outside of designated disposal areas is a violation of these WDRs.

4. The Discharger shall immediately remove and relocate any hazardous wastes discharged at this Facility in violation of this Order. For the unauthorized discharge of hazardous waste (e.g., waste that has not been granted a variance from hazardous waste management requirements pursuant to Health & Saf. Code, § 25143), the Discharger upon discovery shall immediately notify Central Valley Water Board staff and Department of Toxic Substances Control (DTSC) of any violations and provide a schedule for the hazardous waste's removal.

5. The Discharger shall, in a timely manner, remove and relocate any unauthorized designated wastes discharged at this Facility in violation of this Order. If the Discharger is unable to remove and relocate the unauthorized designated waste, the Discharger shall submit a report to the Central Valley Water Board and DTSC explaining how the discharge occurred, why the unauthorized designated waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence.

6. "Treated wood" wastes may only be discharged to a WMU equipped with a composite liner and leachate collection and removal system, as described in Construction Specification D.14, and only if the wastes are handled in accordance with Health and Safety Code sections 25143.1.5 and 250150.7.

7. The Discharger shall manage treated wood at the Facility in accordance with Health & Safety Code sections 25143.1.5 and 25150.7, to ensure consistency and shall comply with all prohibitions listed in Title 22, section 67386.3. The Discharger at a minimum shall monitor the leachate and unsaturated zone beneath the WMUs that receive treated wood waste for arsenic, copper, chromium, and pentachlorophenol, common COCs associated with treated wood, as required in the Discharger's MRP No. R5-2017-0108. If a release of leachate is verified from the WMU where treated wood is disposed, the Discharger shall follow the applicable SPRRs to address the release.

8. Discharge Specifications B.6 and B.7, above, apply only to treated wood waste that is a hazardous waste solely due to the presence of a preservative in the wood, and is not subject to regulation as a hazardous waste under the federal act.

9. Treated wood waste shall not be discharged to landfill cells that have a confirmed leachate release. Treated wood waste shall not be discharged to any landfill cell after confirmation of a release from that cell to either the unsaturated zone or groundwater until corrective action results in cessation of the release.

10. During wet weather conditions, the Facility shall be operated and graded to minimize leachate generation.

11. Leachate and/or landfill gas condensate may be returned only to Module Phase II, and future composite lined modules listed in Finding 6 of this Order in accordance with Standard Discharge Specifications D.2 through D.4 of the applicable SPRRs and Title 27, section 20705, subdivision (f).

12. Leachate and landfill gas condensate returned to a composite-lined landfill area shall be managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS or violation of Construction Specification D.11 of this Order.

13. The Discharger shall only discharge liquids to a Class II surface impoundment for which the Discharger has shown through an approved water balance that the addition of such liquids will not violate the special requirements for surface impoundments (Title 27, § 20375) and has also shown that the addition of such liquids are compatible with the containment features and other wastes in the WMU. The Central Valley Water Board Executive Officer can approve discharge of additional wastes to Class II surface impoundments provided the Discharger provides the required information in this specification.

14. The Discharger shall monitor and report the amount of leachate, LFG condensate, and other liquids applied to each WMU in accordance with intent and purposes listed in Title 27, section 21090, subdivision (a)(5)(B) for closed WMUs and Title 27, section 20705 for active and inactive WMUs, in accordance with the MRP No. R5-2017-0108 (incorporated herein).

15. The Discharger may not use any material as alternative daily cover (ADC) that is not listed below as approved ADC in these WDRs unless and until the Discharger has demonstrated that it meets the requirements in Title 27, section 20705, and the Discharger has received written approval that it may begin using the material as ADC.

16. The currently approved ADCs are earthen materials, processed green materials and/or construction demolition waste, geosynthetic blankets and tarps, and non-hazardous sludge materials originating from the treatment of municipal wastewater where the sludge material contains at least 50 percent solids (by weight).

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

18. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

2. The Discharger shall immediately notify the Central Valley Water Board of any seeps, fires, flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that is in violation of these WDRs or could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

3. Liquid used for Facility maintenance shall be limited to the minimum amount necessary for dust control and construction per Title 27, section 20705, subdivision (f).

4. The Discharger shall maintain in good working order any Facility, control system, or monitoring device installed to achieve compliance with these waste discharge requirements and associated monitoring and reporting program.

5. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

6. Surface drainage within the waste management Facility shall either be contained on site or be discharged in accordance with applicable storm water regulations.

7. The Discharger shall maintain a Storm Water Pollution Prevention Plan (SWPPP) and Monitoring Program and Reporting Requirements, in accordance with State Water Board Order No. 2014-0057-DWQ, or retain all storm water on-site.

8. A minimum separation of five feet shall be maintained between wastes including leachate at the bottom of the LCRS and LCRS sump and the highest anticipated elevation of underlying groundwater including the capillary fringe. The Discharger shall maintain a minimum separation of five feet between the crown of any underdrain collection pipe intended to maintain five-foot separation and wastes including leachate at the bottom of the LCRS including the LCRS sump.

9. All wells within 500 feet of a WMU shall have a sanitary seal that meets the requirements of Calaveras County Environmental Management Agency prior to the discharge of waste to the unit or the well(s) shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to Calaveras County Environmental Management Agency.

10. The Discharger shall operate an active landfill gas collection and control system in order to control any release of landfill gas to groundwater, and the unsaturated zone. The landfill gas system shall meet the following specifications:

a. Landfill gas collection and control systems shall be operated to minimize and control air intrusion and to prevent direct venting of the gas to the atmosphere;

b. Landfill gas collection and control systems shall be operated so that the methane concentration is less than 500 parts per million above background at the appropriate distance above the surface of the landfill necessary to determine regulatory compliance;

c. There shall be a sufficient number and spacing of horizontal collectors or vertical gas collection wells to control landfill gas migration and emissions; and

d. No waste may be placed into new phases until the Discharger has an approved landfill gas monitoring program and the basal waste containment system where waste will be placed is installed.

CLASS II SURFACE IMPOUNDMENT FACILITY SPECIFICATIONS

11. The Discharger shall immediately notify Central Valley Water Board staff by telephone and email and immediately take measures to regain surface impoundment capacity in the event that freeboard levels are equal to or less than 2.5 feet (2.0 feet plus the amount needed to hold the design storm to the nearest tenth of a foot).

12. 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.

13. Prior to the wet season and on or before 1 November, the Class II surface impoundment shall have sufficient capacity available to accommodate rainfall during the wet season less monthly evaporation.

14. Leachate removed from a surface impoundment's primary LCRS shall be discharged to the impoundment from which it originated.

15. The **Action Leakage Rate** (ALR) for the existing 0.70 acre Class II surface impoundment is **1000 gallons per acre per day (gpad)** or 21,000 gallons over a 30-day period. If leachate generation in the LCRS of the Class II surface impoundment exceeds the ALR, the Discharger shall:

    a. **Immediately** notify Central Valley Water Board staff by telephone and email.

    b. Submit written notification within **seven days** that includes a time schedule to locate and repair leak(s) in the liner system.

    c. If repairs do not result in a leakage rate less than the required ALR, the Discharger shall submit written notification within **seven days** that includes a time schedule for replacement of the upper liner of the surface impoundment or other action necessary to reduce leachate production.

    d. Complete repairs or liner replacement in accordance with the approved time schedule under "b" and/or "c", above.

16. If liquid is detected in the pan lysimeter of a Class II surface impoundment indicating a leak in the containment structure, the Discharger shall:

    a. **Immediately** notify Central Valley Water Board staff by telephone and email that the containment structure may have failed.

    b. Cease discharging waste into the Class II surface impoundment until a determination is made as to the source of the liquid.

    c. **Immediately** sample and test the liquid in accordance with the unsaturated zone monitoring requirements in MRP No. R5-2017-0108 (incorporated herein).

    d. If the laboratory results indicate that the liquid can be characterized as contents of the Class II surface impoundment, the Discharger must submit written notification of the release to Central Valley Water Board staff within **seven days** including a time schedule to repair the containment structure(s). Otherwise, the Discharger must submit to Central Valley Water Board staff within **14 days** a report including the laboratory results describing why the source of the liquid is not from the contents of the surface impoundment. The report must describe where the liquid originated from and what corrective action will be taken in the future to prevent the liquid from entering the pan lysimeter.

    e. If repairs are necessary, complete repairs of the containment structures in accordance with the approved time schedule.

17. Solids that accumulate in the Class II surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for surface impoundment leachate and for the discharge of wastes. Prior to removal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Article 2, Subchapter 2, Chapter 3, Division 2 of Title 27. The rationale for the sampling protocol used, the results of this sampling, and a rationale for classification of the solids shall be submitted to Central Valley Water Board staff for review. The Discharger shall submit a work plan and schedule to Central Valley Water Board staff at least 90 days prior to removal of the waste that includes the waste characterization and how the Discharger plans to dispose of the sludge and solids.

18. Following sediment/solids removal from the Class II surface impoundment, the liner system shall be inspected for any damage caused by the process of removing the sediment/solids and any damage shall be repaired within 60 days prior to the discharge of additional wastewater. The Discharger shall submit a final report describing the results of the leak testing to Central Valley Water Board staff.

19. No waste shall be discharged into any new surface impoundment until all applicable financial accounts for these WMUs have been properly funded.

20. At no time shall the freeboard of the Class II surface impoundment be less than two feet. The Class II surface impoundment shall be clearly marked to indicate when liquid levels encroach into the two foot minimum freeboard requirement.

21. If the depth of fluid in an LCRS sump exceeds the level where leachate would back up into the drainage layer, then the Discharger shall immediately cease the discharge of waste to the surface impoundment and shall notify the Central Valley Water Board in writing within seven days. Notification shall include a timetable for remedial action to repair the upper liner of the impoundment or other action necessary to reduce leachate production.

D. DESIGN AND CONSTRUCTION SPECIFICATIONS

1. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over their operating life.

2. Materials used to construct an LCRS shall have appropriate physical and chemical properties to ensure the required transmission of leachate and gas condensate over the life of the WMU including the post-closure maintenance period.

3. Containment structures and precipitation and drainage control systems shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, and washout under 1,000-year, 24-hour precipitation conditions.

4. WMUs shall be designed, constructed and operated to prevent inundation or washout due to flooding events with a 100-year return period.

5. The LCRS shall consist of a permeable layer which covers the bottom of a WMU and extends as far up the sides as possible.

6. LCRSs shall be designed, constructed, and maintained to collect twice the anticipated daily volume of leachate and gas condensate generated by each Class II surface impoundment and/or landfill WMU and to prevent the buildup of hydraulic head on the underlying liner at any time. The LCRS pump shall be capable of removing this volume of fluid and/or 150 percent of the Action Leakage Rate (ALR) flow (ALR applicable to Class II surface impoundments), whichever is greater.

7. The depth of the fluid in any LCRS sump shall be kept at the minimum needed for safe pump operation without excessive pump cycling that could damage the pump.

8. The LCRS for each Class II unit shall be operated and maintained to collect twice the anticipated daily volume of leachate and gas condensate generated by the WMU and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of fluid in the LCRS sump shall be kept at the minimum needed to ensure efficient pump operation.

9. The depth of the fluid in any leachate sump of the Class II units shall be kept at the minimum needed for efficient pump operation (given the pump intake height and cycle frequency), and leachate shall not back up onto the liner system outside of the sump area. The Discharger shall notify the Central Valley Water Board in writing within seven days in the event leachate backs up onto the liner system outside of the sump area and shall include a timetable for remedial or corrective action.

10. If monitoring reveals leachate generation such that the depth of fluid on any portion of the LCRS including the LCRS sump exceeds 30 cm (12 inches), the Discharger shall immediately notify the Central Valley Water Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.

11. The Discharger shall submit a design report including plans, specifications, stability analysis (Title 27, § 20370, subd. (a)), and a construction quality assurance plan for review and approval prior to constructing any new lined WMU.

12. The Discharger shall submit a final report documenting construction of any new lined WMU for review and approval prior to discharging wastes to the WMU. The Discharger must also submit an additional technical report as part of its final construction report demonstrates that certifies that any testing required and any limitations or additional requirements specified in the final closure cover or base and side slope liner's slope stability analysis report was complied with during construction in order to validate the slope stability analysis report conclusions.

13. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the Landfill SPRRs and Section F of the Class II SPRRs, as incorporated herein.

LANDFILL LINER SYSTEM COMPONENTS

14. The Discharger shall construct the base liner of new Class II landfill units in accordance with the following approved engineered alternative liner design:

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

        i. A subdrain layer and/or drainage system that provides minimum five-foot separation between highest anticipated groundwater including capillary fringe and waste in accordance with Title 27, section 20240, subdivision (c);

        ii. A foundation layer that complies with Title 27, section 20240, subdivision (d) that is of sufficient thickness and comprised of materials that will not damage the overlying barrier layer;

        iii. A low permeability 60-mil High Density Polyethylene (HDPE) geomembrane layer (secondary liner) that meets the requirements of State Water Board Resolution 93-62;

        iv. A geocomposite drainage layer (items iii and iv comprise the Discharger's secondary LCRS)

        v. A two-foot thick compacted clay liner (CCL) with maximum hydraulic conductivity of 1×10^{-7} cm/sec or GCL equivalent layer;

        vi. A low permeability 60-mil HDPE geomembrane layer (primary liner) that meets the requirements of State Water Board Resolution 93-62;

vii. A geotextile cushion layer of sufficient thickness to protect underlying primary liner if necessary based on Discharger specifications of item 8 below;

viii. 12 inches of gravel drainage layer, or less if demonstrated by Discharger of proper size and type to prevent damage of primary liner and clogging of LCRS over life of WMU;

ix. A geotextile filter layer of sufficient thickness and type to allow leachate migration to the LCRS yet prevent migration of fines from the operations layer material into the LCRS ; and

x. Operations layer with high permeability properties to allow leachate to reach the LCRS and also prevent damage due to operational waste placement activities above liner system.

b. An engineered alternative composite **side slope liner system** that is comprised, in ascending order, of the following:

i. A subdrain layer and/or drainage system that intercepts groundwater seepage, dissipates pore water pressure against the underside of the liner system, and maintains long-term stability of the WMU;

ii. An appropriate foundation layer that provides slope stability and does not damage the overlying containment layer;

iii. 2-feet of compacted clay or GCL layer that meets the requirements of State Water Board Resolution 93-62;

iv. A low permeability geomembrane layer that meets the requirements of Resolution 93-62;

v. An LCRS drainage layer that complies with Title 27, section 20340 and Resolution 93-62; and

vi. An operations layer of sufficient thickness to protect the side slope liner and having minimum hydraulic conductivity to prevent leachate buildup within the WMU and allow leachate to reach the LCRS.

15. If GCL is used as a liner component the GCL shall be placed such that the Discharger provides a minimum one-foot minimum overlap between panels on the base, one-foot minimum overlap on the side slopes, and one-foot minimum overlap at the end of roll seams.

16. If a gravel type LCRS blanket is used the Discharger shall submit design calculations and liner specifications for future phases based on gravel size, gravel characteristics (e.g., rounded, subrounded, angular, etc.), and static loads (final waste heights) and dynamic loads (construction operations) that will ensure that the primary geomembrane is not damaged by the drainage layer throughout the life of the WMU. The design calculations shall also take into consideration additional stress placed on the primary geomembrane due to specification of a drainage layer thickness of less than one-foot thick. The Discharger shall demonstrate through laboratory testing that the proposed gravel type LCRS blanket if less than one-foot thick will not cause unacceptable damage

to the primary geomembrane liner under expected static and dynamic loads during the life of the WMU.

17. The LCRS shall be designed and operated to function without clogging throughout the life of the WMU. Each phase of the WMU shall be equipped to facilitate annual testing of the LCRS drainage material to demonstrate proper operation as required by section 20340, subdivision (d) of Title 27. An LCRS test shall be performed on any new WMU prior to placement of waste to establish baseline operational performance of the LCRS drainage layer to which future annual LCRS tests will be compared.

CLASS II SURFACE IMPOUNDMENT

18. The Class II surface impoundment liner system shall consists of, from the top down:

    a. A primary 60-mil HDPE geomembrane.

    b. A geocomposite geonet drainage layer as a Leachate Collection and Removal System (LCRS).

    c. A secondary 60-mil HDPE geomembrane.

    d. A foundation layer suitable for providing a stable base for the overlying secondary geomembrane that will not damage the geomembrane over the life of the surface impoundment.

19. The Discharger shall include design features that protect the primary geomembrane from damage due to amongst other things wind uplift, maintenance procedures such as solids removal, ultraviolet radiation degradation, etc. for the entire useful life of the surface impoundment.

20. The Class II surface impoundment shall be designed and constructed to have capacity for wastewater flows to the impoundment, precipitation from a 100-year wet season of 34.6 inches distributed at least monthly, a 1,000-year, 24-hour storm event (design storm) of 5.98 inches, and shall maintain at least two (2.0) feet of freeboard at all times. To ensure compliance with this requirement, the Discharger shall maintain at least 2.5 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.

21. The Discharger shall perform a detailed water balance for any new surface impoundment to demonstrate that the proposed design and construction has sufficient storage capacity to comply with Title 27, section 20375. The water balance at a minimum must take the following factors into account on a monthly basis:

    a. The average influent leachate and landfill gas condensate flow on a monthly basis;

    b. Evaporation losses from the impoundment distributed monthly;

    c. Authorized discharges from the impoundment for dust control, disposal via exportation, storage in auxiliary above ground tanks, etc.;

d. Loss of storage capacity due to operations layer, solids accumulation, etc.

e. The 100-year wet season (34.6 inches) is distributed monthly in accordance with average monthly rainfall patterns used to determine leachate and landfill gas condensate production discharged to a Class II surface impoundment that **will** be returned to a solid waste landfill WMU for dust control purposes;

f. The 100-year wet season (34.6 inches) is distributed monthly in accordance with average monthly rainfall patterns used to determine wastewater production at the Facility and other liquid wastes discharged to a Class II surface impoundment that **will not** be returned to a solid waste landfill WMU;

g. The evaporative surface area of the impoundment based on wastewater elevation in the pond for each month;

h. The total surface area of the site runoff area captured and conveyed to the impoundment (for Class II surface impoundments not discharging to the solid waste landfill WMUs);

i. The design storm event capacity that needs to be maintained to capture design storm runoff conveyed to the impoundment (for Class II surface impoundments not discharging to the solid waste landfill WMUs);

j. The design storm capacity for rainfall into the surface impoundment; and

k. Additional capacity necessary to maintain the minimum two-foot freeboard requirement.

22. The surface impoundment(s) shall be designed, constructed and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.

23. Any direct-line discharge to the surface impoundment shall have fail-safe equipment or operating procedures that include daily inspection and manual control of pumping systems during the wet weather season to prevent overfilling.

24. The surface impoundment bottom slope shall have a minimum one percent slope and shall be graded to provide positive drainage of LCRS leachate to the leachate sump and ensure unconfined leachate flow in the LCRS drainage layer and proper venting of any landfill gas that may form in the LCRS or below the secondary geomembrane liner.

25. The LCRS for the Class II surface impoundment shall be designed, operated, and maintained to collect twice the anticipated daily volume of leachate generated by the WMU and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of fluid in the LCRS sump shall be kept at the minimum needed to ensure efficient pump operation and shall not exceed one foot head at any time on the secondary liner.

26. The LCRS shall be designed and operated to function without clogging through the scheduled closure of the surface impoundment. The surface impoundment shall be equipped to facilitate annual testing of the LCRS drainage material to demonstrate proper operation as required by section 20340, subdivision (d) of Title 27.

27. The depth of the fluid in the leachate sump of the Class II surface impoundment shall be kept at the minimum needed for efficient pump operation (given the pump intake height and cycle frequency), and leachate shall not back up onto the secondary liner system outside of the sump area.

28. Leachate generation within a surface impoundment LCRS shall not exceed 85% of the design capacity of (a) the LCRS, or (b) the sump pump. If leachate generation exceeds this value and/or if the depth of the fluid in an LCRS exceeds the minimum needed for safe pump operation, then the Discharger shall immediately cease the discharge of waste (including leachate) to the impoundment and shall notify the Central Valley Water Board in writing within seven days. Notification shall include a timetable for a remedial action to repair the upper liner of the impoundment or other action necessary to reduce leachate production.

29. The LCRS for the Class II surface impoundment shall be designed and constructed to transmit twice the maximum Action Leakage Rate (ALR) of 1,000 gallons per acre per day (gpad) under unconfined flow conditions taking into account LCRS transmissivity reduction factors due to clogging of the LCRS over the life of the Class II surface impoundment.

30. The Class II surface impoundment shall have a sump to collect and return leachate to the impoundment that leaks through the primary liner. The sump shall include a dedicated automated pump to remove leachate and return it to the impoundment. The sump and pumping system shall be designed and constructed such that in the case of a pump failure the Discharger has sufficient time to repair/replace the pump and still comply with the requirement to limit head on the secondary liner to one foot.

31. The Class II surface impoundment shall be designed and constructed to have a flow totalizer operational at all times that measures leachate volumes pumped from the LCRS sump in order to determine leakage rates and compliance with the ALR.

32. The Class II surface impoundment shall be designed and constructed to have an unsaturated zone monitoring system consisting of a pan lysimeter beneath the entire sump area of the impoundment.

33. The Class II surface impoundment shall have permanent markings on the liner, or a permanent freeboard gauge so that the freeboard can be observed and recorded at any time. The markings or gauge shall have increments no greater than one vertical inch.

34. The Discharger shall not proceed with liner construction including earth moving and grading in preparation for liner construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved.

35. A disinterested third party independent of both the Discharger and the construction contractor shall perform all construction quality assurance monitoring and testing during the construction of any liner or final closure cover system.

36. The Discharger may propose changes to the liner or final closure cover system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the

proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following written approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board in revised WDRs.

37. If the Discharger proposes to discharge leachate and gas condensate from future Phase III WMU into the existing 0.70-acre Class II surface impoundment the Discharger shall submit a revised water balance analysis report for review and approval that demonstrates that the existing Class II surface impoundment has sufficient storage capacity to contain waste from Phases I through III and continue to maintain sufficient freeboard in accordance with Title 27, section 20375. The Discharger shall not discharge waste from Phase III until the report has been approved by the Executive Officer.

38. The Discharger shall comply with all Standard Construction Specifications listed in Section F of both the Landfill SPRRs and Class II SPRRs, incorporated herein.

39. The Discharger shall comply with all Storm Water Provisions listed in Section L of both the Landfill SPRRs and Class II SPRRs, both of which as incorporated herein.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least two years prior to proposed closure of any portion of the landfill in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the applicable SPRRs.

2. The Discharger shall install a final closure cover over a landfill WMU that meets the following minimum prescriptive standards:

    a. A minimum two-foot thick foundation layer that complies with Title 27, section 21090, subdivision (a)(1), and is comprised of materials that will not damage the overlying barrier layer;

    b. A two-foot thick compacted clay liner (CCL) with maximum hydraulic conductivity of 1×10^{-7} cm/sec or GCL equivalent barrier layer that meets the requirements of State Water Board Resolution 93-62, and Title 27, section 21090, subdivision (a)(2);

    c. A low permeability 60-mil HDPE or 40-mil LLDPE geomembrane barrier layer that meets the requirements of State Water Board Resolution 93-62 and Title 27, section 21090, subdivision (a)(2) (items b and c satisfy requirement for a geocomposite barrier layer);

    d. A drainage layer if necessary to provide slope stability (reduce soil pore liquid pressure); and

    e. An erosion resistant layer that complies with Title 27, section 21090, subdivision (a)(3).

3. Any final closure cover over a WMU shall be designed and constructed to reduce soil pore gas pressures below the closure over barrier layer that may cause final cover slope instability throughout the postclosure maintenance period.

4. The Discharger shall implement the Postclosure Maintenance Plan specified in the Discharger's October 2010 *Phase I Partial Final Landfill Closure and Postclosure Maintenance Plan* (2010 Plan) throughout the Phase I WMU postclosure maintenance period. The Discharger shall perform final cover system maintenance in accordance with the 2010 Plan which includes but not limited to:

    a. Periodic inspections;

    b. Final cover surveys;

    c. Five-year iso-settlement maps;

    d. Survey and maintenance of settlement monuments;

    e. Period leak searches;

    f. Preventative maintenance;

    g. Repairs; and

    h. Record keeping and reporting.

5. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order, except when modifications are necessary for problematic areas of the final cover needing repair so long as the barrier layer (e.g., geomembrane, GCL, and/or compacted clay layer) remains intact, continues to satisfy slope stability requirements, does not degrade the ability of the final closure cover to meet original design and performance specifications, and the modifications are approved by Central Valley Water Board staff.

6. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater taking into consideration top deck final slope reduction due to localized waste compaction and overall landfill settlement.

7. The Discharger shall install an active landfill gas extraction system for the closed landfill unit during landfill closure, and landfill gas shall be extracted from closed landfill units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.

8. The Discharger shall seal the edges of the final cover by connecting the cover geomembrane to the liner geomembrane.

9. The Discharger shall test the critical interfaces of the final closure cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report and also demonstrate and certify that any testing required

and any limitations or additional requirements specified in the final closure cover's slope stability analysis report was complied with during construction in order to validate the slope stability analysis report conclusions.

10. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.

11. At closure of the Class II surface impoundment, the Discharger shall clean-close the unit pursuant to Title 27, section 21400, subdivision (b)(1). All precipitates, settled solids, liner materials, and adjacent natural geologic materials contaminated by wastes shall be completely removed and discharged to an appropriately permitted landfill Facility. If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the impoundment shall be closed as a landfill pursuant to Title 27, section 21400, subdivision (b)(2)(A). In this event, the Discharger shall backfill and grade the area and submit a revised Final Closure and Post-Closure Maintenance Plan proposing a final cover meeting the requirements of Title 27, section 21090 and shall perform all post-closure maintenance in the approved Post-Closure Maintenance Plan.

12. Prior to closure, the Discharger shall submit a Final Closure and Post-Closure Maintenance Plan prepared by a California-registered civil engineer or certified engineering geologist, and that contains all applicable information required in Title 27, section 21769. The plan shall include any closure/post-closure elements proposed in the ROWD, and shall meet the requirements of this Order.

13. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the Landfill SPRRs and the Class II SPRRs, incorporated herein.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the WMUs in at least the amounts of Findings 104 through 105, adjusted for inflation annually and shall be revised according to the approved PCPMP required by these WDRs in Provisions Section H. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle or Central Valley Water Board staff determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

2. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and

CalRecycle. The PCPCMP shall meet the requirements of Title 27, section 21769, subdivision (b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first 30 years of post-closure maintenance. Reports regarding financial assurance required in F.1 above shall reflect the updated cost estimate.

3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill and Class II surface impoundment in at least the amount of the annual inflation-adjusted cost estimate of Findings 106 through 107 and shall be revised according to the approved PCPMP required by these WDRs in Provisions Section H. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle or Central Valley Water Board staff determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with MRP No. R5-2017-0108, and the Standard Monitoring Specifications listed in Section I of Landfill SPRRs and Class II SPRRs, incorporated herein.

2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2017-0108, and the Standard Monitoring Specifications listed in Section I of Landfill SPRRs and Class II SPRRs, incorporated herein.

3. The Discharger shall comply with the Water Quality Protection Standard (WQPS) as specified in this Order, MRP No. R5-2017-0108, and the Landfill SPRRs and Class II SPRRs, as incorporated herein.

4. A pan lysimeter shall be installed beneath the LCRS sump and a portion of the LCRS piping for each new landfill cell/module for the purpose of unsaturated zone monitoring. If the new landfill phase WMU does not have an LCRS sump the Discharger will install an appropriate number of landfill gas probes and or lysimeters beneath the base of the new landfill and along the edge of the containment system to monitor soil pore gas and soil pore liquid in the unsaturated zone.

5. The landfill will be filled in phases; sufficient groundwater detection monitoring well(s) and sufficient unsaturated zone monitoring devices shall be installed at the downgradient edge of each phase. As a result, the footprint of the WMU will expand over time. The Discharger must develop and implement a plan in accordance with Title 27, section

21760, subdivision (a)(3) that will ensure there will be sufficient groundwater monitoring wells and unsaturated zone monitoring devices at the downgradient edge of the waste throughout the life of the Facility. The Discharger shall establish WQPS for any new WMU prior to discharger of waste to said WMU.

6. The Discharger shall monitor the underdrain, primary LCRS, and leak detection system (secondary LCRS) associated with each phase of construction. The liquid shall be collected as close to edge of waste as possible for each phase of construction in order to provide representative samples.

7. Unsaturated zone monitoring systems shall be capable of measuring both saturated (soil pore liquids or leachate) and unsaturated (soil pore gas or landfill gas) COC concentrations that may exist as a result of a release from the WMU.

8. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined by Title 27, § 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP No. R5-2017-0108 (incorporated herein).

9. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2017-0108 and Section I (Standard Monitoring Specifications) in both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

10. As specified in MRP No. R5-2017-0108, the Discharger shall enter all reports and monitoring data including but not limited to boring logs, groundwater elevation readings, etc. into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23.

11. The Discharger shall evaluate as part of its Corrective Action Monitoring Program the effectiveness of its corrective action program and provide as part of its reporting requirements an estimate as to when the Discharger will achieve full compliance.

12. The Discharger shall add any confirmed COCs detected during its five-year monitoring schedule using Tables VI of MRP No. R5-2017-0108 to Table V for detection monitoring purposes.

13. Any new, repaired, or replaced monitoring device installed to determine compliance with these WDRs shall begin sampling for the parameters listed in the tables of MRP No. R5-2017-0108 for the applicable media being monitored (e.g., groundwater, unsaturated zone, surface waters, etc.) within 72 hours of determining that the monitoring device is fully functional. The Discharger shall also increase monitoring frequency at the new, repaired, and/or replaced monitoring device such that the Discharger can establish baseline water and/or gas quality characteristics within one year at the monitoring point that is representative and captures seasonal fluctuations at the monitoring device. Installation of monitoring devices for monitoring new WMUs shall occur at least one year prior to placement of waste in the new WMU such that the Discharger can establish baseline water and/or gas quality characteristics at each new monitoring point that are representative of seasonal fluctuations at the monitoring device.

14. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

H. PROVISIONS

1. The Discharger shall maintain at the Facility copies of: (a) this Order; (b) MRP No. R5-2017-0108; (c) Landfill SPRRs; and (d) Class II SPRRs. These materials shall be available at all times to Facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.

2. A copy of all documents submitted to the Central Valley Water Board shall be maintained in the Facility's operating record.

3. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D (40 C.F.R. part 258) not specifically referred to in this Order.

4. The Discharger shall comply with MRP No. R5-2017-0108 (incorporated herein).

5. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated December 2015 for landfills and SPRRs dated April 2016 for Class II surface impoundments, which are attached hereto and made part of this Order by reference.

6. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.

7. All reports required by this Order shall be submitted pursuant to Water Code section 13267, and shall be prepared under the direction of, and certified by a registered professional (i.e. a California-registered Civil Engineer or Certified Engineering Geologist) competent to take responsible charge over the required report.

8. The Discharger shall complete the tasks contained in these waste discharge requirements and submit the following reports pursuant to Water Code section 13267 in accordance with the following time schedule:

Task	Compliance Date
a. Complete the following items:	**1 January 2018**

i. Correct Deficiencies in the Discharger's Leachate Monitoring System. Submit a work plan for review and approval to correct deficiencies in the Discharger's leachate monitoring system such that the Discharger can accurately monitor and report the quantity and characteristics of the leachate being produced at the Facility for each monitoring point. The Discharger shall also submit a tabulated record of any past monthly monitoring of leachate flows (gallons/month) for each monitoring point.

ii. Correct Deficiency in Discharger's Groundwater Detection Monitoring System. Submit a work plan for review and approval to correct groundwater monitoring wells HP-3, D-10, and D-12 either by repair or replacement such that they are appropriately screened to provide representative samples of ground water quality passing the point of compliance.

iii. Evaluation of Shallow Groundwater at Well-13 and Stormwater Discharges in Vicinity of Well-13. Submit a work plan that collects, conveys, and stores stormwater at the site in such a way that it does not prevent the Discharger from collecting representative samples from its detection monitoring system (groundwater, unsaturated zone, and surface water).

iv. Investigation of Groundwater Monitoring Wells U-2 and HP-3 for determination of leachate release from Phase I WMU. Submit a work plan for review and approval that investigates source of elevated concentrations of monitoring parameters in U-2 and HP-3 to determine if it is due to release of leachate from the Phase I WMU. The work plan shall include installation of groundwater monitoring well(s) and unsaturated zone monitoring devices along western toe of Phase I at the edge of waste.

v. **Investigation of release from Class II surface impoundment and/or Phase II WMU.** Submit a work plan for review and approval to determine if the elevated concentrations of monitoring parameters in groundwater monitoring well D-8 is due to release of leachate from the Class II surface impoundment and/or Phase II WMU. The work plan shall include installation of additional groundwater monitoring wells and unsaturated zone monitoring devices along downgradient edge of waste of the Class II surface impoundment and Phase II WMU and any other monitoring points required to determine the lateral and vertical extent of the release of leachate.

vi. **Unsaturated Zone Monitoring System Deficiencies for Phase I-B.** The Discharger shall repair or replace lysimeters L-1R and L-2R. If the Discharger is unable to repair or replace the lysimeters the Discharger shall submit a work plan in accordance with Title 27, section 21760(a)(3) for review and approval to install a sufficient number new unsaturated zone monitoring devices at appropriate depths that will provide unsaturated zone monitoring of Phase I-B WMU.

vii. **Separate Monitoring and Reporting for subdrains SD-1, SD-2 and SD-IIB.** Submit a work plan to reconfigure the subdrain wet well such that the Discharger can report individually on subdrain monitoring points SD-1, SD-2, and SD-IIB quantities of the groundwater seepage collected and their individual water quality characteristics.

viii. **Plan for disposal of contaminated groundwater collected in subdrains.** Submit a work plan that describes how the Discharger will convey, contain, and dispose of contaminated groundwater collected in subdrains SD-1, SD-2, SD-IIB in accordance with Title 27, sections 20200, subdivision (d) and 20705, subdivision (f) for review and approval.

ix. **Surface Water Detection Monitoring Work plan.** Submit a work plan identifying a background surface monitoring point if available that characterizes surface water quality entering the Facility. The Discharger shall also establish monitoring points for surface water quality discharged to, from, and within sedimentation basin #1. The Discharger shall **immediately** include these monitoring points into MRP No. R5-2017-0108 and begin monitoring once the work plan has been reviewed and approved.

x. **As-built drawing of Subdrain collection system.** Submit an as-built drawing showing locations of subdrain collection system below Phase I and Phase 2 WMUs including seeps identified during design and construction of the WMUs. The drawing will identify specific areas where each subdrain SD-1, SD-2, SD-IIB collects seeps below the WMUs.

xi. **Revised WQPS and sampling and analysis plan.** The Discharger shall submit a revised WQPS and sampling and analysis plan for review and approval that complies with Title 27, sections 20385 through 20435 that addresses the concerns identified in Findings 39 and 58.

xii. **Preliminary Final Closure Cover Plan.** Submit a preliminary final closure cover plan including cost estimate for final closure of Phase II through Phase IV that complies with Title 27, section 20950, subdivision (a)(2)(A)(1) and State Water Board Resolution 93-62.

xiii. **Submittal of Phase II-B drainage layer material test reports.** The Discharger shall submit the design specifications, the CQA requirements, and all CQC and CQA test results for the drainage gravel used for construction of Phase II-B.

xiv. **Updated Preliminary Closure and Postclosure Maintenance Plan and Financial Assurances.** The Discharger shall submit an updated PCPMP that satisfies the requirements of Title 27 and is approved by CalRecycle. The PCPMP shall include closure cost estimates, any applicable postclosure maintenance cost estimates, and corrective action cost estimates for both the landfill WMUs and the Class II surface impoundment WMU(s). The Discharger shall also provide documentation showing that financial mechanism(s) are in place to provide necessary financial assurances per Title 27 requirements.

xv. **Map of springs and supply Wells with owner information.** The Discharger shall submit a technical report that includes a map of supply wells and springs within one mile of the Facility along with owner information as required by Title 27, section 21750(g) and (h).

b. Complete the following items:

i. **Per item a.i**, complete improvements to the leachate monitoring system and submit a final construction report.	**Within 180 days after work plan approval by the Water Board**

ii. The Discharger shall accelerate monitoring of primary and secondary leachate monitoring points in accordance with MRP No. R5-2017-0108 section A.3 to at least monthly upon completion of the improvements for a period of at least one year and quarterly for an additional year in order to characterize leachate quality. The Discharger shall submit the results quarterly in a separate report.	**Report quarterly until two years of data have been collected**
c. Complete the following items:	
i. **Per item a.ii**, complete repair or replacement of detection monitoring wells HP-3, D-10, and D-12 and submit a well completion report 60 days thereafter.	**1 April 2018**
ii. The Discharger shall accelerate monitoring of repaired or replacement wells for HP-3, D-10, and D-12 in accordance with MRP No. R5-2017-0108 section A.1 to at least quarterly upon completion of the wells for a period of at least two years in order to characterize groundwater quality at the new monitoring points.	**1 April 2020**
d. Complete the following items:	
i. **Per item a.iii**, submit a technical report that defines the lateral extent of the shallow groundwater at Well-13, and identifies the source and direction of flow of shallow groundwater at Well-13.	**Within 180 days after work plan approval by the Water Board**
ii. Complete construction and submit a final construction report of stormwater management system around Well-13 such that stormwater discharge does not interfere with groundwater monitoring system.	**Within 180 days after the technical report is approved by the Water Board**
e. Complete the following items:	
i. **Per item a.iv**, install groundwater monitoring wells and unsaturated zone monitoring devices at appropriate depths and intervals to determine if there is a release from Phase I WMU.	**Within 180 days after work plan approval by the Water Board**
ii. The Discharger shall accelerate monitoring of the installed groundwater monitoring wells and unsaturated zone monitoring devices to at least bi-monthly upon completion of the monitoring points for a period of at least one year and submit a report identifying the source of elevated concentrations of monitoring parameters in U-2 and HP-3.	**Within 14 months after work plan approval**

f. Complete the following items:

i.	**Per item a.v**, install groundwater monitoring wells and unsaturated zone monitoring devices at appropriate depths and intervals to determine if there is a release from Class II surface impoundment and/or Phase II WMU.	**Within 180 days after work plan approval by the Water Board**
ii.	The Discharger shall accelerate monitoring of the installed groundwater monitoring wells and unsaturated zone monitoring devices to at least bi-monthly upon completion of the monitoring points for a period of at least eighteen months and submit a report identifying the source of elevated concentrations of monitoring parameters in D-8 and if the source is the Class II surface impoundment and/or Phase II WMU what corrective action is necessary to mitigate the release of leachate.	**19 months after new monitoring points are installed and operational**
iii.	If a release is confirmed, implement a corrective action plan upon approval by the Water Board which includes performance measures that will ensure that the corrective action is effective in mitigating the release of leachate.	**As soon as confirmation of a release**

g. Complete the following items:

i.	**Per item a.vi**, if installing any new unsaturated zone monitoring devices, the devices shall be installed **within 180 days after work plan approval by the Water Board**.	**Upon adoption of these WDRs**
ii.	The Discharger shall accelerate monitoring of lysimeters L-1R and L-2R (or approved replacement monitoring points) for soil pore liquids and soil pore gas (methane and VOCs) to at least monthly upon repair, replacement or installation of an alternative unsaturated zone monitoring system for Phase I-B WMU for a period of at least one year for general minerals, methane and VOCs.	**Accelerated monthly monitoring and reporting for at least one year after adoption of these WDRs**
iii.	The Discharger shall submit a monthly report within a month of the previous month's monitoring event with the tabulated results of monthly unsaturated zone monitoring beneath Phase I-B WMU. If the monitoring results detect methane or VOCs in the unsaturated zone the Discharger shall submit a work plan for review and approval for corrective action to prevent the release of gas from Phase I-B WMU.	**Accelerated monthly monitoring and reporting for at least one year after repair, replacement, or installation of a new unsaturated zone monitoring system for Phase I-B**

h. Work plan for addressing VOCs in unsaturated zone below Phase II

i. The Discharger shall accelerate monitoring of gas probes GP-IIB-1, GP-IIB-2, and GP-IIB-3 for methane and VOCs to at least monthly upon adoption of these WDRs for a period of at least one year.	**Upon adoption of these WDRs**
ii. The Discharger shall submit a monthly report within a month of the previous month's monitoring event with the tabulated results of monthly unsaturated zone monitoring beneath Phase II WMU. If the monitoring results detect methane or VOCs in the unsaturated zone the Discharger shall submit a work plan for review and approval for corrective action to prevent the release of gas from Phase II WMU.	**Accelerated monthly monitoring and reporting for at least one year after adoption of these WDRs**

i. Address release of leachate to unsaturated zone

i. **Per item a.vii** complete construction required to reconfigure subdrain wet well and begin accelerated monitoring of quantities and water quality characteristics for each subdrain monitoring point.	**Within 90 days after work plan approval by the Water Board**
ii. **Initiate Evaluation Monitoring Program for subdrains:**	
1) If necessary, initiate evaluation monitoring program (EMP) for subdrains SD-1, SD-2, and SD-IIB	**Immediately following completion of item 8.i.i above**
2) If necessary, submit an engineering feasibility study (EFS) in accordance with Title 27, section 20425, for the release of leachate to the unsaturated zone below Phase I and/or Phase II WMU and implement the corrective action upon review and approval.	**Within 180 days after approval of EMP by Water Board**
iii. **If necessary, per item a.viii**, implement work plan to dispose of contaminated groundwater in accordance with Title 27, sections 20200, subdivision (d) and 20705, subdivision (f).	**Within 180 days after work plan approval by the Water Board**

j. Complete the following items:

i. **Per item a.x.i**, the Discharger shall reevaluate historical monitoring results using the revised WQPS and submit a report showing the results of applying the revised WQPS with discussion whether the WQPS was capable of providing "significant evidence" of a release and earliest detection of a release in accordance with Title 27 requirements.	**90 days after approval of the revised WQPS and sampling and analysis plan.**

ii. The Discharger shall schedule a time when Regional Water Board staff may be present to collect split samples from monitoring points for independent laboratory analysis to verify and validate the revised sampling and analysis plan. **1 May 2018**

k. Operations Layer Borrow Source Characterization **2 January 2019**

Submit a technical report that characterizes the hydraulic conductivity of the operations layer borrow source used for Phase II and future landfill phases to ensure it has sufficient hydraulic conductivity to not inhibit leachate from reaching the LCRS system.

l. Side Slope Operations Layer Technical Report **2 January 2019**

Submit a technical report that provides evidence through modeling and testing that demonstrates that using a low permeable operations layer on the base and side slopes does not:

i. Cause liquid head to build up (soil pore liquid pressure) on the base or side slope operations layer or liner;

ii. Cause increased down drag on the side slope liner system;

iii. Cause a preferential slip plane that could damage the side slope liner system.

m. Seismic and Slope Stability Investigations and Certifications

i. **Phase II Base Liner Slope Stability.** The Discharger shall submit a technical report that investigates whether the results of the shear-interface tests demonstrates that the Phase II Base Liner will be stable in accordance with the requirements of Title 27. The report shall evaluate whether installation of localized sub drains on the side slopes where seeps are discovered is sufficient to ensure side slope stability throughout the life of the WMU. The Discharger shall also certify in the report that the construction was performed such that the slope stability analysis remains valid throughout the life of the WMU. **2 January 2019**

ii. **Phase I Partial Final Closure Cover Slope Stability.** The Discharger shall submit a technical report that investigates the February 2017 final cover veneer failure at Phase I WMU in terms of the Discharger's slope stability design, the results of the interface shear tests including failure within the soil substrate, the test parameters using normal loads higher than the range of expected normal loads in the field, and other design parameters that may have attributed to the veneer failure, (i.e., vegetative soil properties, drainage layer

thickness, etc.)

iii. **Per item i** above**,** the Discharger shall certify that the limitations/conditions of the 2005 Phase II-B Slope Stability Design Report were met during construction of Phase II-B base and side slope liner system in order to validate the design or provide necessary design changes to ensure that future base and side slope liner systems at the Facility ensure slope stability throughout the life of the WMU.

iv. **Per item ii** above**,** the Discharger shall certify that the limitations of the 2010 Closure Slope Stability Design Report were met during construction of Phase I Partial Final Closure Cover in order to validate the design and provide slope stability throughout the life of the landfill or provide necessary design changes to ensure that future closure covers at the Facility are not susceptible to the same failure mode. **2 June 2019**

n. Construction Plans

Submit construction and design plans for review and approval. (See all Construction Specifications in Section D, above and Section F of the applicable SPRRs.) **90 days prior to proposed construction**

o. Construction Report

Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans (see Standard Construction Specifications in Section F of the applicable SPRRs). The Discharger must also submit an additional technical report as part of its final construction report demonstrates and certifies that any testing required and any limitations or additional requirements specified in the final closure cover or base liner's slope stability analysis report was complied with during construction in order to validate the slope stability analysis report conclusions. **60 days prior to proposed discharge**

p. Final Closure Plan

Submit a final or partial final closure and post-closure maintenance plan, design plans, and CQA plan for review and approval (see all Closure and Post-Closure Specifications in Section E, above and Section G of the applicable SPRRs) **Two years prior to closure**

9. The Discharger shall comply with all General Provisions listed in Section K of both the Landfill SPRRs and Class II SPRRs, as incorporated herein.

10. The Central Valley Water Board has converted to a paperless office system. All project correspondence and reports required under this Order shall therefore be submitted electronically rather than in paper form, as follows:

All technical reports and monitoring reports required under this Order shall be converted to PDF and uploaded via internet to the State Water Board's GeoTracker database at http://geotracker.waterboards.ca.gov, as specified in California Code of Regulations, title 23, section 3892, subdivision (d) and section 3893. Project-associated analytical data shall be similarly uploaded to the GeoTracker database in an appropriate format specified under this Order under a site-specific global identification number. Information on the GeoTracker database is provided at:

http://www.swrcb.ca.gov/ust/electronic_submittal/index.shtm

Notification of the Geotracker upload shall be emailed to the Central Valley Water Board at: centralvalleysacramento@waterboards.ca.gov. To ensure that the submittal is routed to the appropriate staff as quickly as possible, the following information shall be included in the body of the email:

Attention:	Title 27 Compliance & Enforcement Unit Or Title 27 Permitting Unit
Report Title	
Geotracker Upload ID	
Discharger name:	County of Calaveras, Department of Public Works
Facility name:	Rock Creek Solid Waste Facility
County:	Calaveras
CIWQS place ID:	253123

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 20 October 2017.

ORIGINAL SIGNED BY

PAMELA C. CREEDON, Executive Officer

VKJ/WMH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2017-0108
FOR
COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS
ROCK CREEK SOLID WASTE FACILITY
CLASS II LANDFILL
CLASS II SURFACE IMPOUNDMENT
CONSTRUCTION, OPERATION, CLOSURE,
POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION
CALAVERAS COUNTY

This monitoring and reporting program (MRP) is issued pursuant to Water Code section 13267, and incorporates requirements for groundwater, unsaturated zone, leachate, and surface water monitoring and reporting; facility monitoring, maintenance, and reporting; corrective action monitoring and reporting; and financial assurances reporting contained in California Code of Regulations, title 27 (Title 27), section 20005 et seq., Waste Discharge Requirements (WDRs) Order R5-2017-0108, and the Standard Provisions and Reporting Requirements for Landfills dated January 2012 (Landfill SPRRs) and Standard Provisions and Reporting Requirements for Class II Surface Impoundments dated April 2016 (Class II SPRRs). Compliance with this MRP is ordered by the WDRs, and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The County of Calaveras and its Department of Public Works (Discharger) shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, leachate (waste characterization), and the unsaturated zone in accordance with Section I (Standard Monitoring Specifications) of the applicable SPRRs and Section G (Monitoring Specifications) of the WDRs. All monitoring shall be conducted in accordance with the most current approved *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the Water Quality Protection Standard (WQPS). All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through VI.

Any new, repaired, or replaced monitoring device installed to determine compliance with these WDRs shall begin sampling for the parameters listed in the tables for the applicable media being monitored (e.g., groundwater, unsaturated zone, surface waters, etc.) within 72 hours of determining that the monitoring device is fully functional. The Discharger shall also increase monitoring frequency at the monitoring device such that the Discharger can establish baseline water and/or gas quality characteristics within one year at the monitoring point that is representative and captures seasonal fluctuations at the monitoring device. Installation of monitoring devices for monitoring new WMUs shall occur at least one year prior to placement of waste in the new WMU such that the Discharger can establish baseline

water and/or gas quality characteristics at each new monitoring point that are representative of seasonal fluctuations at the monitoring device and are not affected by a release.

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

The monitoring program of this MRP includes:

Section	Monitoring Program
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring (gas probes, lysimeters, and subdrains)
A.3	Leachate (primary and secondary LCRS) Monitoring, Class II Surface Impoundment Monitoring, Seep Monitoring, and LCRS Testing
A.4	Surface Water Monitoring (including springs)
A.5	Facility Monitoring
A.6	Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, Subchapter 3 “Water Monitoring”. The detection monitoring system shall be certified by a California-licensed professional civil engineer or licensed professional geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system **does not meet** the applicable requirements of Title 27. Two detection monitoring wells HP-3 and D-10 are not screened properly to provide representative samples of groundwater quality passing the point of compliance. Section H (Provisions) of WDRs Order No. R5-2017-0108 requires the Discharger to repair or replace these detection monitoring wells such that they comply with the requirements of Title 27. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell or module is constructed.

The current groundwater monitoring network shall consist of the following:

Well	Status	Units Being Monitored
U-1	Background	Not Applicable
U-2	Background/Evaluation	Not Applicable
HP-3	Detection/Evaluation	Phase I-A, I-B
D-1	Detection	Phases I-A, I-B, II-A
D-4	Detection	Phases I-B, II-A, II-B
D-8	Detection/Corrective Action	Phases II-A, II-B, Surface Impoundment
D-9	Detection	Phases I-B, II-A, II-B, Surface Impoundment
D-10	Detection	Phases II-A, II-B

Well	Status	Units Being Monitored
D-11	Background/ Detection	Phases I-A, I-B
D-12	Background/Detection	Phases II-A, II-B, future Phase III
Well-13	Detection	Surface Impoundment
11-R	Piezometer	Groundwater Elevation
HP-1	Piezometer	Groundwater Elevation
HP-2	Piezometer	Groundwater Elevation
D-5	Piezometer	Groundwater Elevation
D-6	Piezometer	Groundwater Elevation
D-7	Piezometer	Groundwater Elevation
1-D	Piezometer	Groundwater Elevation
1-S	Piezometer	Groundwater Elevation
2-D	Piezometer	Groundwater Elevation
2-S	Piezometer	Groundwater Elevation
6-D	Piezometer	Groundwater Elevation
6-S[1]	Piezometer	Groundwater Elevation
7	Piezometer	Groundwater Elevation
8	Piezometer	Groundwater Elevation
9	Piezometer	Groundwater Elevation
12	Piezometer	Groundwater Elevation
WW-1	Piezometer	All Phases

Groundwater samples shall be collected from the background wells, detection monitoring wells, evaluation and corrective action monitoring wells (if any), and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. Also, refer to section A.6 for any additional requirements or accelerated monitoring frequencies for corrective action monitoring wells. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

Once per quarter, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415, subdivision (e)(15). All groundwater elevations shall be reported using only one common datum (e.g., NGVD29 or NAVD88, etc.) for the entire network. The Discharger shall provide a map showing the potentiometric surface showing groundwater elevation relative to the bottom of waste e.g., waste in the LCRS and LCRS sump and make a determination whether the Discharger has maintained minimum separation between the waste and the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored including the capillary fringe as required in WDRs Order No. R5-2017-0108.

[1] The Discharger is not required to monitor 6-S so long as the Discharger is only using 6-S and 6-D as piezometers for groundwater elevation monitoring. Once the Discharger begins construction of Phase III WMU the Discharger shall continue to monitor 6-S as part of its groundwater monitoring program.

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years. Five-year COCs were last monitored in 2012 and shall be monitored again in **2017**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring (Gas Probes, Lysimeters, and Subdrains)

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The current unsaturated zone detection monitoring system **does not meet** the applicable requirements of Title 27. The Discharger reports that the unsaturated zone monitoring system lysimeters L-1R and L-2R below Phase I WMU are nonfunctional. The Discharger also reports that it has not complied with past WDRs R5-2005-0100 and WDRs R5-2011-0029 until 2015 requiring the three gas probes GP-IIB-1, GP-IIB-2, and GP-IIB-3 below Phase II WMU be monitored for methane and VOCs annually. The Discharger shall collect, preserve, and transport all unsaturated zone samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

All 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 for soil-pore liquid and/or soil-pore gas.

The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell or module.

The current unsaturated zone monitoring network shall consist of:

Mon Pt.	Status	Units Being Monitored
L-5	Background	Not Applicable
L-1R	Detection	Phase I-B
L-2R	Detection	Phase I-B
GPL-1	Detection	Surface Impoundment lysimeter
SD-1	Detection	Subdrain below Phase II
SD-2	Detection	Subdrain below Phase II
SD-IIB	Corrective Action	Leachate release below Phase II-A
GP-IIB-1	Detection/Corrective Action	Phase II-A, II-B
GP-IIB-2	Detection/Corrective Action	Phase II-B
GP-IIB-3	Detection/Corrective Action	Phase II-B

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies (pan lysimeters need only be sampled when liquid is present). Pan lysimeters shall be inspected for the presence of liquid **monthly**. Also, refer to section A.6 for any additional requirements or accelerated monitoring frequencies for corrective action monitoring at unsaturated zone monitoring devices. If liquid is detected in a previously dry pan lysimeter, the Discharger shall

verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for the Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years; beginning again in **December 2017** (does not include soil-pore gas).

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

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

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

a. **Leachate Monitoring**

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

The current LCRS leachate monitoring points are:

Monitoring Point	Unit Where Monitoring Point is Located
LCRS-II	Primary Wet Well (for Phase II)
LDS-IIA	Secondary Wet Well (for Phase II-A)
LDS-IIB	Secondary Wet Well (for Phase II-B)
SI1-Sump	Surface Impoundment LCRS
SI1-Pond	Surface Impoundment contents
SI1-Outfall	Outfall into Surface Impoundment

All LCRS sumps shall be inspected monthly for the presence of leachate, and flow shall be recorded in accordance with Table III. If leachate is detected in a previously dry sump, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid are present. All LCRS sump samples shall be analyzed for the five-year COCs specified in Table III every five years, beginning again in **December 2017**.

The Discharger shall immediately notify Central Valley Water Board staff by telephone and email and immediately take measures to regain surface impoundment capacity in the event that freeboard levels are equal to or less than 2.5 feet (2.0 feet plus the amount needed to hold the design storm to the nearest tenth of a foot).

b. Seep Monitoring

Leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in MRP Section B.j, below.

c. Annual LCRS Testing

All LCRSs shall be tested annually pursuant to Title 27, section 20340, subdivision (d) to demonstrate proper operation of the LCRS drainage layer. The Discharger shall perform test(s) to determine degradation i.e., clogging of the LCRS drainage layer. The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report and shall include comparisons with earlier tests made under comparable conditions. An LCRS test shall be performed on any new WMU prior to placement of waste to establish baseline operational performance of the LCRS drainage layer to which future annual LCRS tests will be compared.

4. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States or where unauthorized discharges from a WMU enters surface waters. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Rock Creek Solid Waste Facility, runoff from landfill areas flows to two sequential sedimentation basins that periodically discharge to a seasonal creek, to Rock Creek and thereafter to Little John's Creek a tributary of the San Joaquin River. The current surface water detection monitoring system **does not meet** the applicable requirements of Title 27 because the Discharger is not currently monitoring surface water quality at primary sedimentation basin #1. Furthermore, the Discharger is not currently monitoring background surface water quality at the facility. Section H (Provisions) of WDRs Order No. R5-2017-0108 requires the Discharger to monitor background surface water quality and monitor surface water quality within primary sedimentation basin #1.

The current and future surface water monitoring points for the landfill are:

Monitoring Point	Status
TBD[1]	Background Water Quality (Future)
SB-1	Influent into Sedimentation Basin #1 (Future)
SB-2	Water quality in Sedimentation Basin #1 (Future)
SB-3	Effluent from Sedimentation Basin #1 (Future)
RO-1	Discharge from facility to seasonal creek (Current)

[1]TBD- To be determined if run-on background water quality exists and is measurable.

For surface water detection monitoring, a sample shall be collected at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water

monitoring samples shall be collected and analyzed for the five-year COCs specified in Table IV every five years, beginning again in **December 2017** when surface water is present and flowing into sedimentation basin #1.

5. Facility Monitoring

a. **Annual Facility Inspection**

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in MRP Section B.4.

b. **Major Storm Events**

The Discharger shall record onsite rainfall to track the magnitude of storm events. The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in MRP Section B.5.

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

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of 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, subds. (e)(1)-(2).) Reporting shall be in accordance with MRP Section B.6. The next iso-settlement survey shall be conducted in **2017**.

d. **Standard Observations**

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

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

The Standard Observations shall include:

1) For the landfill units:

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

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

2) Along the perimeter of the landfill units:

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

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

3) For receiving waters:

   a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and

   b) Discoloration and turbidity - description of color, source, and size of affected area.

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

6. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27, section 20430 and this MRP. Groundwater monitoring wells and unsaturated zone monitoring points that are in a corrective action monitoring program shall be monitored in accordance with the groundwater and unsaturated zone monitoring requirements in MRP parts A.1 and A.2, except as modified in this part for any additional constituents or modified monitored frequencies.

a. Groundwater Evaluation/Corrective Action Monitoring

The Discharger shall monitor the following evaluation/corrective action monitoring well as required in part A.1 and Table I of this MRP, with the following additional constituents, and the following alternative sampling frequency for all Field and Monitoring Parameters listed in Table I:

Well	Additional Constituents	Sampling Frequency
D-8	None	Quarterly

b. Unsaturated Zone Corrective Action

i. The Discharger shall accelerate monitoring of lysimeters L-1R and L-2R for soil pore liquids and soil pore gas to at least monthly upon repair, replacement or

installation of an alternative unsaturated zone monitoring system for Phase 1 WMU for a period of at least one year.

The Discharger shall monitor the following unsaturated zone monitoring points or approved alternative monitoring points as required in part A.2 and Table II of this MRP, including any following additional constituents, and the following alternative sampling frequency for all Field and Monitoring Parameters listed in Table II:

Lysimeter	**Unit**	**Additional Constituents**	**Sampling Frequency**
L-1R, -2R	Phase I	None	Monthly

ii. The Discharger shall accelerate monitoring of gas probes GP-IIB-1, GP-IIB-2, and GP-IIB-3 for methane and VOCs to at least monthly upon adoption of these WDRs for a period of at least one year.

The Discharger shall monitor the following unsaturated zone monitoring points as required in part A.2 and Table II of this MRP, including any following additional constituents, and the following alternative sampling frequency for all Field and Monitoring Parameters listed in Table II:

Gas Probe	**Unit Constituents**	**Additional Frequency**	**Sampling**
GP-IIB-1, -2, -3	Phase II	None	Monthly

iii. The Discharger shall submit a monthly report within a month of the previous month's monitoring event with the tabulated results of monthly unsaturated zone monitoring beneath Phase I and Phase II WMUs. If the monitoring results detect any methane or VOCs in the unsaturated zone, or any other monitoring parameters indicative of a release of leachate or landfill gas from the WMUs, the Discharger shall submit a work plan within 90 days of detection of the release for review and approval for corrective action to prevent or remediate the release of leachate and/or landfill gas from the Phase I and Phase II WMUs.

c. **Landfill Gas Corrective Action System** (To be determined at future date)

B. REPORTING

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

Section	Report	End of Reporting Period	Due Date
B.1	Semiannual Monitoring Report	30 June, 31 December	**1 August, 1 February**
B.2	Annual Monitoring Report	31 December	**1 February**
B.3	Seep Reporting	Continuous	**Immediately & 7 Days**
B.4	Annual Facility Inspection Report	31 October	**15 November**

Section	Report	End of Reporting Period	Due Date
B.5	Major Storm Event Reporting	Continuous	**7 days from damage discovery**
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	**At Closure Completion and Every Five Years**
B.7	Financial Assurances Report	31 December	**1 June**

The Discharger shall enter all monitoring data and reports including but not limited to all boring logs and groundwater elevations into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23. Notification of the Geotracker upload shall be emailed to the Central Valley Water Board at: centralvalleysacramento@waterboards.ca.gov.

To ensure that the submittal is routed to the appropriate staff as quickly as possible, the following information shall be included in the body of the email:

Attention:	Title 27 Compliance & Enforcement Unit
Report Title	
Geotracker Upload ID	
Discharger name:	County of Calaveras and County of Calaveras Department of Public Works
Facility name:	Rock Creek Solid Waste Facility
County:	Calaveras
CIWQS place ID:	CW-253123

Reporting Requirements

Semiannually, the Discharger shall submit monitoring reports containing the data and information required in this MRP, and as required per the WDRs (Order No. R5-2017-0108) and the SPRRs—particularly SPRRs Section I ("Standard Monitoring Specifications") and Section J ("Response to a Release"). In reporting the monitoring data required by this MRP, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format (i.e., on a flash drive or compact disk) with Optical Character Recognition (OCR).

Upon request by Central Valley Water Board staff, all groundwater elevation, field parameter readings, and analytical data shall be submitted in a digital tabulated format easily importable into data analysis software (e.g., Microsoft Excel®).

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made.

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

The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period. Such records shall be legible and shall show the following for each sample:

a) Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;

b) Date, time and manner of sampling;

c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;

d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;

e) Calculation of results; and

f) Results of analyses, and the MDL and PQL for each analysis (all peaks shall be reported).

Required Reports

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

   a) For each groundwater monitoring point addressed by the report, a description of:

      1) The time of water level measurement;

      2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

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

      4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and

      5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.

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

c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report. (See Title 27, § 20415, subd. (e)(15).) The Discharger shall provide a map showing the potentiometric surface showing groundwater elevation relative to the bottom of waste e.g., waste in the LCRS and LCRS sump and make a determination whether the Discharger has maintained minimum separation between the waste and the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored including the capillary fringe as required in WDRs Order No. R5-2017-0108.

d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, and leachate. 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 "< [reporting limit]" (e.g., "< 0.10"). Units shall be as required in Tables I-IV, unless specific justification is given to report in other units. Refer to the SPRRs Section I ("Standard Monitoring Specifications") for specific requirements regarding MDLs and PQLs.

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

f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five-year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report actions taken under Section J (Response to a Release) for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.

g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (including in the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the applicable SPRRs.

h) A summary of all Standard Observations for the reporting period required in MRP Section A.5.d.

i) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the applicable SPRRs.

j) A comprehensive discussion of any Corrective Action Program required under MRP Section A.6.

2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the

previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken since the monitoring point was installed and the monitoring parameter was detected at least once since the monitoring point was installed. The graph shall also show the approved concentration limit at the time each sample was taken. If a five-year COC event was performed, than these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.

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

c) All historical monitoring data, including data for previous years, shall be submitted in tabular form in a digital file format easily importable into data analysis software (e.g., Microsoft Excel®). The Central Valley Water Board regards the submittal of data in hard copy and in digital format as the form necessary for statistical analysis facilitating periodic review. (See Title 27, § 20420, subd. (h).)

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

e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.

f) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the year in which each discrete landfill module will be filled.

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

h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the applicable SPRRs.

i) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set where updated concentration limits have been reviewed and approved.

j) The Discharger shall provide a map showing the potentiometric surface showing groundwater elevation relative to the bottom of waste e.g., waste in the LCRS and

LCRS sump and make a determination whether the Discharger has maintained minimum separation between the waste and the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored including the capillary fringe as required in WDRs Order No. R5-2017-0108.

3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:

   a) A map showing the location(s) of seepage;

   b) An estimate of the flow rate;

   c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);

   d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III, and an estimated date that the results will be submitted to the Central Valley Water Board; and

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

4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. (See MRP § A.5.a, above.)

5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger shall notify Central Valley Water Board staff **immediately upon discovery** of any damage or significant erosion; and report subsequent repairs **within 14 days** of completion of the repairs. Photographs of any problem(s) and repairs performed shall be submitted with the report. (See MRP § A.5.b, above.) As part of the Annual Report the Discharger shall report recorded onsite rainfall.

6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090, subdivision (e). (See MRP § A.5.c, above.) The next report is due by **1 February 2018**.

7. **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action. (See WDRs Order No. R5-2017-0108, Financial Assurances Specifications F.1–F.3.)

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each Waste Management Unit (WMU), the Water Quality Protection Standard (WQPS) shall consist of all COCs, the concentration limit for each constituent of concern, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The WQPS for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the WQPS, including biennial (every two years) updates to concentration limits, shall be submitted in a report for review and approval prior to implementation of revised concentration limits.

The report shall:

a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.

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

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

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

The WQPS shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the WQPS.

The Discharger proposed the methods for calculating concentration limits in the annual 2016 *Water Quality Protection Standard Report*. The limits are calculated using Intrawell

tolerance limits (TLs) at 95 percent confidence and 95 percent coverage based on background data from each monitoring well.

TLs were calculated following protocols outlined in "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Addendum to Interim Final Guidance" [United States Environmental Protection Agency (USEPA), 1992]. Following this protocol, the upper 95 percent TL was calculated for each analyte that had been detected with sufficient frequency to have a statistically "normal" or "transformed normal" data distribution. For normal data distributions, the calculated TL represents the value that future observations will fall below (with a 95 percent probability).

For parametric TL analysis, the mean ($\bar{u}$) and standard deviation (S) are calculated for background data and a multiplier (K) is specified at the 95 percent confidence level. TLs were calculated using the following formula:

$$TL = \bar{u} + kS$$

Where:
TL - is the upper 95 percent tolerance limit
$\bar{u}$ - is the mean concentration
S - is the Standard Deviation of the background data population.
k - is the k multiplier, calculated using the following equation:

$$k = t_{n-1,1-B}(1+1/n)^{1/2}$$

Where:
k – is the k multiplier
t – is the Student's T-test value for n-1 (degrees of freedom) and 1-B (percent coverage).
n – is the number of observations.

For the non-parametric TL analysis, the highest detected value from the background data set was used to set the TL.

2. Monitoring Parameters

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

3. Constituents of Concern (COCs)

COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the WMU, and are required to be monitored every five years. (See Title 27, § 20395, 20420, subd. (g).) The facility WMU "Five-year COCs" are listed in Tables I-V for the specified monitored medium. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last five-year COC report submitted to the Central Valley Water Board was the 2012

First Semiannual Monitoring Report. Five-year COCs are due to be monitored again in **December 2017**.

4. Concentration Limits

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

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

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

The methods for calculating concentration limits were included in the 27 February 2007 *Water Quality Protection Standard Report*. The approved method uses Intrawell tolerance limits at 95 percent confidence and 95 percent coverage. Both intrawell and interwell analysis is used for well D-1.

The most recent concentration limits for select parameters as reported in the *2016 Annual Monitoring Report* were as follows:

Point	**Analysis Type**	**pH (Std units)**	**EC[1] (umhos/ cm)**	**Bicar-bonate (mg/L)**	**Chloride (mg/L)[3]**	**Nitrate as N (mg/L)**	**Sulfate (mg/L)**	**TDS[2] (mg/L)**	**VOCS[5] (ug/L)**
U-1	Intrawell	To be determined[4]							Non-Detect
U-2	Intrawell	To be determined							Non Detect
D-1	Intrawell/ Interwell	6.5-7.0	447.2	140	11	3.0	87	296.5	Non Detect
D-4	Intrawell	6.4-7.2	484.5	94.7	13.4	2.4	118.8	321.0	Non Detect
D-8	Intrawell	To be determined							Non Detect
D-9	Intrawell	6.8-7.4	224.3	92	4.6	3.2	16.0	170	Non Detect
D-10	Intrawell	6.8-7.4	322.3	100	11	5.5	44	238.7	Non Detect
D-11	Intrawell	7.2-7.8	324	110	18.5	4.0	6.6	230	Non Detect
D-12	Intrawell	6.8-7.6	283.1	100	5.8	2.3	35	270	Non Detect
GPL-1	Intrawell	To be determined							Non Detect
HP-3	Intrawell	To be determined							Non Detect
SD-1	Intrawell	To be determined							Non Detect
SD-2	Intrawell	To be determined							Non Detect
SD-IIB	Intrawell	To be determined							Non Detect
L-5	Intrawell	N/A	N/A	39.6	39.9	13.3	650	1117.2	Non Detect

Unsaturated Zone Gas Probes		
Monitoring Point	**Methane**	**VOCs[5]**
GP-IIB-1	<1%	Non Detect
GP-IIB-2	<1%	Non Detect
GP-IIB-3	<1%	Non Detect

[1] Electrical Conductivity
[2] Total Dissolved Solids
[3] Milligrams per liter
[4] To be determined-Concentration limits for monitoring points that have been impacted by a release or showing increasing trends where further evaluation is necessary were not calculated correctly and will have to be determined following an evaluation and corrective action work plan required in Provisions Section H of WDRs R5-2017-0108.
[5] VOCs include all anthropogenic constituents such as but not limited to SVOCs, herbicides, pesticides (Organophosphorus compounds).

5. Retesting Procedures for Confirming Evidence of a Release

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

a. For analytes that are detected in less than 10 percent 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 applicable SPRRs.

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

6. Point of Compliance

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

a. **Groundwater**

Point of Compliance Well	Cell or Module
HP-3	Phase I-A
D-1	Phases I-B, II-A
D-4	Phases II-A, II-B
D-8	Phase II-B, Surface Impoundment
D-9	Phase II-B, Surface Impoundment
D-10	Phases II-A, II-B
D-11	Phases I-A, I-B
D-12	Phase II-B
Well-13	Surface Impoundment

b. **Unsaturated Zone**

Point of Compliance	Cell or Module
L-1R	Phase I-B
L-2R	Phase I-B
GPL-1	Class II Surface Impoundment
SD-1	Phase II
SD-2	Phase II
SD-IIB	Phase II-A
GP-IIB-1	Phase II-A, II-B
GP-IIB-2	Phase II-B
GP-IIB-3	Phase II-B

c. **Surface Waters**

Point of Compliance	Cell or Module
SB-1	Primary Sedimentation Basin #1 Landfill
RO-1	Facility

7. Compliance Period

The compliance period for each waste management unit shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program. (See Title 27, § 20410.)

8. Monitoring Points

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

D. TRANSMITTAL LETTER FOR ALL REPORTS

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

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

ORIGINAL SIGNED BY

Ordered By: _____

PAMELA C. CREEDON, Executive Officer

_____20 October 2017_____

(Date)

VKJ

TABLE I

GROUNDWATER DETECTION MONITORING PROGRAM

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Field Parameters				
Groundwater Elevation	GWELEV	Ft. & 100ths, M.S.L.	Quarterly[3]	Semiannual
Temperature	TEMP	^{o}F	Semiannual	Semiannual
Electrical Conductivity	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Turbidity	TURB	Turbidity units	Semiannual	Semiannual
Monitoring Parameters				
Total Dissolved Solids (TDS)	TDS	mg/L[1]	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate	CACO3	mg/L	Semiannual	Semiannual
Bicarbonate	BICACO3	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	NO3N	mg/L	Semiannual	Semiannual
Sulfate	SO4	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)		ug/L[2]	Semiannual	Semiannual
5-Year Constituents of Concern (see Table VI)				
Total Organic Carbon	TOC	mg/L	5 years	December 2017
Inorganics (dissolved)		ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)		ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)		ug/L	5 years	‘’ ‘’
Chlorophenoxy Herbicides (USEPA Method 8151A)		ug/L	5 years	‘’ ‘’
Organophosphorus Compounds (USEPA Method 8141B)		ug/L	5 years	‘’ ‘’

[1] Milligrams per liter
[2] Micrograms per liter
[3] Piezometers 1S, 1D, 2S, 2D, 6S, 6D, D-5, D-6, D-7, 7, 8, 9, and 12 shall be monitored semiannually.

TABLE II

UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS[1]

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Monitoring Parameters				
Volatile Organic Compounds[2] (USEPA Method TO-15)		ug/cm^3	Annual	Annual
Methane	CH4	%	Semiannual	Annual
Carbon Dioxide	CO2	%	Semiannual	Annual
Oxygen	OXYGEN	%	Semiannual	Annual

LYSIMETERS, AND UNDERDRAINS[3] (or other vadose zone monitoring point where liquid and gas may be present)

Parameter		Units	Sampling Frequency	Reporting Frequency
Field Parameters				
Electrical Conductivity	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Volume of liquid removed		gallons	Monthly	Semiannual
Monitoring Parameters				
Total Dissolved Solids (TDS)	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate	CACO3	mg/L	Semiannual	Semiannual
Bicarbonate	BICACO3	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	NO3N	mg/L	Semiannual	Semiannual
Sulfate	SO4	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Pentachlorophenol	PCP	ug/L	Semiannual	Semiannual
Arsenic (dissolved)	AS	ug/L	Semiannual	Semiannual
Copper (dissolved)	CU	ug/L	Semiannual	Semiannual
Chromium (dissolved)	CR	ug/L	Semiannual	Semiannual
Volatile Organic Compounds1 (in liquid matrix) (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual
Volatile Organic Compounds in gas matrix (Use USEPA Method TO-15)	(See Table V)	ug/cm^3	Semiannual	Semiannual
Methane	CH4	%	Semiannual	Semiannual
Carbon Dioxide	CO2	%	Semiannual	Semiannual
Oxygen	OXYGEN	%	Semiannual	Semiannual
5-Year Constituents of Concern (see Table VI)				
Total Organic Carbon	TOC	mg/L	5 years	December 2017
Inorganics (dissolved)		ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)		ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)		ug/L	5 years	‘’ ‘’

Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	‘’	‘’
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	‘’	‘’

1. Soil-pore gas samples collected from landfill gas probes are only subject to the VOC (USEPA Method TO-15) and methane sampling (not the other parameters listed for pan lysimeters).
2. Gas samples may be prescreened to determine if laboratory analysis using Method TO-15 is required. A gas analyzer for methane concentrations or a Photo Ionization Detector (PID) for total VOCs concentrations may be used. If methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected at a concentration greater than 1.0 ppm then a gas sample shall be obtained and analyzed for VOCs using EPA Method TO-15. Both the screening results and laboratory analysis results shall be reported. Otherwise, the Discharger shall report the methane or total VOC screening results and no further laboratory analysis is required.
3. Pan lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry pan lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

TABLE III

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

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Field Parameters				
Total Flow		Gallons	Monthly	Semiannual
Flow Rate	FLOW	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	SC	umhos/cm	Quarterly	Semiannual
pH	PH	pH units	Quarterly	Semiannual
Monitoring Parameters				
Total Dissolved Solids (TDS)	TDS	mg/L	Annually	Annually
Chloride	CL	mg/L	Annually	Annually
Carbonate as CACO3	CACO3	mg/L	Annually	Annually
Bicarbonate as CACO3	BICACO3	mg/L	Annually	Annually
Nitrate - Nitrogen	NO3N	mg/L	Annually	Annually
Sulfate	SO4	mg/L	Annually	Annually
Calcium	CA	mg/L	Annually	Annually
Magnesium	MG	mg/L	Annually	Annually
Manganese	MN	mg/L	Semiannual	Annually
Potassium	K	mg/L	Annually	Annually
Sodium	NA	mg/L	Annually	Annually
Pentachlorophenol	PCP	ug/L	Annual	Annually
Arsenic (dissolved)	AS	ug/L	Annual	Annually
Copper (dissolved)	CU	ug/L	Annual	Annually
Chromium (dissolved)	CR	ug/L	Annual	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)		ug/L	Annually	Annually
5-Year Constituents of Concern (see Table VI)				
Total Organic Carbon	TOC	mg/L	5 years	December 2017
Inorganics (dissolved)		ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)		ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)		ug/L	5 years	‘’ ‘’
Chlorophenoxy Herbicides (USEPA Method 8151A)		ug/L	5 years	‘’ ‘’
Organophosphorus Compounds (USEPA Method 8141B)		ug/L	5 years	‘’ ‘’
LCRS Testing [3]		---	Annually	Annually

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

[2.] Leachate seeps shall be sampled and analyzed for the Field and Monitoring Parameters in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.j)

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

TABLE IV

SURFACE WATER DETECTION MONITORING PROGRAM

Parameter	Geotracker Code	Units	Sampling Frequency[1]	Reporting Frequency
Field Parameters				
Electrical Conductivity	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Turbidity	TURB	Turbidity units	Semiannual	Semiannual
Flow to Waters of U.S.		Yes or No	Semiannual	Semiannual
Monitoring Parameters				
Total Dissolved Solids (TDS)	TDS	mg/L	Semiannual	Semiannual
Carbonate	CACO3	mg/L	Semiannual	Semiannual
Bicarbonate	BICACO3	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	NO3N	mg/L	Semiannual	Semiannual
Sulfate	SO4	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)		ug/L	Semiannual	Semiannual
5-Year Constituents of Concern (see Table VI)				
Total Organic Carbon	TOC	mg/L	5 years	December 2017
Inorganics (dissolved)		ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)		ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)		ug/L	5 years	‘’ ‘’
Chlorophenoxy Herbicides (USEPA Method 8151A)		ug/L	5 years	‘’ ‘’
Organophosphorus Compounds (USEPA Method 8141B)		ug/L	5 years	‘’ ‘’

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

TABLE V

MONITORING PARAMETERS FOR WATER QUALITY MONITORING

Surrogates for Metallic Constituents:

COC Description	Geotracker Code
pH	PH
Total Dissolved Solids	TDS
Electrical Conductivity	SC
Chloride	CL
Sulfate	SO4
Nitrate nitrogen	NO3N

Volatile Organic Compounds, short list (USEPA Method 8260B):

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- l ,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

TABLE V

MONITORING PARAMETERS FOR WATER QUALITY MONITORING

Continued

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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Inorganics (dissolved):	USEPA Method	Geotracker Code
Aluminum	6010	AL
Antimony	7041	SB
Barium	6010	BA
Beryllium	6010	BE
Cadmium	7131A	CD
Chromium	6010	CR
Cobalt	6010	CO
Copper	6010	CU
Silver	6010	AG
Tin	6010	SN
Vanadium	6010	V
Zinc	6010	ZN
Iron	6010	FE
Manganese	6010	MN
Arsenic	7062	AS
Lead	7421	PB
Mercury	7470A	HG
Nickel	7521	NI
Selenium	7742	SE
Thallium	7841	TL
Cyanide	9010C	CN
Sulfide	9030B	S

Volatile Organic Compounds, extended list (USEPA Method 8260B):

COC Description	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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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, l-Dichloroethene; Vinylidene chloride)	DCE11
cis- l ,2-Dichloroethylene (cis- 1,2-Dichloroethene)	DCE12C
trans- l ,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- l ,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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

1,2,3-Trichloropropane	TCPR123
Vinyl acetate	VA
Vinyl chloride (Chloroethene)	VC
Xylene (total)	XYLENES

Semi-Volatile Organic Compounds (USEPA Method 8270C or D - base, neutral, & acid extractables):

Acenaphthene	ACNP
Acenaphthylene	ACNPY
Acetophenone	ACPHN
2-Acetylaminofluorene (2-AAF)	ACAMFL2
Aldrin	ALDRIN
4-Aminobiphenyl	AMINOBPH4
Anthracene	ANTH
Benzo[a]anthracene (Benzanthracene)	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-methyethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)	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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

p-Nitroaniline (4-Nitroaniline)	NO2ANIL4
Nitrobenzene	NO2BZ
o-Nitrophenol (2-Nitrophenol)	NTPH2
p-Nitrophenol (4-Nitrophenol)	NTPH4
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)	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-Nitrosospyrrolidine	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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides (USEPA Method 8151A):

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):

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	SIMAZINE

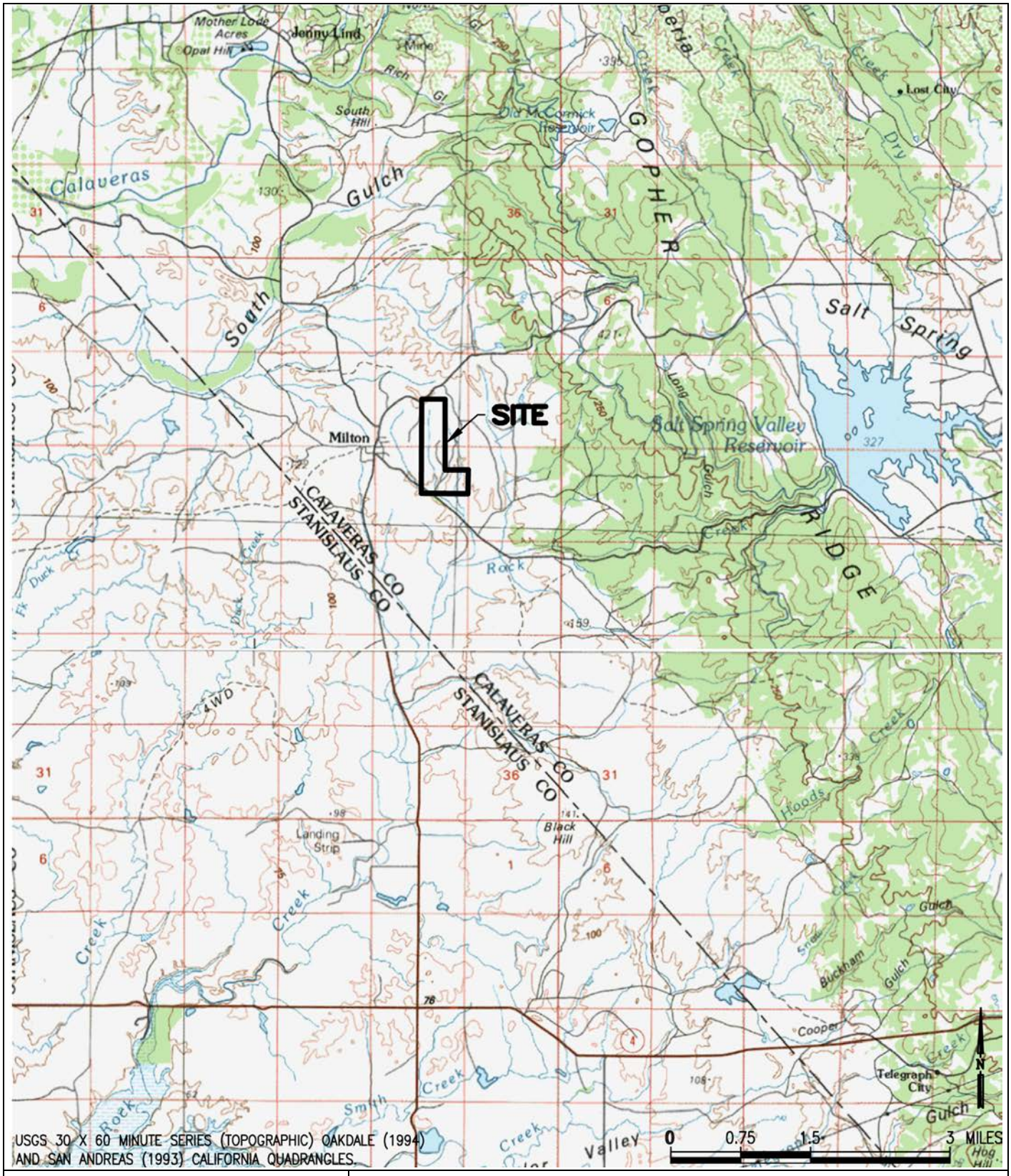
TABLE VII

LANDFILL GAS CORRECTIVE ACTION MONITORING PROGRAM (IF REQUIRED IN SECTION A.6)

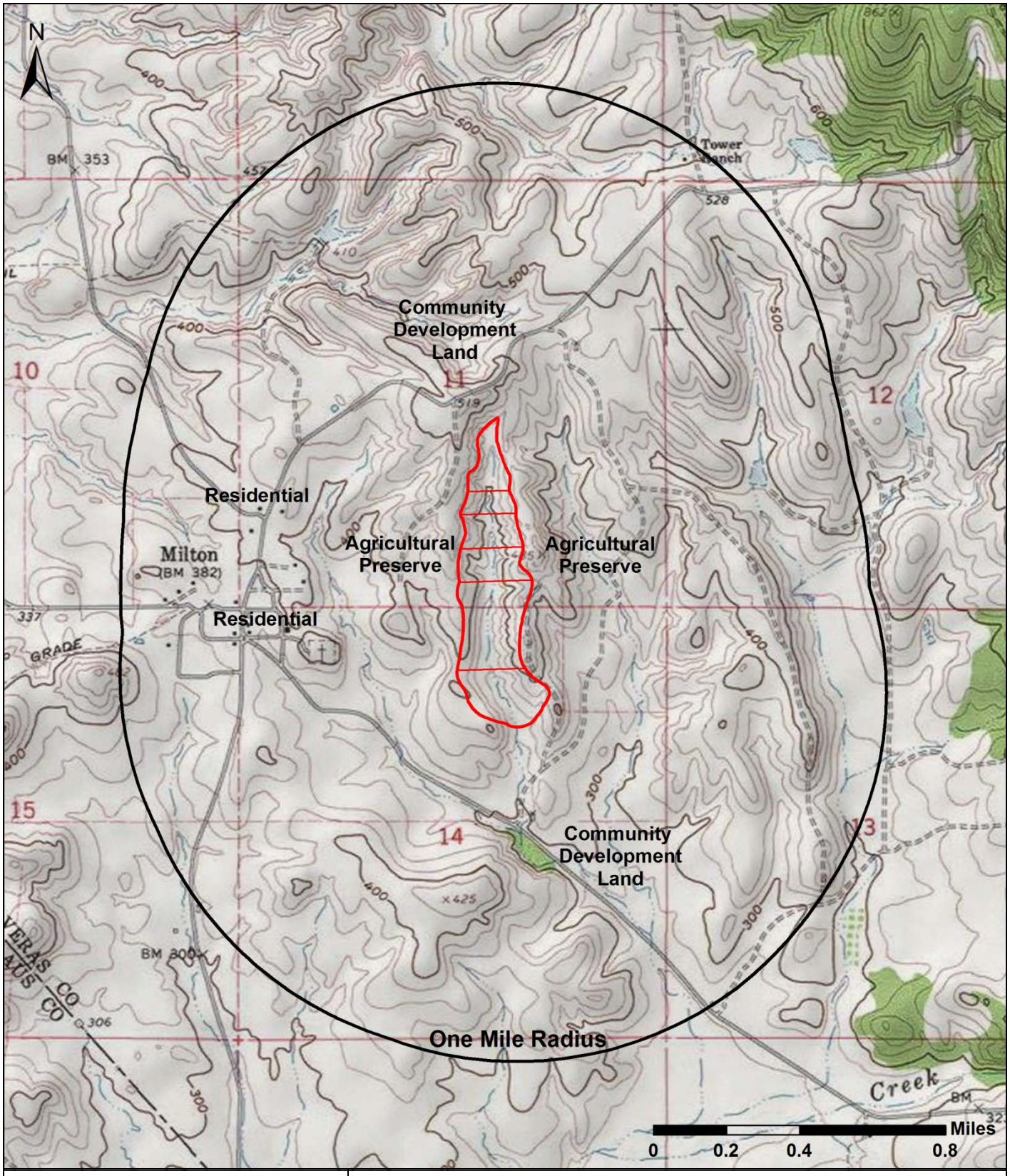
Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
LFG Control System				
Control System Run-time	--	Hours	Quarterly	Semiannual
Control System Down-time	--	%	Quarterly	Semiannual
Temperature into Plant	--	^{0}F	Quarterly	Semiannual
Flare Combustion Temperature	--	^{0}F	Quarterly	Semiannual
System Vacuum	--	mm Hg vacuum	Quarterly	Semiannual
Totalized flow into Plant	--	Cubic Feet	Quarterly	Semiannual
Totalized flow rate into Plant	--	CFM	Quarterly	Semiannual
LFG Control System Influent				
Volatile Organic Compounds[1] (USEPA TO-15)	--	ug/cm	Quarterly	Semiannual
Methane	--	%	Quarterly	Semiannual
LFG Extraction Wells (As specified in Section A.6)				
Atmospheric Temperature	--	^{0}F	Quarterly	Semiannual
Atmospheric Pressure	--	inches Hg	Quarterly	Semiannual
Methane	--	% by volume	Quarterly	Semiannual
Carbon Dioxide	--	% by volume	Quarterly	Semiannual
Oxygen	--	% by volume	Quarterly	Semiannual
Remainder gas	--	% by volume	Quarterly	Semiannual
Gas temperature at each well	--	^{0}F	Quarterly	Semiannual
Initial static pressure in wellhead	--	inches H20	Quarterly	Semiannual
Adjusted static pressure in Wellhead	--	inches H20	Quarterly	Semiannual
LFG Probes (As specified in Section A.6)				
Atmospheric Temperature	--	^{0}F	Quarterly	Semiannual
Atmospheric Pressure	--	inches Hg	Quarterly	Semiannual
Methane	--	% by volume	Quarterly	Semiannual
Carbon Dioxide	--	% by volume	Quarterly	Semiannual
Oxygen	--	% by volume	Quarterly	Semiannual
Remainder gas	--	% by volume	Quarterly	Semiannual
Probe pressure/vacuum	--	inches H20	Quarterly	Semiannual
Volatile Organic Compounds[3] (USEPA TO-15)	--	ug/cm	Quarterly	Semiannual

---

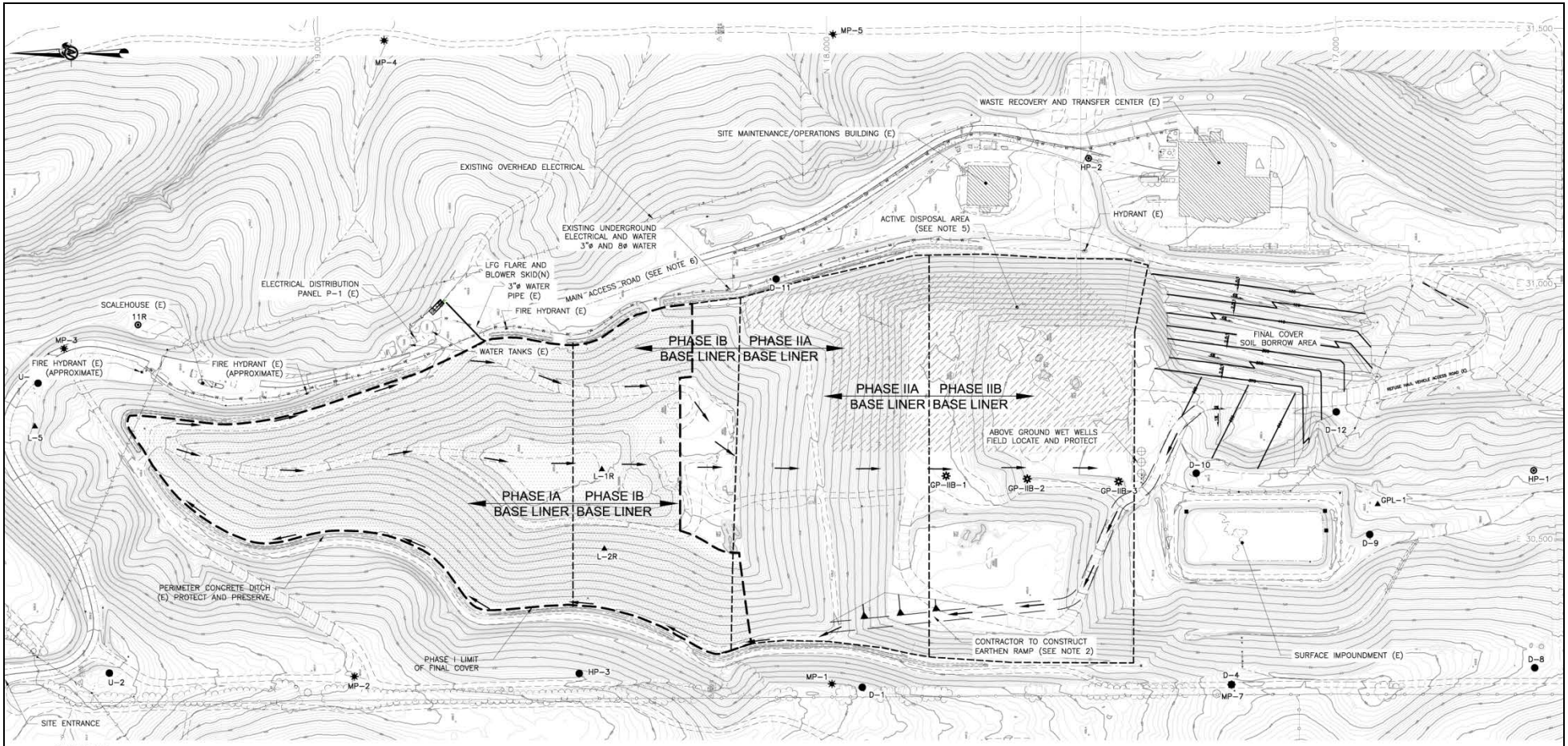
1. Gas samples may be prescreened to determine if laboratory analysis using Method TO-15 is required. A gas analyzer for methane concentrations or a Photo Ionization Detector (PID) for total VOCs concentrations may be used. If methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected at a concentration greater than 1.0 ppm then a gas sample shall be obtained and analyzed for VOCs using EPA Method TO-15. Both the screening results and laboratory analysis results shall be reported. Otherwise, the Discharger shall report the methane or total VOC screening results and no further laboratory analysis is required.



Drawing Reference: Second Semiannual 2016 and Annual 2016 Rock Creek Solid Waste Facility Figure 1 – Site Location Map	**SITE LOCATION MAP** COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CALAVERAS COUNTY



Drawing Reference:	**PREDEVELOPMENT TOPOGRAPHY AND LAND USE MAP** COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CALAVERAS COUNTY



LEGEND

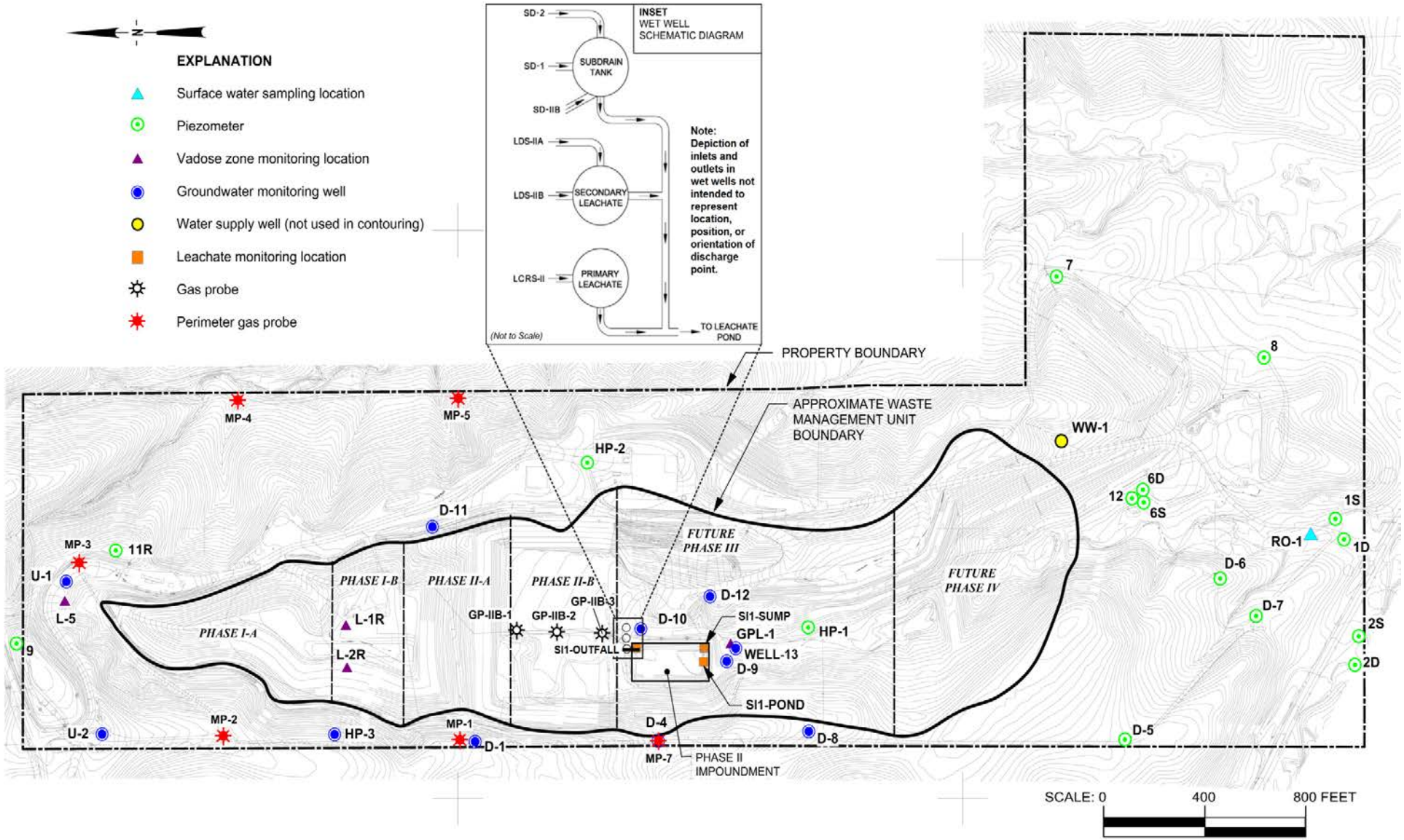
- CONTRACTOR HAUL ROAD (N)
- LIMIT OF PHASE I FINAL COVER (N)
- ELECTRICAL LINE
- WATER LINE (E)
- PHASE IA, IB, IIA, & IIB BASE LINER LIMITS
- GROUND WATER MONITORING WELL (E)
- PIEZOMETER (E)
- PERIMETER GAS PROBE (E)
- UNDERGROUND GAS PROBE (E)
- LEACHATE MONITORING LOCATION (E)
- UNDERGROUND VADOSE ZONE MONITORING LOCATION (E)
- LIMITS OF FINAL COVER
- APPROXIMATELY LIMITS OF REFUSE DISPOSAL OPERATIONS

NOTES

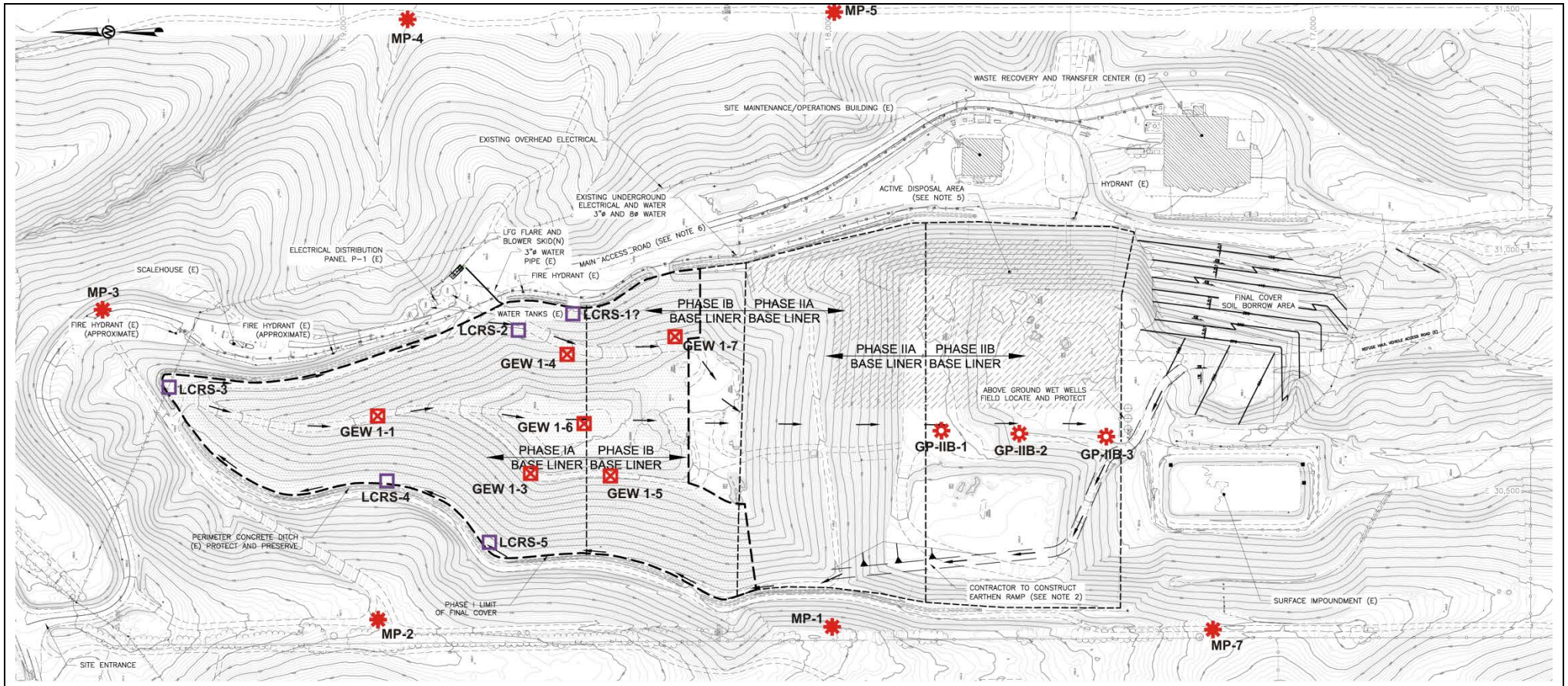
1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY VERTICAL MAPPING RESOURCES. DATE OF PHOTOGRAPHY: AUGUST 21, 2009. DATUM: HORIZONTAL – CA STATE PLANE SYSTEM ZONE 3 NAD 83, VERTICAL – NAVD 88.
2. EARTHEN RAMP TO BE CONSTRUCTED OF SOIL TO ALLOW ACCESS FROM BORROW AREA TO CLOSURE AREA. CONTRACTOR IS RESPONSIBLE FOR PROTECTING GEOSYNTHETIC MATERIALS AND REPAIRING GEOSYNTHETIC MATERIALS IF DAMAGED. RAMP TO BE LEFT IN PLACE BY CONTRACTOR UPON COMPLETION OF PROJECT.
3. CONTRACTOR TO FILL IN OR BRIDGE OVER EXISTING PERIMETER CONCRETE DITCH AS NECESSARY TO PROVIDE ACCESS FOR COVER CONSTRUCTION. IF PERIODS OF RAINFALL ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE EXISTING PERIMETER DITCH AND ALLOWING STORM WATER TO FLOW TO THE SEDIMENTATION BASIN UNIMPEDED.
4. ANY DAMAGE TO THE EXISTING CONCRETE DITCH OCCURRING DURING THE CONSTRUCTION IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR.
5. CONTRACTOR TO NOT DETRIMENTALLY AFFECT THE ACTIVE DISPOSAL OPERATIONS IN ANY WAY.
6. EXISTING PAVED ACCESS ROAD IS NOT TO BE USED FOR ANY HEAVY EQUIPMENT TRAFFIC BY CONTRACTOR. THE ONLY USE OF HEAVY EQUIPMENT ON THIS ROAD WILL BE ISOLATED TO THE LFG HEADER TRENCHING OPERATIONS.

100 0 100 200
SCALE FEET

Drawing Reference: Phase 1 Partial Final Closure Construction Rock Creek Solid Waste Facility Figure 2 – Site Plan	**EXISTING SITE PLAN** COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CALAVERAS COUNTY	



Drawing Reference: Final Closure and Postclosure Maintenance Plan Plate 3 – Monitoring Systems	**EXISTING SITE MONITORING SYSTEM LOCATIONS** COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CALAVERAS COUNTY



LEGEND

- CONTRACTOR HAUL ROAD
- LIMIT OF PHASE I FINAL COVER
- ELECTRICAL LINE
- WATER LINE
- PHASE IA, IB, IIA, & IIB BASE LINER LIMITS
- PERIMETER GAS PROBE
- UNDERGROUND GAS PROBE
- GAS EXTRACTION WELL
- LEACHATE COLLECTION RISER SYSTEM
- LEACHATE MONITORING LOCATION
- LIMITS OF FINAL COVER
- APPROXIMATE LIMITS OF REFUSE DISPOSAL OPERATIONS

NOTES

1. TOPOGRAPHIC CONTOURS PREPARED USING PHOTOGRAMMETRIC METHODS BY VERTICAL MAPPING RESOURCES. DATE OF PHOTOGRAPHY: AUGUST 21, 2009. DATUM: HORIZONTAL – CA STATE PLANE SYSTEM ZONE 3 NAD 83, VERTICAL – NAVD 88.
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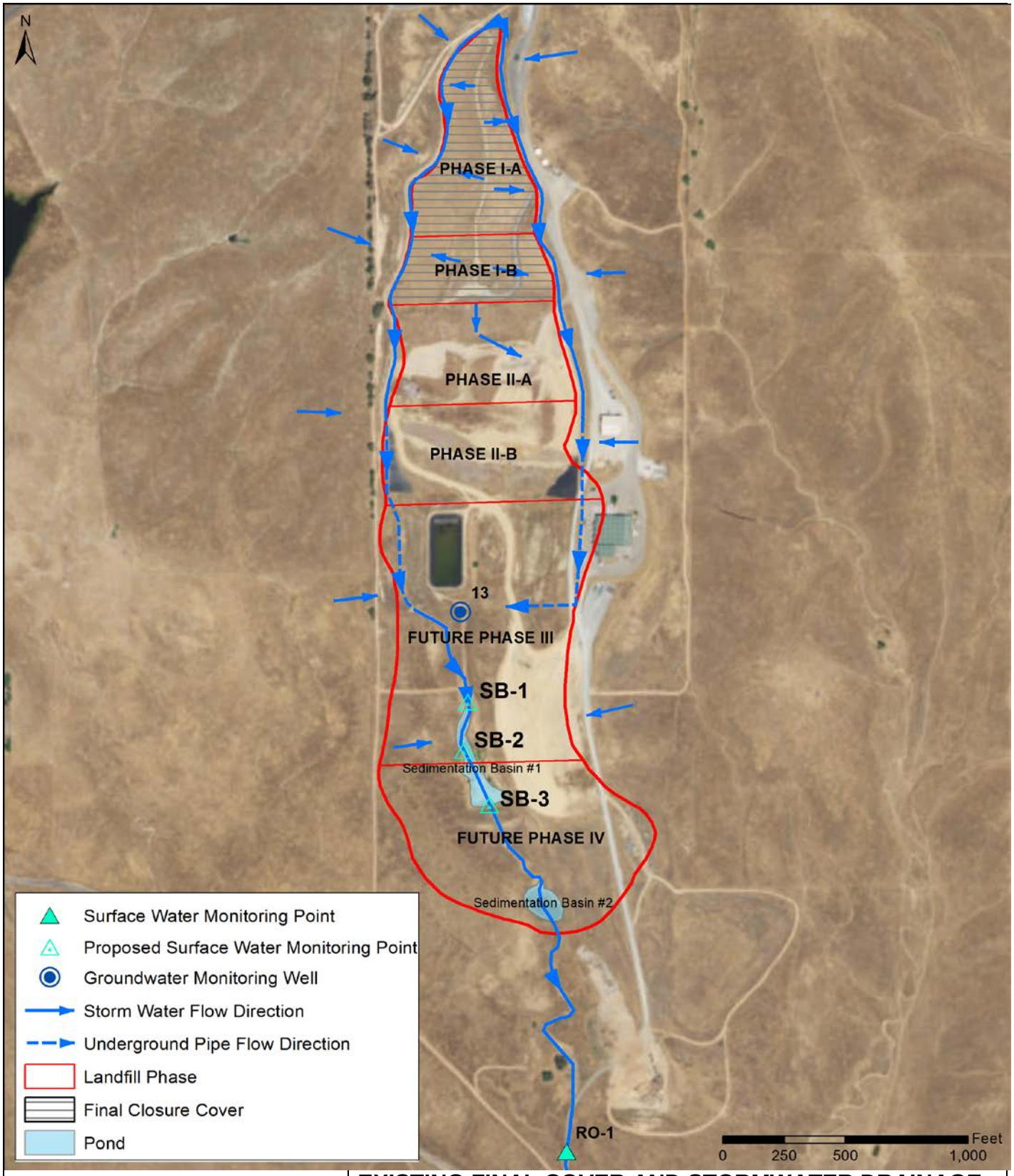
5. CONTRACTOR TO NOT DETRIMENTALLY AFFECT THE ACTIVE DISPOSAL OPERATIONS IN ANY WAY.
6. EXISTING PAVED ACCESS ROAD IS NOT TO BE USED FOR ANY HEAVY EQUIPMENT TRAFFIC BY CONTRACTOR. THE ONLY USE OF HEAVY EQUIPMENT ON THIS ROAD WILL BE ISOLATED TO THE LFG HEADER TRENCHING OPERATIONS.

100 0 100 200
SCALE FEET

Drawing Reference: Phase 1 Partial Final Closure Construction Rock Creek Solid Waste Facility Figure 2 – Site Plan	**EXISTING LANDFILL GAS MONITORING AND COLLECTION SYSTEM** COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CALAVERAS COUNTY



Drawing Reference:	**EXISTING FINAL COVER AND STORMWATER DRAINAGE PLAN** COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS ROCK CREEK SOLID WASTE FACILITY CALAVERAS COUNTY

INFORMATION SHEET

ORDER R5-2017-0108
COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS
ROCK CREEK SOLID WASTE FACILITY
CLASS II LANDFILL AND CLASS II SURFACE IMPOUNDMENT
CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION

COUNTY OF CALAVERAS, DEPARTMENT OF PUBLIC WORKS; ROCK CREEK SOLID WASTE FACILITY; CLASS II LANDFILL; CLASS II SURFACE IMPOUNDMENT; CALAVERAS COUNTY

The active landfill facility is a municipal solid waste (MSW) landfill regulated pursuant to Water Code section 13000 et seq., California Code of Regulations, title 27 (Title 27), section 20005 et seq. and Code of Federal Regulations, title 40, part 258; and in accordance with State Water Resources Control Board Resolution 93 62.

The facility is located on an approximately 200-acre property at 12021 Hunt Road, Milton of which 57 acres is permitted for refuse disposal, and approximately 24 acres have been constructed. The facility consists of landfill waste management units (WMUs) classified as Class II units for the discharge of non-hazardous waste, MSW, and designated waste, and a Class II surface impoundment.

Subsequent to the issuance of WDRs R5-2011-0029 on 8 April 2011, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) reviewed engineering design reports, construction quality assurance reports, existing operations and historical monitoring results. The Central Valley Water Board has determined that revision of existing WDRs is necessary to address the following issues, *inter alia*:

- Corrective action for non-functional unsaturated zone monitoring system, release of leachate and volatile organic compounds (VOCs) into unsaturated zone, release of leachate measured at groundwater monitoring well D-8;

- Detection monitoring wells that do not provide representative samples due to being improperly screened;

- Separation of underdrain liquids from landfill leachate and landfill gas condensate;

- Investigation of elevated concentrations of leachate constituent monitoring parameters in groundwater monitoring wells U-2 and HP-3;

- Revised Water Quality Protection Standards (WQPS) including updated Sampling and Analysis Plan (SAP);

- Technical report on seismic slope stability analysis of Phase II -B liner system and Phase I final closure cover, and technical report for side slope liner system with low permeability operations layer meeting the requirements of Title 27 section 20340;

- Placement of stormwater conveyance and storage structures in relation to facility early-detection monitoring systems.

The revised WDRs address these items as well as others in order to ensure compliance with existing laws and regulations related to protection of water quality.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS FOR WASTE DISCHARGE REQUIREMENTS FOR NONHAZARDOUS SOLID WASTE DISCHARGES REGULATED BY SUBTITLE D AND/OR TITLE 27

(40 C.F.R. section 258 and Title 27, § 20005 et seq.)

December 2015

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to nonhazardous solid waste disposal sites that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq., and municipal solid waste (MSW) landfills that are subject to the Federal Subtitle D regulations contained in 40 Code of Federal Regulations section 258 (hereafter, "Subtitle D" or "40 C.F.R. § 258.XX") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Subtitle D regulations are only applicable to MSW landfills and therefore any requirements in these SPRRs that are referenced as coming from Subtitle D are not applicable to non-MSW waste management units such as Class II surface impoundments, Class II waste piles, and non-MSW landfill units. All Subtitle D requirements in these SPRRs are referenced with "[40 C.F.R. § 258.XX]" after the requirement.

2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.

3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.

4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.

5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.

6. If there is a site-specific need to change a requirement in these SPRRs for a particular landfill facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.

7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. TERMS AND CONDITIONS

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

other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:

   a. Violation of any term or condition contained in this Order;

   b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;

   c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or

   d. A material change in the character, location, or volume of discharge.

3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:

   a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;

   b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);

   c. A change in the type of waste being accepted for disposal; or

   d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.

4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].

6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.

7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].

8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

C. STANDARD PROHIBITIONS

1. The discharge of liquid or semi-solid waste (waste containing less than 50 percent solids) is prohibited, except for the following when proposed in the ROWD/JTD and approved by this Order:

   a. Dewatered sewage or water treatment sludge as described in Title 27, section 20220(c) provided it is discharged above a composite liner with a leachate collection and removal system (LCRS) [Title 27, § 20200(d)(3)].

   b. Leachate and/or landfill gas condensate that is returned to the composite-lined waste management unit (with an LCRS) from which it came [Title 27, § 20340(g) and 40 C.F.R. § 258.28].

2. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:

   a. require a higher level of containment than provided by the unit; or
   b. are ‘restricted wastes’; or
   c. impair the integrity of containment structures;

   is prohibited [Title 27, § 20200(b)].

3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.

4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.

5. The discharge of waste to a closed landfill unit is prohibited.

6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.

7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. STANDARD DISCHARGE SPECIFICATIONS

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].

2. Leachate and landfill gas condensate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].

3. The discharge of leachate or landfill gas condensate is restricted to those portions of a waste management unit that has a composite liner system and LCRS meeting the Federal Subtitle D requirements [40 C.F.R. § 258.28].

4. Leachate and condensate returned to a composite-lined landfill unit (when approved by this Order) shall be discharged and managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS.

5. Any discharge of waste outside the portion of the landfill that was already covered with waste as of the landfill unit's respective Federal Deadline constitutes a "lateral expansion" and requires the installation of an approved composite liner system and LCRS [40 C.F.R. § 258.40(b)].

6. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.

7. The discharge shall remain within the designated disposal area at all times.

8. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. STANDARD FACILITY SPECIFICATIONS

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.

2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].

3. Interim cover is daily and intermediate cover [Title 27, § 20750(a)]. Interim cover over wastes discharged to a landfill shall be designed and constructed to minimize percolation of liquids through the wastes [Title 27, § 20705(b)].

4. Intermediate cover consisting of compacted earthen material of at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within **180 days** [Title 27, § 20700(a)].

5. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.

6. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].

7. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

8. The Discharger shall limit water used for facility maintenance within landfill areas to the minimum amount necessary for dust control and construction.

9. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.

11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.

12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).

13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.

14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].

15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan* and *Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (Industrial General Permit) or most recent general industrial storm water permit), or retain all storm water on-site.

16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.

17. New MSW landfill units or lateral expansions of existing units shall not be sited in a “wetland” [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new landfill modules that include the following:

    a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, any proposed landfill gas monitoring and extraction points, and access to the LCRS for required annual testing.

    b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.

    c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].

    d. Information about the seismic design of the proposed new module (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.

    e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.

    f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, section 21760(b).

2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.

3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].

4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].

6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].

7. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

8. All Class III landfill units shall be designed to withstand the maximum probable earthquake and Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [Title 27, § 20370(a)].

9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period [Title 27, § 21750(f)(5)].

10. New waste management units and expansions of existing units shall not be located on a known Holocene fault [Title 27, § 20260(d)].

11. Liners shall be designed and constructed to contain the fluid, including landfill gas, waste, and leachate [Title 27, § 20330(a)].

12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].

13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].

14. A test pad for each barrier layer and final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].

15. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control landfill gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [Title 27, § 20324(i)(1)].

16. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.

17. The Discharger shall propose an electronic leak location survey of the top liner for any new landfill module in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.

18. Leachate collection and removal systems are required for Class II landfills and surface impoundments, MSW landfills, and for Class III landfills which have a liner or which accept sewage or water treatment sludge [Title 27, § 20340(a)].

19. All new landfill units or lateral expansions of existing units that require a LCRS shall have a blanket-type LCRS that covers the bottom of the unit and extends as far up the sides as possible. The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit [Title 27, § 20340(e)].

20. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].

21. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the landfill unit and during the post-closure maintenance period.

22. The LCRS shall be designed to maintain the depth of fluid over any portion of the LCRS of no greater than 30 cm [40 C.F.R. § 258.40(a)(2)], excluding the leachate sump. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].

23. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].

24. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].

25. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.

26. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new lined cell or module, construction of a final cover, or any other construction that requires Central Valley Water Board staff approval under this Order.

27. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new lined landfill module. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.

28. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.

29. Prior to placement of waste in a new landfill unit, the Discharger shall monitor any pan lysimeter for the unit that has received enough rainfall to flood the LCRS sump. If liquid is detected in the pan lysimeter, the Discharger shall verify that the liquid is not from a leak in the primary liner system before waste can be accepted to the new module.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

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

2. The Discharger shall notify the Central Valley Water Board in writing that a landfill unit or portion of a unit is to be closed either at the same time that the California Department of Resources Recycling and Recovery (CalRecycle) is notified or **180 days** prior to beginning any final closure activities, whichever is sooner [Title 27, § 21710(c)(5)(A)]. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations [Title 27, § 21710(c)(5)(C)].

3. Initiation of closure activities shall begin within **30 days** of final waste receipt, or within **one year** of receipt of most recent waste if additional capacity remains [40 C.F.R. § 258.60(f)].

4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer [40 C.F.R. § 258.60(g)].

5. The Discharger shall carry out both mandatory closure and normal closure of a waste management unit or a portion of a unit in accordance with a closure and post-closure maintenance plan approved by the Central Valley Water Board [Title 27, § 20950(a)(1)] through the issuance of closure waste discharge requirements.

6. The Discharger shall notify the Central Valley Water Board that a preliminary closure and post-closure maintenance plan has been prepared and placed in the operating record by the date of initial receipt of waste at any new MSW landfill unit or lateral expansion of any existing unit [40 C.F.R. § 258.60(d)]. This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.

7. In addition to the applicable provisions of Title 27, the preliminary closure and/or the post-closure maintenance plans for MSW landfill units shall include the following:

    a. A description of the steps necessary to close all MSW landfill units at any point during their active life in accordance with the cover design requirements [40 C.F.R. § 258.60(c)];

    b. An estimate of the largest area of the landfill unit(s) ever requiring a final cover at any time during the active life of the unit(s) [40 C.F.R. § 258.60(c)(2)];

    c. An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility [40 C.F.R. § 258.60(c)(3)]; and

    d. A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. section 258.60 [40 C.F.R. § 258.60(c)(4)].

8. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, federal requirements for a MSW facility, land use of the closed unit, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].

9. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].

10. The final cover of closed landfills shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].

11. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].

12. All final cover designs shall include a minimum 1-foot thick erosion resistant layer [Title 27, § 21090(a)(3)(A)].

13. The Discharger shall close the landfill with minimum 15-foot wide benches every 50 vertical feet [Title 27, § 21090(a)].

14. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one and designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required in Title 27, section 21750(f)(5) [Title 27, § 21090(a)].

15. For any portions of the final cover installed after July 18, 1997, for which the Central Valley Water Board has not approved a slope and foundation stability report on or before that date, the Discharger shall meet the requirements of Title 27, section 21750(f)(5) [Title 27, § 21090(a)(6)].

16. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].

17. The Discharger shall design storm water conveyance systems for closed Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for closed Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

18. Closed landfill units shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment

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

19. Following closure of any MSW landfill units, the Discharger shall notify the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the post-closure maintenance plan [Title 27, § 20515(a)(4) and §21170, and 40 C.F.R. § 258.60(i)].

20. Construction or repair of the final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].

21. The Discharger shall incorporate into the closure and post-closure maintenance plan a cover-integrity monitoring and maintenance program which includes at least the following: a periodic leak search, periodic identification of other problem areas, prompt cover repair, and vegetation maintenance [Title 27, § 21090(a)(4)].

22. The Discharger shall complete a final cover survey upon completion of closure activities for that portion of the landfill. The final cover surveys shall include an initial survey and map [Title 27, § 21090(e)(1). Every **five years**, the Discharger shall conduct a survey of the closed landfill cover and submit an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer [Title 27, § 21090(e)(2)].

23. Within **30 days** of completion of <u>all</u> closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].

24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].

25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

26. The Discharger shall conduct a periodic leak search to monitor of the integrity of the final cover in accordance with the schedule in the approved final post-closure maintenance plan [Title 27, § 21090(a)(4)(A)].

27. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, areas damaged by equipment operations, and localized areas identified in the required five-year iso-settlement survey [Title 27, § 21090(a)(4)(B)].

28. The Discharger shall repair the cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].

29. Throughout the post-closure maintenance period, the Discharger shall maintain the structural integrity and effectiveness of all containment structures, maintain the final cover as necessary to correct the effects of settlement and other adverse factors, continue to operate the LCRS as long as leachate is generated and detected, maintain the monitoring systems, prevent erosion and related damage of the final cover due to drainage, and protect and maintain surveyed monuments [Title 27, § 21090(c)].

30. Post-closure maintenance shall be conducted for a minimum period of **30 years** or until the waste no longer poses a threat to environmental quality, whichever is greater [Title 27, § 21180(a) and Title 27, § 21900(a)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

1. The Discharger shall establish an irrevocable fund for closure and post-closure maintenance to ensure closure and post-closure maintenance of each classified unit in accordance with an approved closure and post-closure maintenance plan [Title 27, § 20950(f) and § 22207(a)].

2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b), § 22221, and § 22222].

I. STANDARD MONITORING SPECIFICATIONS

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

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].

3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].

4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].

5. A Detection Monitoring Program for a new landfill facility shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].

6. Background for water samples or soil-pore gas samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).

7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:

   a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;

   b. Sample preservation information and shipment procedures;

   c. Sample analytical methods and procedures;

   d. Sample quality assurance/quality control (QA/QC) procedures;

   e. Chain of Custody control; and

   f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

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

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

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

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.

10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., “trace” or “ND”) in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.

11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).

12. **“Trace” results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.

13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.

14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result**. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries**. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.

17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.

18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)]. Groundwater samples shall not be field-filtered prior to laboratory analysis [40 C.F.R. § 258.53(b)]. Groundwater samples needing filtering (e.g., samples to be analyzed for dissolved metals) shall be filtered by the laboratory prior to analysis.

19. Groundwater elevations shall be measured in each well immediately prior to purging, each time groundwater is sampled. The owner or operator shall determine the rate and direction of groundwater flow each time groundwater is sampled. Groundwater elevations in wells which monitor the same waste management area shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction [40 C.F.R. § 258.53(d)].

20. Monitoring wells, piezometers, and other measurement, sampling, and analytical devices must be operated and maintained so that they perform to design

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

21. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].

22. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].

23. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.

24. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.

25. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].

26. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405).

27. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].

28. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].

29. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of

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

30. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].

31. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].

32. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].

33. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].

34. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].

35. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].

36. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 21415(e)(13)].

37. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].

38. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].

39. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for

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

40. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.

41. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.

42. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger’s technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a “trace” detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory’s concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of “ties”.

43. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall

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

44. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.

45. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:

    a. Standard Monitoring Specification I.46 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and

    b. Standard Monitoring Specification I.47 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

46. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples**. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:

    a. **Initial Determination of Measurably Significant Evidence of a Release**. Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if ***either:***

        1) The data contains two or more analytes that equal or exceed their respective MDLs; or

        2) The data contains one or more analyte that equals or exceeds its PQL.

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

1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.46.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.

2) **Confirmation of a Release**. As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:

a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and

b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.

c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

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

a. **Initial Determination of Measurably Significant Evidence of a Release**. The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there in measurably significant evidence of a release [Title 27, § 20420(i)].

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

1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.47.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single "composite" retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two "discrete" retests (i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.

2) **Confirmation of a Release**. As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.47.b.1, above and shall:

a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and

b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.

c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

48. **Physical Evidence of a Release**. If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately

verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

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

   a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].

   b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].

   c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).

   d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an <u>initial</u> engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed

description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

e. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].

f. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.c is approved (the date is it established), the Discharger shall complete and submit the following:

i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].

ii) **Updated Engineering Feasibility Study.** An <u>updated</u> engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].

iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

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

K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

2. All reports and transmittal letters shall be signed by persons identified below:

   a. For a corporation: by a principal executive officer of at least the level of senior vice-president.

   b. For a partnership or sole proprietorship: by a general partner or the proprietor.

   c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.

   d. A duly authorized representative of a person designated in a, b or c above if:

      1) The authorization is made in writing by a person described in a, b, or c of this provision;

      2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and

      3) The written authorization is submitted to the Central Valley Water Board.

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

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

3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and from gases and leachate generated by discharged waste during the active life, closure, and post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.

5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of this Order.

6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].

7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].

8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or

operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.

9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].

10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. STORM WATER PROVISIONS

1. New and existing Class III landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20260(c)].

2. New and existing Class II landfills shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return period [Title 27, § 20250(c)].

3. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

4. MSW landfills located in a 100-year floodplain shall demonstrate that the landfill unit will not restrict the flow of the 100-year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health or the environment [40 C.F.R. § 258.11(a)].

5. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding,

infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].

6. Precipitation on landfills or waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].

7. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:

    a. accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit:

    b. effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities;

    c. prevent surface erosion;

    d. control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste;

    e. take into account:

        i) for closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern;

        ii) for operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time;

        iii) the possible effects of the waste management unit's drainage pattern on and by the regional watershed;

        iv) the design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility; and

    f. preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

8. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].

9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].

10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].

11. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS FOR WASTE DISCHARGE REQUIREMENTS FOR INDUSTRIAL FACILITIES REGULATED BY TITLE 27

(Title 27, § 20005 et seq.)

April 2016

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to Class II surface impoundments, waste piles, and land treatment units that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.

2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.

3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.

4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.

5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.

6. If there is a site-specific need to change a requirement in these SPRRs for a particular facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.

7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. TERMS AND CONDITIONS

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:

a. Violation of any term or condition contained in this Order;

b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;

c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or

d. A material change in the character, location, or volume of discharge.

3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:

   a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;

   b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);

   c. A change in the type of waste being accepted for disposal; or

   d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.

4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].

6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.

7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is

made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].

8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

C. STANDARD PROHIBITIONS

1. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:

   a. require a higher level of containment than provided by the unit; or

   b. are ‘restricted wastes’; or

   c. impair the integrity of containment structures;

   is prohibited [Title 27, § 20200(b)].

2. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.

3. The discharge of waste to a closed waste management unit is prohibited.

4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited, except within the treatment zone at a land treatment unit.

5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. STANDARD DISCHARGE SPECIFICATIONS

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].

2. Leachate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].

3. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.

4. The discharge shall remain within the designated disposal area at all times.

5. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. STANDARD FACILITY SPECIFICATIONS

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.

2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].

3. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].

4. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.

5. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

6. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.

7. The Discharger shall maintain the depth of the fluid in the sump of each waste management unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).

8. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].

9. The Discharger shall maintain a *Storm Water Pollution Prevention Plan* and *Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.

F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new Class II waste management units that include the following:

    a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, and access to the LCRS for required annual testing.

    b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.

    c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].

    d. Information about the seismic design of the proposed new waste management unit (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.

    e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.

    f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, sections 21760(b) and 20375(b).

2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.

3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have

been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].

4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].

6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].

7. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

8. All Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion [Title 27, § 20370(a)].

9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the waste management unit foundation, final slopes, and containment systems under both static and dynamic conditions throughout the life of the unit [Title 27, § 21750(f)(5)].

10. New Class II Units, other than LTUs and expansions of existing Class II units, shall have a 200 foot setback from any known Holocene fault. [Title 27, § 20250(d)].

11. Liners shall be designed and constructed to contain the fluid, including waste, and leachate [Title 27, § 20330(a)].

12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].

13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].

14. A test pad for each barrier layer and any final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].

15. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.

16. The Discharger shall propose an electronic leak location survey of the top liner for any new waste management unit in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.

17. Leachate collection and removal systems are required for Class II surface impoundments [Title 27, § 20340(a)].

18. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].

19. Leachate collection and removal systems shall be designed and operated to function without clogging through the life of the waste management unit.

20. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].

21. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].

22. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].

23. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.

24. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new Class II waste management unit, construction of a final cover (for units closed as a landfill), or any other construction that requires Central Valley Water Board staff approval under this Order.

25. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new Class II waste management unit. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.

26. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

1. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, future land use, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].

2. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].

3. The final cover of waste management units closed as a landfill shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].

4. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].

5. All final cover designs shall include a minimum 1-foot thick erosion resistant vegetative layer or a mechanically erosion-resistant layer [Title 27, § 21090(a)(3)(A)(1 & 2)].

6. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].

7. The Discharger shall design storm water conveyance systems for Class II units that are closed as a landfill for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

8. Construction or repair of a final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].

9. Within **30 days** of completion of <u>all</u> closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that units that are closed as a landfill shall be maintained in accordance with an approved post-closure maintenance plan [Title 27, § 21710(c)(6)].

10. The post-closure maintenance period for units closed as a landfill shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

11. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, and any areas damaged by equipment operations [Title 27, § 21090(a)(4)(B)].

12. The Discharger shall repair any cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

1. The Discharger shall establish an irrevocable fund (or provide other means) for closure to ensure closure of each Class II unit in accordance with an approved closure plan [Title 27, § 20950(f) and § 22207(a)].

2. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management unit [Title 27, §20380(b) and § 22222].

I. STANDARD MONITORING SPECIFICATIONS

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that

monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4)].

2. All monitoring systems shall be designed and certified by a registered geologist or a registered civil engineer [Title 27, § 20415(e)(1)].

3. All monitoring wells shall be cased and constructed in a manner that maintains the integrity of the monitoring well bore hole and prevents the bore hole from acting as a conduit for contaminant transport [Title 27, § 20415(b)(4)(A)].

4. All sample chemical analyses of any material shall be performed by a laboratory certified by the California Department of Health Services [Wat. Code, § 13176(a)].

5. A Detection Monitoring Program for a new Class II waste management unit shall be installed, operational, and one year of monitoring data collected from background monitoring points prior to the discharge of wastes [Title 27, § 20415(e)(6)].

6. Background for water samples shall be represented by the data from all samples taken from applicable background monitoring points during that reporting period (at least one sample from each background monitoring point).

7. The Discharger shall submit for approval, establish, and maintain an approved Sample Collection and Analysis Plan. The Sample Collection and Analysis Plan shall at a minimum include:

   a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;

   b. Sample preservation information and shipment procedures;

   c. Sample analytical methods and procedures;

   d. Sample quality assurance/quality control (QA/QC) procedures;

   e. Chain of Custody control; and

   f. Sample analysis information including sample preparation techniques to avoid matrix interferences, method detection limits (MDLs), practical quantitation limits (PQLs) and reporting limits (RLs), and procedures for reporting trace results between the MDL and PQL.

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

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.

9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.

10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., “trace” or “ND”) in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.

11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).

12. **“Trace” results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.

13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.

14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively

interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The **MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result**. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries**. In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.

17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.

18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)].

19. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].

20. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].

21. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.

22. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.

23. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].

24. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405).

25. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].

26. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].

27. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].

28. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].

29. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].

30. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].

31. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].

32. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].

33. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].

34. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 20415(e)(13)].

35. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].

36. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].

37. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for determining "measurably significant" (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].

38. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether

there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.

39. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.

40. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger's technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX, Article 19 to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".

41. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).

42. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.

43. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the

Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:

a. Standard Monitoring Specification I.44 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and

b. Standard Monitoring Specification I.45 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

44. **Verification Procedure for Analytes Detected in Less than 10% of Background Samples**. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:

a. **Initial Determination of Measurably Significant Evidence of a Release**. Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if ***either:***

1) The data contains two or more analytes that equal or exceed their respective MDLs; or

2) The data contains one or more analyte that equals or exceeds its PQL.

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

1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.44.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.

2) **Confirmation of a Release**. As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more

analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:

a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and

b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.

c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

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

a. **Initial Determination of Measurably Significant Evidence of a Release**. The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there in measurably significant evidence of a release [Title 27, § 20420(i)].

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

1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.45.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(8)(E)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests

(i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.

2) **Confirmation of a Release**. As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.45.b.1, above and shall:

a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and

b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.

c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

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

J. RESPONSE TO A RELEASE

1. **Measurably Significant Evidence of a Release Has Been Confirmed**. If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.44 or I.45, then the Discharger shall:

   a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].

   b. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)].

   c. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an <u>initial</u> engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

   d. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the

waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].

e. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.b is approved (the date is it established), the Discharger shall complete and submit the following:

i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].

ii) **Updated Engineering Feasibility Study.** An <u>updated</u> engineering feasibility study for corrective action based on the data collected to delineate the release and data from the ongoing monitoring program required under Title 27, section 20425(e) [Title 27, § 20425(c)].

iii) **Amended ROWD for a Corrective Action Program.** An amended report of waste discharge to establish a Corrective Action Program meeting the requirements of Title 27, section 20430 based on the data collected to delineate the release and based on the updated engineering feasibility study [Title 27, § 20425(d)].

K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.

2. All reports and transmittal letters shall be signed by persons identified below:

   a. For a corporation: by a principal executive officer of at least the level of senior vice-president.

   b. For a partnership or sole proprietorship: by a general partner or the proprietor.

c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.

d. A duly authorized representative of a person designated in a, b or c above if:

   1) The authorization is made in writing by a person described in a, b, or c of this provision;

   2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and

   3) The written authorization is submitted to the Central Valley Water Board.

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

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

3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.

4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and leachate generated by discharged waste during the active life, closure, and any post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.

5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger's violations of this Order.

6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost

estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].

7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].

8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.

9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].

10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. STORM WATER PROVISIONS

1. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].

2. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].

3. Precipitation on Class II waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].

4. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:

    a. Accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit.

    b. Effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities.

    c. Prevent surface erosion through the use of energy dissipators where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion.

    d. Control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.

    e. Take into account:

        i) For closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern.

        ii) For operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time.

        iii) The possible effects of the waste management unit's drainage pattern on and by the regional watershed.

        iv) The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility.

    f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

5. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].

6. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].

7. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].

8. Any drainage layer in a final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].