

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2016-0042

WASTE DISCHARGE REQUIREMENTS
FOR
WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.
ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY
CLASS II AND CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE,
POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
ALAMEDA COUNTY

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

1. Waste Management of Alameda County, Inc. (hereinafter Discharger or WMAC) owns and operates the Altamont Landfill and Resource Recovery Facility (hereinafter ALRRF or Facility) about 3.5 miles east of the City of Livermore's eastern boundary, in Sections 15, 16, 17, and 21, T2S, R3E, MDB&M. 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 section 258 (a.k.a. Subtitle D) in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
 - a. Attachment A – Site Location Map
 - b. Attachment B – Predevelopment Topography and Land Use Map
 - c. Attachment C – Site Plan and 2014 Topography
 - d. Attachment D – Groundwater Sampling Locations and Fault Zone Map
 - e. Attachment E – Surface Water and Unsaturated Zone Monitoring Locations
 - f. Attachment F – Fill Area 1- Existing Landfill Gas Collection System, Fill Area 2- Proposed Landfill Gas Collection System, and Perimeter Landfill Gas Probes
 - g. Attachment G – Site Geologic Hazards and Shallow Groundwater Locations
 - h. Attachment H – Existing Storm Water Drainage Plan
 - i. Attachment I – Conceptual Final Covers and Storm Water Drainage Plan
3. On 30 July 2015, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. The ROWD contains the applicable information required in Title 27. On 30 November 2015, the Discharger submitted revisions to the JTD to better reflect and/or clarify landfill design and operation. On 16 December 2015 the Discharger requested that the revised waste discharge requirements (WDRs) Order not include waste discharge requirements for a

composting facility since the Discharger is currently reevaluating and considering other siting alternatives. Therefore, these revised WDRs do not include provisions allowing construction or operation of a composting facility.

4. The information in the ROWD/JTD and supporting documents submitted thereafter has been used in revising current WDRs Order R5-2009-0055.
5. Upon adoption of WDR Order R5-2016-0042, Monitoring and Reporting Program (MRP) R5-2009-0055 shall remain in effect until 23 September 2016, on which date MRP Order R5-2016-0042 shall go into effect.

SITE DESCRIPTION

6. The facility is on a 2,064 acre property at 10840 Altamont Pass Road, in the unincorporated area of Alameda County, as shown in Attachment A. The existing and future landfill area is approximately 472 acres (in plan) of which 260 acres (Fill Area 1 plus Fill Area 2 Unit 1 Phase 1) have been constructed. Existing landfill waste management units (hereafter WMU or Unit) consist of the following:

- a. Fill Area 1 Unit 1, an unlined landfill Unit covering 122 acres;
- b. Fill Area 1 Unit 2, a lined landfill Unit covering 112 acres;
- c. Fill Area 2 Unit 1, Phase 1, a lined landfill Unit covering 25 acres.

The facility is comprised of Alameda County Assessor's Parcel Numbers (APN) 99B-6225-1, 99B-6250-1, 99B-6275-1-1, 99B-6275-1-2, 99B-6275-1-3, 99B-6275-1-4, 99B-6062-1-2, 99B-6062-2, 99B-6062-3-4, and 99B-6062-5-2.

7. The existing and future permitted landfill area is shown in Attachment B, which also shows predevelopment topography and land use. The ALRRF is located in a sparsely populated area. The ALRRF lies within a land use area zoned as "A" District, which is primarily used for agricultural purposes (public utility and sanitary landfill uses are granted within this designation through the issuance of a conditional use permit (CUP)). Adjacent land uses within 1,000 feet of the facility include dry-land farming, cattle grazing, power-producing windmills, water storage and conservation. Subsidiaries of FPL Energy, Inc., leases portions of the facility property for the installation and operation of power-producing windmills.
8. The facility began disposal operations in 1980 and currently operates under permits issued to WMAC, formerly known as Oakland Scavenger Company (OSC). The ALRRF is currently owned and operated by WMAC, a wholly owned subsidiary of Waste Management (WM).
9. The Facility is located near the crest of the Diablo Range in an area characterized by steep rolling hills (Altamont Hills). Facility elevations vary from a low of about 450 feet above mean sea level (MSL) in the southeast corner, to a high of 1262 feet above MSL on the highest hill in the west portion of the existing Facility.

10. In addition to storm-water runoff, natural groundwater seepage contributes to the discharge from the Altamont Hills. The locations of formerly identified groundwater seeps in the vicinity of the ALRRF are shown on Attachment G. These seeps were identified on the National Wetlands Inventory "Altamont" and "Byron Hot Springs" maps prepared by U. S. Department of Interior in 1987, and in the RUST Environment & Infrastructure, Inc. *Class II Expansion Area Site Characterization Report, Altamont Landfill and Resource Recovery Facility* (RUST report [1994a]). Groundwater seepage is common in the region as evidenced by areas of standing water in the valley bottoms that remains throughout the end of the dry season. The general existing storm-water flow directions for Fill Area 1 and Fill Area 2 are shown on Attachment H.
11. The Discharger's JTD indicates that there are 11 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site. The wells include, 2S/3E 18C 2, 2S/3E 18J 1, 2S/3E 18J 2, 2S/3E 18J 5, 2S/3E 18J 6, 2S/3E 18J 7, 2S/3E 18 J 8, 2S/3E 19H 1, 2S/3E 21E 1, 2S/3E 21K 1, and 2S/3E 29C 1. There are no on-site water supply wells.
12. The facility accepted approximately 1.17 million tons of waste material in 2014 which included 1.124 million tons of municipal solid waste, 2,951 tons of C&D waste, 8,550 tons of friable asbestos waste, and 35,724 tons of other special and designated waste. The Discharger estimates that in the next five years the Facility will receive an average 1.21 million tons of waste per year. In the Discharger's JTD revisions, the Discharger reported that on 16 November 2015, it received approval from Bay Area Air Quality Management District to increase the decomposable waste disposal capacity in Fill Area 1 by 3.92 million tons. Therefore, according to the Discharger, Fill Area 1 may not reach its capacity for ten years or more depending on Fill Area 2 filling, future flow rates and types of waste received. The Discharger is permitted to accept peak daily waste disposal quantities of 11,150 tons per day. As currently planned, when Fill Area 2 is completely constructed it will have a disposal capacity of 36.1 million tons of decomposable waste, not including intermediate and final covers, alternative daily covers and other beneficial reuses. The Discharger's current waste disposal permit limits the total decomposable waste placed in Fill Area 2 to 40 million tons (less the actual decomposable tons placed in Fill Area 1 that exceed 47.1 million tons). The waste footprint for Fill Area 2 will be less than or equal to the permitted 250 acres. The current design for Fill Area 2 footprint is 237 acres but may be modified in the future up to but not exceeding 250 acres as Fill Area 2 is developed. If the average daily discharge follows current projections the Discharger estimates it will take approximately 59 years for Fill Area 2 to reach capacity.
13. The revisions to the current WDRs addressed in these revised WDRs include but are not limited to:
 - a. provisions requiring changes/improvements to the groundwater, surface water, and unsaturated zone monitoring systems;
 - b. addition of prohibitions, specifications, provisions, and monitoring and reporting requirements associated with construction of Class II surface impoundments;

- c. provisions requiring the Discharger to submit Title 27 compliant water quality protection standards (WQPS) including appropriate concentration limits and an approved sample collection and analysis plan;
 - d. corrective actions for gas and/or leachate releases from Fill Area 1; and
 - e. provisions requiring a technical report on impacts on the Discharger’s groundwater monitoring system from releases of storm water from unlined storm water sedimentation ponds.
14. On 24 April 2009, the Central Valley Water Board issued Order R5-2009-0055 in which the landfill WMUs at the facility were classified as Class II and Class III Units for the discharge of non-hazardous waste, municipal solid waste, and designated waste. This Order continues to classify the landfill Units as Class II and Class III Units in accordance with Title 27.
15. The existing and future landfill WMUs authorized by this Order are described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner/LCRS¹ Components²</u>	<u>WMU Classification & Status</u>
Fill Area 1, Unit 1	122 acres	Unlined	Class III
Fill Area 1, Unit 2	113 acres	Lined	Class II
Fill Area 2, Unit 1	208 acres	Lined	Class II, 208 acres with 25 acres currently active ³
Fill Area 2, Unit 2	29 acres	Lined	Class II, future
Fill Area 2 Liquid Waste Surface Impoundment	2.5 acres in plan view, (8 M gallons)	Double Lined	Class II, constructed but not active to date
Fill Area 1 and 2 ⁴ Liquid Waste Surface Impoundment	1 acre in plan view (4.6 M gallons)	Double Lined	Class II, future
Fill Area 1 and 2 ⁴ Liquid Waste Surface Impoundment	1 acre in plan view (4.8 M gallons)	Double Lined	Class II, future

¹ LCRS – Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted

³ Fill Area 2, Unit 1 footprint is currently designed for 208 acres. However, at the time of adoption of this Order only Phase 1 of Fill Area 2 Unit 1 has been constructed accounting for 25 acres. The acreages of Fill Area 2 Units 1 and 2 may be modified, but the combined acreage shall not exceed 250 acres.

⁴ The final acreages, storage depths, and capacities of the leachate surface impoundments can change but the storage capacity is based on a finalized water balance analysis.

16. The base of refuse at the toe of Fill Area 1 is estimated to be at an elevation of 710 feet above MSL. The current top-of-fill elevations for Fill Area 1 range from between

approximately 1150 feet and 1160 feet above MSL, based on 31 December 2014 topography. The conceptual final grading plan for Fill Area 1 is shown in Attachment I. The base of refuse at the sump for Fill Area 2 Unit 1 is designed at an elevation of approximately 540 feet above MSL. As shown on the Fill Area 2 Unit 1 conceptual final grading plan (Attachment I), the currently proposed maximum elevation of Fill Area 2 Unit 1 is 990 feet above MSL. The conceptual final grading plans, including acreages, elevations, volumes, and design capacities, for Fill Areas 1 and 2 may be modified as long as they are consistent with the design parameters specified in the Solid Waste Facility and BAAQMD permits.

17. The existing on-site facilities at the ALRRF as shown in Attachment C include: existing WMUs, soil stockpiles and borrow areas, administrative offices, a transfer truck waste staging area, recycling operations (green and wood waste grinding and transfer, construction and demolition debris transfer, white goods, tire shredding, and landfill gas), an active landfill gas extraction system, a landfill gas-to-energy plant, landfill gas to liquid natural gas conversion facility; landfill gas flares, a household hazardous waste (HHW) storage area, a maintenance building, fueling facility, truck wash facilities and wash water storage, a wastewater treatment plant, organic waste processing facility, and a meteorological station.
18. The following future facilities at the ALRRF which are described in these WDRs:
 - a. Addition of Class II designated solid waste disposal area within Fill Area 2 Unit 1 area through construction of future phases;
 - b. Addition of Class II designated solid waste disposal area within Fill Area 2 Unit 2 area;
 - c. Addition of three Class II surface impoundments (one has already been constructed) for designated liquid waste storage discharged from Fill Area 1 and Fill Area 2 approximately located as shown in Attachment C;
 - d. Addition of a Materials Recovery Facility (MRF) to complement and expand on the recovery of recyclables, wood waste and green waste materials at the ALRRF; and
 - e. Addition of a truck wash facility in Fill Area 2.
19. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations section 258, and are hereinafter referred to as either "Subtitle D" in reference to the RCRA federal law that required the regulations or "40 C.F.R. section 258.XX". These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board 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 that are either more stringent or that do not exist in Title 27.

20. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015 attached to this Order and hereby incorporated into and made a part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) R5-2016-0042 and in the SPRRs. In general, requirements that are either in regulation or otherwise apply to all MSW landfills are considered to be “standard” and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through H) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
21. 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.

PREVIOUS ENFORCEMENT

22. On 11 April 2014 Board staff issued a notice of violation to the Discharger following the Water Board staff inspection on 15 November 2013. Excavation of Fill Area 2 had begun without prior submission of design plans and specifications, as well as approval of construction quality assurance plans as required by WDRs Order R5-2009-0055.
23. On 23 May 2014 Board staff requested a revised corrective action plan for groundwater monitoring well E-20B. Water Board staff addressed comments from the Discharger regarding VOC detection in monitoring well E-20B and PC-1. The Discharger stated that the source of VOCs in groundwater monitoring wells is due to landfill gas migration and not a release of landfill leachate. Board staff noted amongst other concerns that the revised corrective action plan should propose detailed corrective action measures to be taken to prevent the migration of VOCs beyond Fill Area 1, and to reduce VOC impacts in groundwater around E-20B such that water quality protection standards are achieved. The revised corrective action plan should include corrective action monitoring of the Discharger’s active landfill gas extraction system.
24. On 1 August 2014 Board staff issued a notice of violation to the discharger for accepting hazardous waste. On 27 February 2014 the discharger accepted 7,200 gallons (30.12 tons) of waste water containing 280 micrograms per liter of Dinoseb that was improperly profiled by the generator. This hazardous waste was discharged to one of the site’s solidification basins, and after it was solidified it was discharged into the landfill. The Discharger was required to completely remove the entire volume of illegally discharged

Dinoseb hazardous waste. Dinoseb has historically been detected twice in the WMU's leachate and three times in the unsaturated zone.

25. On 10 October 2014 Board staff notified the Discharger that it had reviewed the Discharger's revised E-20B corrective action plan (CAP). The revised CAP continued to assert that the source of VOCs in E-20B was due to landfill gas migration. Board staff did not concur based on the information provided and required additional work to be done by the Discharger. The Discharger proposed installing a groundwater monitoring well downgradient of E-20B; Board staff concurred but required a well cluster that monitors both shallow and deep groundwater. Board staff also reiterated that if the Discharger's method of corrective action is through changes in size and operation of its active landfill gas (LFG) extraction system in Fill Area 1 the Discharger must provide information regarding the size and operation of its LFG extraction well system including but not limited to gas extraction data, well construction details, vacuum, flow, volume, radius of influence estimates, and concentrations of VOCs in LFG for LFG wells located along the western boundary of Fill Area 1. These WDRs require the Discharger to provide information regarding its active landfill gas extraction system and the effectiveness thereof so long as the Discharger proposes to use landfill gas extraction as a corrective action measure.
26. On 13 October 2014 Board staff notified the Discharger of review of the Discharger's 2013 Annual Groundwater Monitoring Report and the First Semiannual 2014 Groundwater Monitoring Report. Board staff identified several issues related to these monitoring reports such as deficiencies in the Discharger's groundwater sampling, analysis, and reporting methods. WMAC provided a re-evaluation of the site hydrogeologic conceptual model in multiple reports and letters in 2015 and 2016, where they stated that if constituents flowed along bedding planes, they would reach depths exceeding 1,000 feet below MSL, and at this depth, groundwater is characterized as mineralized/saline water. Staff concurred with this interpretation, and in a 6 May 2016 letter, staff stated that it is not currently requiring wells to be installed to intercept these bedding planes.
27. On 10 February 2015 the Discharger notified Water board staff of VOCs detected in MW-12 during the First Quarter 2015 monitoring. The Discharger reported that a 9 January 2015 sample contained detections of three VOCs at concentrations below the reporting limit. The Discharger noted that resampling of this well will be conducted and resampling results will be reported under separate cover and if detected again Water board staff will be notified.
28. On 2 September 2015 Board staff sent the Discharger a summary of the 11 August 2015 meeting with Permitting and Compliance and Enforcement staff and the Discharger. Topics discussed included the installation of the liner system in Fill Area 2, Phase 1, the location of a newly proposed Class II surface impoundment, compliance with WDRs and Title 27, closure of Fill Area 1, proposal of 111 acre composting facility atop Fill Area 1, Financial Assurance requirements, and reporting requirements. These

WDRs require the Discharger to comply with the information required prior to discharge to the newly constructed landfill WMU and proposed Class II surface impoundment.

29. On 16 December 2015 the Discharger notified Water board staff of detections of five-year constituent of concern parameters in E-03A, MW-5A, and E-05 in the Second Semiannual 2015 monitoring report. Cyanide was detected in E-03A above the reporting limit, the reanalysis results were non-detect for cyanide. Semi-VOCs were detected above the reporting limit in MW-5A and E-05.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

30. The Discharger proposes to continue to discharge wastes classified under Title 27 as non-hazardous solid waste and inert waste to unlined Fill Area 1, Unit 1. The Discharger also proposes to discharge/continue to discharge, wastes classified under Title 27 as designated waste, non-hazardous solid waste, and inert waste to composite lined Fill Area 1, Unit 2 and composite lined Fill Area 2. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62 and Subtitle D, as required by these WDRs.
31. Active unlined landfill Units at the facility are “existing Units” under Title 27 that were permitted before 27 November 1984 and may continue to accept waste in the “Existing Footprint” until ready for closure unless waste receipts do not meet the timeframes and amounts in Title 27, section 21110, or they are required to close sooner to address environmental impacts or other regulatory concerns. The “Existing Footprint” as defined in Title 27, section 20164 is the area that was covered by waste as of the date that the landfill Unit became subject to Subtitle D. The Existing Footprint for the active unlined Fill Area 1 Unit 1 of the landfill is shown on Attachment C.
32. Active landfill Units at the facility with pre-Subtitle D liner systems may continue to accept waste in the “Existing Footprint” until ready for closure unless waste receipts do not meet the timeframes and amounts in Title 27, section 21110, or they are required to close sooner to address environmental impacts or other regulatory concerns. The “Existing Footprint” as defined in Title 27, section 20164 is the area that was covered by waste as of the date that the landfill Unit became subject to Subtitle D. There are no WMUs with pre-Subtitle D liner systems at ALRRF.
33. The Discharger also proposes to continue to discharge designated waste to Class II landfill WMUs Fill Area 1 Unit 2 and Fill Area 2. These wastes include asbestos, commercial and industrial waste, MSW, nonhazardous ash, nonhazardous petroleum and/or metal contaminated soils, salty waste, construction and demolition waste, treated auto shredder waste, treated wood waste, solidified wastes, and dewatered sewage and wastewater treatment plant waste sludges. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.

34. The Discharger proposes to discharge landfill leachate, a designated liquid waste, into a Class II surface impoundment constructed to accept landfill leachate from Fill Area 2 WMU. The 8-million gallon Class II surface impoundment covers approximately 2.5 acres in plan view with a maximum storage depth of approximately 12 feet excluding the minimum 2-foot minimum freeboard requirement. On 20 August 2015, Central Valley Water Board staff received a Leachate Storage Impoundment Design Report (Design Report) for the 8 million gallon Class II surface impoundment and leachate conveyance system from Fill Area 2, Unit 1, Phase 1 WMU and subsequent future phases to the surface impoundment. On 30 October 2015 Central Valley Water Board staff provided comments on the original Design Report and subsequent amendments stating that the proposed design, construction, and construction quality assurance specifications in the Design Report complies with Title 27 requirements. The Discharger estimates that construction of the surface impoundment will be completed prior to adoption of these WDRs. These WDRs include prohibitions, specifications, provisions, and monitoring and reporting requirements associated with the design, construction, operation, and water quality protection standards pertaining to the 8 million gallon surface impoundment and leachate conveyance system prior to placement of waste in the surface impoundment. The Discharger's current water balance was only based on leachate production from Fill Area 2 to determine that volume capacity of an 8 million gallon surface impoundment was sufficient to contain leachate from Fill Area 2 phase 1 through at least phase 5. However, the Discharger in its JTD proposes to discharge truck wash water, contaminated groundwater, and any other non-hazardous liquid waste compatible with the surface impoundment containment system. These additional flows of waste were not accounted for in the Discharger's water balance which determined adequacy of volumetric capacity of the 8 million gallon surface impoundment. However, these WDRs allow for the discharge of these other liquid wastes to the 8 million gallon surface impoundment so long as the Discharger provides a revised water balance that is approved by the Central Valley Water Board Executive Officer that includes containment of these additional liquid wastes as well as demonstrates that these non-hazardous liquid wastes are compatible with the waste containment liner system.
35. The Discharger proposes to discharge landfill leachate, a designated liquid waste, from Fill Area 1 and Fill Area 2 into two new Class II surface impoundments to be constructed in the near future in the location shown in Attachment C. These WDRs include prohibitions, specifications, provisions, and monitoring and reporting requirements associated with the design, construction, operation, and water quality protection standards pertaining to the two 4.6 and 4.8 million gallon Class II surface impoundments prior to placement of liquid waste in the WMUs. The two new Class II surface impoundments are approximately 1-acre size each in plan view with a maximum storage depth of approximately 10-feet excluding the minimum 2-foot minimum freeboard requirement. The Discharger in its JTD proposes to discharge truck wash water, contaminated groundwater, and any other non-hazardous liquid waste compatible to the surface impoundment containment system. These WDRs allow for the discharge of these other liquid wastes to the currently proposed 4.6 and 4.8 million gallon surface impoundments so long as the Discharger provides a water balance that is approved by the Central Valley Water Board Executive Officer that includes containment of these

additional liquid wastes as well as demonstrates that these non-hazardous liquid wastes are compatible with the waste containment liner system. These WDRs also allow the Discharger to increase the acreage, depth and storage capacity of the proposed 4.6 and 4.8 million gallon surface impoundments in order to accommodate the additional non-hazardous liquid waste containment so long as the storage capacity does not increase by more than 50% and the additional liquid waste is included in a water balance approved by the Central Valley Water Board Executive Officer. These WDRs also permit the Discharger to construct the two proposed surface impoundments as one storage impoundment in the location shown in Attachment C so long as the combined storage capacity does not exceed 14.1 million gallons (includes allowable 50% increase).

36. The Discharger also proposes to have the option to accept other liquid designated wastes in the Class II surface impoundments provided there is sufficient capacity. Prior to acceptance of other liquid designated wastes as mentioned above, this Order requires the Discharger to submit an amended ROWD that identifies and characterizes the waste, demonstrates that the waste is compatible with the surface impoundment liner system, includes any additional measures necessary such as odor and/or vector control, and includes a water balance that demonstrates the impoundments have adequate capacity to accept the waste.
37. 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 which 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.

38. The Discharger proposes to continue to discharge wastes containing greater than one percent (>1%) friable asbestos to the landfill Units. These wastes are classified as 'hazardous' under California Code of Regulations, title 22 (Title 22). However, these wastes do not pose a threat to groundwater quality and California Health and Safety Code, section 25143.7 permits their disposal in any landfill that has WDRs that specifically permit the discharge, provided that the wastes are handled and disposed of in accordance with applicable statutes and regulations.
39. The State Water Resources Control Board adopted Resolution No. 87-22 on 19 March 1987. This Resolution allows the discharge of shredder wastes to Class III landfills where WDRs allow such disposal. Currently these WDRs only allow shredder wastes that have been treated prior to discharge to WMUs at the ALRRF.

40. Treated (stabilized) auto shredder waste (TASW) is any non-recyclable waste from the shredding of automobile bodies (from which batteries, mufflers, mercury switches, and exhaust pipes have been removed), household appliances, and sheet metal. The Discharger proposed to continue to discharge TASW in the top lift of Fill Area 1, Unit 1 where it will not be exposed to acidic leachate. The Discharger also proposes to continue to use TASW as alternative daily cover, beneficial reuse material, or to dispose of it in all the applicable Class II landfill areas. In the past, TASW has been discharged at the landfill under a waiver from the Department of Toxic Substances Control (DTSC), and at the Class III unit, pursuant to Resolution No. 87-22. DTSC's waiver is currently under review and may be rescinded due to new data and information indicating TASW should be managed as a hazardous waste due to increasingly high concentrations of toxic metals, and concerns about the long-term effectiveness of the stabilization treatment process. If DTSC makes the determination that TASW is a special hazardous waste and requires management at a Class I facility, this Order prohibits the discharge of auto shredder waste (treated or untreated) at the Altamont Landfill.
41. The Discharger proposes to continue to discharge treated wood waste in the composite-lined Class II Units at the landfill. Specifications in these WDRs 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. Treated wood that is not a hazardous waste can be handled as C&D debris or MSW, as appropriate, and the limitations and prohibitions for its handling as specified in these WDRs do not apply.
42. Title 22 defines "treated wood" that is a hazardous waste, to mean 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. Sec. 136 and following). 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).
43. 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 prohibitions in Title 22, section 67386.3, which are:
 - 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 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 ceases 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.
44. The Discharger proposes to continue to operate a solidification process that receives non-hazardous liquid and semi-solid wastes. Typical liquid-content wastes that may be solidified include: grease trap waste; monitoring well purge water; commercial, industrial or residential waste waters and sludges; rinse waters; and sludges (excluding sewage) with total volatile organic content (VOC) of less than 1000 µg/L. The facility can also solidify the sludge that can be generated from the facility's Wastewater Treatment Plant. Currently, the solidification of non-hazardous liquid and semi-solid wastes takes place in clay-lined pits located in the Class II area to prevent rapid infiltration of the discharged liquid waste. Following discharge to the designated area, on-site soils, ash, ground wood waste, processed construction and demolition (C&D) debris, or non-hazardous contaminated soils are used to solidify any free liquid present in the designated area such that the moisture content of the resulting mixture is not in excess of the waste holding capacity. Depending on the analytical information for the wastes that were solidified, the solidified material is then disposed in the appropriate Class II or Class III landfill areas or used as alternative daily cover.
45. Title 27 section 20200(d) requires that the solidified waste does not contain "*liquid in excess of the moisture holding capacity as a result of waste management operations, compaction, or settlement.*" These WDRs require the Discharger to evaluate their solidification processes to show compliance with Title 27. These WDRs also require the Discharger to provide a technical report demonstrating that solidification operation does not result in the introduction of liquids into a solid waste WMU in excess of the moisture holding capacity of the WMU as a result of waste management operations, compaction, or settlement. In addition, these WDRs require that the Discharger provide Standard Operating Procedures for the solidification process.

46. 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.
47. The Discharger uses the following materials approved by the LEA for ADC: TASW, shredded tires, solidified waste with approved extender¹, biosolids (treated sewage sludge), combination biosolids and TASW, geosynthetic blankets and tarps, processed C&D material, and material recycling facility (MRF) fines. The Discharger has demonstrated to the LEA that these materials will minimize percolation of liquids through waste, and that they meet the Unit classification where they will be discharged.
48. In a letter dated 8 October 2014, Central Valley Water Board staff notified the Discharger that use of MRF fines on areas of the landfill that drain outside of the limits of the contiguous landfill Unit's leachate collection and removal systems (LCRS) has the potential to impact receiving surface water quality. These WDRs also find that use of the approved ADC on areas of the landfill that drain and/or percolate outside of the limits of the contiguous landfill Unit's LCRS also has the potential to impact receiving surface and/or groundwater quality. These WDRs require that the Discharger demonstrates to Central Valley Water Board staff satisfaction using quantitative methods equivalent to those specified in the letter 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 listed above 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.
49. 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 will 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

¹ Approved extenders include soil, green waste, TASW, ash, cement, kiln dust, ground-treated woods or a combination of these materials.

areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved by Central Valley Water Board staff. The demonstration can take into account removal of sediments containing COCs from sedimentation basins.

50. Currently a non-operational wastewater treatment plant (WWTP) exists on the southeast side of Fill Area 1. Historically, the WWTP constructed in 1994 operated to treat landfill liquids prior to discharge under an USEPA National Pollution Discharge Elimination System Permit No. CA 0083763. Landfill liquids included leachate from Fill Area 1, contaminated groundwater from the Fill Area 1 underdrains and Groundwater Interceptor Barrier (after the VOC tank), LFG condensate, wash water from the equipment maintenance building, and compost contact water were combined and then treated on site at the WWTP. The WWTP was designed to treat 75,000 gallons/day and could treat up to 201,600 gallons per day during a peak flow event. The Discharger's JTD states that the treated WWTP effluent would then be used on site for dust control or irrigation, or, in rare circumstances, would be discharged off site in accordance with the Facility's approved NPDES permit. An exception to this was the hydrocarbon phase of the LFG condensate, which was transported off site for proper management. Some of the cleaner site liquids may have been used directly for dust control within the landfill footprint (e.g., truck wash water and heavy equipment wash water). Subsequently, the Discharger requested that the Central Valley Water Board rescind NPDES Permit No. CA 0083763 for surface water discharge to waters of the US.
51. On 22 June 2007, The Central Valley Water Board rescinded NPDES Permit No. CA 0083763. The WWTP ceased operation in February 2010. Currently, the WWTP is used as a wastewater plant (WWP) to store wastewater from various wastewater sources such as but not limited to Fill Area 1 leachate, and underdrains. The stored wastewater is used for dust control in the lined Class II landfill areas as allowed under Title 27 section 20340(g) where units have a leachate collection and removal system (LCRS) and contain waste of a similar classification to units from which the leachate was extracted. The Discharger currently has no NPDES permit that allows for surface water discharge from the WWP to waters of the US. The Discharger has proposed to construct three Class II surface impoundments to accommodate non-hazardous and designated waste liquids generated by Fill Area 1, Fill Area 2 and other sources.
52. Contained within Fill Area 1, Unit 1 is a closed hazardous and designated waste disposal area. This clay lined and capped unit, also known as the Red Star Area, contains mainly laundry wastewater treatment sludge, sandblasting residue, and small amounts of other designated wastes. This area was closed in 1987 by capping with a compacted clay layer and subsequent covering with MSW and finally overlain by the Unit 2 base liner. The area received a variance from DTSC regarding the final closure on 1 June 1998 and noted in the California Regulatory Notice Register 98, Volume No. 25-Z.
53. The exclusion of hazardous and designated wastes from the facility not approved by the Central Valley Water Board in accordance with Title 27 section 20210 is accomplished

through load checking and waste screening, as described in the Hazardous Waste Exclusion Program included in the Joint Technical Document. Hazardous wastes that are identified and require removal are temporarily stored at the hazardous waste storage area adjacent to the administration office. Shipment of hazardous site offsite is done under EPA ID No. CAD981382732. However, due to isolated instances in the past of improper disposal of hazardous and designated wastes to WMUs not classified to accept such waste these WDRs require the Discharger to expeditiously notify Central Valley Water Board staff of any violations and provide a schedule for the hazardous waste's removal and for unauthorized designated waste the removal and/or other mitigation activities in order to prevent leachate generation and a release from unauthorized disposal of waste.

GEOLOGY

54. The high point elevation at the Facility is a hill on the facilities north side measured at 1257 feet above mean sea level (MSL), while the lowest elevation of 540 feet above MSL is at the southern boundary of the waste management Facility.
55. The Facility was constructed on top of geological structures that formed as the result of compression and extensional forces applied over geologic time to the underlying stratum. After deposition of sediments and then consolidation, the area experienced an episode of compression, which produced the Altamont Anticline. Also associated with the compressional-folding are secondary fractures, identified on the facilities boring logs. The orientation of the dipping sedimentary beds is 10 to 30 degrees to the east-northeast. The geomorphic features indicate that the Altamont Anticline is a broad structure that trends north-northwest with an axis that skirts the far-western margin of the Facility (Attachment D). In addition, RUST (1998) also reported the presence of the Altamont Thrust Fault that underlies the WMU, which may have formed during the same compressional episode as the folding. The orientation of the Altamont Thrust Fault is not known. The stratigraphy under the landfill again experienced deformation as the region experienced extension. As a result, en echelon to the Altamont Anticline is a series of high angle normal faults that dip to the east.
56. Typical sediments encountered at the site consist of varying amounts of sandy silts and sandy clays (alluvium) at the surface, underlain by weathered mudstone and sandstone, and then predominantly mudstone and sandstone at depth. The rocks encountered at depth are typical of the Panoche Formation. Other rock types identified during previous investigations include mudstone, siltstone and shale, all of which are consistent interpretations of this formation that underlies the site.
57. The most prevalent unit at the site is mudstone, which, in vertical section, represents approximately 90% of the lithology encountered at the western portion of the site, and 50% to 70% of the lithology encountered at the eastern portion of the site. Different investigators have described the mudstone encountered in borings at the site as a light olive gray to grayish black weak claystone, mudstone, or clayey siltstone. Descriptions of weathering of the mudstone have ranged from generally fresh to weathered.

58. Fracturing has also been observed in the Panoche Formation deposits. The density of fracturing has been observed to be most prevalent near the ground surface and to decrease with depth. Woodward-Clyde Consultant's Report, "*Soil, Geology and Groundwater Investigation for the Proposed Altamont Sanitary Landfill Site*" (WCC [1975]) observed that the system of open fractures in the Panoche Formation extends to greatest depths (up to approximately 100 feet below ground surface [bgs]) beneath the hills. The depth of open fractures decreases to approximately 5 to 10 feet bgs beneath the stream valleys.
59. Descriptions of the sandstone beds encountered in the Panoche Formation during site investigations are consistent with the regional description of the Panoche Formation. The sandstone beds are laterally discontinuous and it is not possible to match sandstone beds observed in borings that are several hundred feet apart. Sandstone in these lenses has ranged from being weak and weathered within the top 50 to 75 feet bgs, to fresh, strong, and well cemented at greater depths. Sandstone beds are typically thin (on the order of 0.5 feet thick); however, they can be as thick as 30 feet or more.

FAULTING AND SEISMICITY

60. Tectonically, the Diablo Range is located in the moderately active central Coast Ranges and is part of the San Andreas transform area [RUST, 1994a]. Deformation in the region results primarily from north-northwest trending, right lateral strike-slip faults and secondarily by thrust faulting and folding associated with crustal shortening.
61. Individual faults are characterized by minor offset bedding, drag folding, and gouge zones averaging 0.5 to 1 inch, and up to 6 inches wide. Excavations near the landfill margin show that the siltstones and claystones tend to preserve faulting with distributed deformation across broad zones that have fracture orientations similar to the mapped faults north and south of the excavations. Excavations conducted by WLA (LFR Levine-Fricke, 2002) near the southern boundary of Fill Area 1 showed an absence of distinct fault zones across the projections of faults identified during geologic field mapping, and the presence of broad zones of greater fracturing and shearing along the projections of these fault zones. Overall, however, the investigations indicate that shallow bedrock in the area directly south of the facility southern boundary is pervasively fractured throughout, with a few broad areas of comparatively more intense fracturing. Data collected throughout the excavations demonstrate that the entire shallow bedrock package is fractured and sheared, consistent with previous interpretation regarding pervasive weathering of the upper portions of the Panoche formation at the site. The absence of distinct, well-defined fault zones makes it likely that groundwater flows through the highly fractured rock mass in a manner more similar to that of porous media rather than via fracture flow.
62. The Lookout Hill and Dibblee fault zones appear to cross the Facility and project through the railroad cuts south of Facility. Many small fractures and joints are present between the two fault zones, indicating pervasive deformation of the bedrock between primary zones of displacement. As indicated above, however, the data collected indicate that

the entire shallow bedrock package is fractured and sheared, consistent with previous interpretation regarding pervasive weathering of the upper portions of the Panoche formation at the site (see Attachment D).

63. The West fault has been mapped through Fill Area 2. The fault is mapped through the axis of the main canyon of Fill Area 2 and extends across a small saddle on the southern border of Fill Area 2. The West fault is steeply dipping, without a large mappable offset across the fault. The Huey fault daylights northeast of Fill Area 2 and has similar characteristics to the West fault (see Attachment D).
64. There are no known Holocene faults within 200 feet of the Facility property (Facility boundary). Potential active faults in the Area include the Midway fault (approximately 1.6 miles from the site), the Greenville fault (approximately 3.1 miles from the site), and the Corral Hollow-Carnegie fault (approximately 3.1 from the site) (RUST, 1994a). Major potentially active faults near the Altamont Hills region include the Calaveras, the San Andreas, Hayward, and Gray Valley Blind Thrust Segment 6 faults.
65. The Discharger's consultant, Geosyntec Consultants conducted an updated seismic site exposure evaluation in 2014 for the ALRRF, which incorporated historic seismicity, recent relevant studies of known active and potentially active faults and earthquake zones within a 62-mile (approximately 100 km) radius of the site, and recent studies of strong ground motion attenuation and duration. Based on a review of 13 potentially active faults, the design Maximum Credible Earthquake (MCE) for the site was established as either a moment magnitude (M_w) 6.7 event on the Great Valley blind thrust Segment 6, termed the near-field design event, or a M_w 7.9 event on the San Andreas Fault, termed the far-field design event. The expected median near-field bedrock MCE peak horizontal ground acceleration (PHGA) equals 0.72g and the expected median far-field bedrock MCE PHGA equals 0.10g. The expected median free-field bedrock MCE D_s equals 10.8 sec for the near-field MCE and 38.6 sec for the far-field MCE. The Greenville fault MCE was eliminated from consideration based on judgment, as the calculated PHGA for this event was significantly smaller (0.57g for M_w 6.9) than that of the Great Valley blind thrust Segment 6.

LANDSLIDES

66. The landfill property is situated in an area that is susceptible to mass movement on natural slopes. Landslide deposits occur in and around Fill Area 1. They are typically associated with dip slopes in the Panoche mudstone, and faulted and fractured areas. During the excavation of Unit 2 in Fill Area 1, six landslides occurred on the south-facing slope. The landslides may have been associated with unearthing and reactivating existing landslide deposits or with the fine sediments overlying deep fractured bedrock due to tectonics or weathering. Each of the six landslides was preceded by construction that increased the slope angle and then followed by periods of prolonged intense rainfall. The locations of the landslides in Fill Area 1 Unit 2 are shown in Attachment G.

67. There are several historical landslides within the footprint of the Fill Area 2 expansion. However, prior to installing the liner, the Discharger will remove these known landslides to achieve uniform soil properties. The Discharger has stated that if new landslides are unearthed during construction, they will be mapped and then removed. If the Discharger proposes to not remove any landslide within the Fill Area 2 footprint the Discharger shall submit a risk analysis report including a revised slope stability analysis report comparing the cost benefit for not removing the landslide versus the cost of repairing the landfill liner if it were to fail during the Unit's life, closure period, and post-closure maintenance period due to the landslide not being removed. Currently, the known locations of the landslides in Fill Area 2 are shown in Attachment G.

CLIMATE

68. The facility receives an average of about 13 inches of precipitation per year. For the 30-year period from 1971 to 2000, NOAA (2001) reports a normal annual precipitation of 14.8 inches at the Livermore Weather Station and 12.51 inches at Tracy Pumping Weather Station. Annual precipitation recorded at the facility weather station in 1997 was 10.85 inches (Simon, 1998). In 2004, 12.37 inches of precipitation was measured at the EPA ACAP study area on the south side of Fill Area 1, Unit 1. Precipitation at the project site within this range is typical of the Central Valley region. Rainfall is seasonal, with approximately 90 percent of the rainfall occurring between November and April. Snowfall is unusual at the site. Strong westerly winds from the Pacific coast are characteristic of the Altamont Pass area.
69. Evaporation data collected for the site between 1991 and 1997 indicate a mean inferred evaporation of 65.86 inches per year (Simon, 1998). For that time period (1991-1997), the highest mean monthly-inferred evaporation was calculated as 10.85 inches for July and the lowest mean monthly-inferred evaporation was calculated as 1.13 inches for December (Simon, 1998).
70. A meteorological (MET) station existed at the ALRRF in the 1990s but was dismantled in 1998 when it reached end of its functional life. A MET station was also installed at the site as part of the EPA sponsored alternative cover assessment program (ACAP) but, once the program was terminated, the station was removed. WMAC installed a Bay Area Air Quality Management District (BAAQMD) approved MET station in 2010 to generate site-specific climatological data, including precipitation, wind direction, evaporation and temperature data. The station is located approximately 75 feet south of a gravel parking area, near the maintenance building at an elevation of above 1,100 feet as shown in Attachment C.
71. Based on data from the ALRRF weather station from 1997 [Simon, 1998], the prevailing wind for the site is west-southwest for 50% of the time with an additional 10% to the west, 7% to the southwest, and 6% to the north. The mean annual wind speed in 1997 was 12.6 miles per hour (mph), with June being the windiest month.

72. For Class III landfills, Fill Area 1 Unit 1 WMU, the 100-year, 24-hour precipitation event for the facility is estimated to be 3.75 inches, based on Department of Water Resources' bulletin 195 entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, and updated August 1986. More recent data published by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 6, Version 2 predicts the 100-year, 24-hour precipitation event for the facility to be 4.44 inches with a 90% confidence interval ranging from 3.65 to 5.52 inches. The Discharger is required to design their LCRS, precipitation, and drainage control facilities using design storm information that is the most current and protective per Title 27 sections 20340 and 20365.
73. For Class II landfills, Fill Area 1 Unit 2 WMU and Fill Area 2 WMU, the 1,000-year, 24-hour precipitation event for the facility is estimated to be 4.9 inches, based on Department of Water Resources' bulletin 195 entitled *Rainfall Depth-Duration-Frequency for California*, revised November 1982, and updated August 1986. More recent data published by the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 6, Version 2 predicts the 1000-year, 24-hour precipitation event for the facility to be 6.48 inches with a 90% confidence interval ranging from 4.85 to 8.82 inches. The Discharger is required to design their leachate, precipitation, and drainage control facilities using design storm information that is the most current and protective per Title 27 sections 20340 and 20365².
74. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 060001-0140A (effective map date 3 August 2009).

SURFACE WATER CONDITIONS

75. The Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition (hereinafter "Basin Plan"), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
76. The facility is near the crest of the Altamont Hills. The regional topography is characterized by moderately to steeply rolling hills and narrow valleys that have a northwest trend. Surface water flows from the ridges down through the valleys and discharges into local drainages. These natural drainages, which are often dry, ultimately drain toward the Sacramento-San Joaquin Delta to the east or the San Francisco Bay toward the west, when surface water flow is sufficient. The drainage divide between the Central Valley Region and San Francisco Bay Region traverses the facility property.
77. Runoff originating on the east side of the facility property drains eastward in un-named channels and ditches to Mountain House Creek, which flows to Old River in the

² Based on the latest publication by NOAA [2013], the design storms are 4.44 in. and 6.48 in. for the 100-yr, 24-hr and 1,000-yr, 24-hr storms, respectively the Discharger designed FA2 Phase 1 storm water management system (SWMS) using the NOAA 14 design storm events.

Sacramento-San Joaquin Delta. Runoff originating on the west side of the divide flows west-southwest to channels along Dyer Road that drain into Altamont Creek, which may flow into San Francisco Bay through Arroyo Las Positas, Arroyo Mocho, Arroyo de la Laguna, and Alameda Creek near Union City.

78. For the drainages on the east side of the surface water divide, which drain into Sacramento-San Joaquin Delta, designated beneficial uses of surface waters, as designated in the Basin Plan, are: municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; water contact and non-contact water recreation; warm freshwater habitat; cold fresh water habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation.
79. For the drainages on the west side of the surface water divide, as designated in the Water Quality Control Plan for the San Francisco Bay Basin, the Arroyo de la Laguna has potential beneficial uses for warm freshwater habitat and cold freshwater habitat, and existing beneficial uses for groundwater recharge, fish migration, water contact recreation, non-contact water recreation, fish spawning, and wildlife habitat.
80. Storm water sedimentation basins A, B, C, SB-1, SB-2, and SB-A are located around the landfill as shown on Attachment E. The basins detain storm water for sedimentation control during the rainy season. When storm water flows are sufficient, storm water from the sedimentation basins discharge to the San Joaquin River to the east and to the San Francisco Bay toward the west.
81. The U.S. Army Corps of Engineers (USACE) is responsible for the issuance of permits for the placement of dredged or fill material into waters of the United States (waters) pursuant to Section 404 of the Clean Water Act (CWA) (33 USC 1344). A delineation of jurisdictional waters and wetlands at the ALRRF site was initially completed by LSA Associates, Inc. (LSA) on 18 January 1993, and verified by USACE on 7 April 1993. The delineation determined that no wetlands exist within the proposed footprint of Fill Area 2, thus Part 258.12 of Subtitle D requirements are not applicable to the proposed Fill Area 2. However, during the development of Fill Area 2, approximately 0.5 acres of channels/watercourses would be filled. To address the 0.5 acres of ephemeral watercourses to be impacted by Fill Area 2 development, the Discharger applied to the USACE for an Individual Army Permit on 24 May 2004. A conceptual waters mitigation plan was submitted to the USACE, which entailed a combination of channel restoration and pond/wetland creation and/or enhancement to achieve a 3:1 replacement-to-loss ratio. The USACE requested a specific plan, which the Discharger submitted on 19 September 2005 and final approval was given in August 2011. Additionally, the Discharger submitted a permit application to the Central Valley Water Board for a Section 401 Water Quality Certification on 24 May 2004. The Central Valley Water Board issued a Technically Conditioned Certification on 27 July 2004, and the application was approved in December 2010. Section 401 and Section 404 permits were not required at the time that Fill Area 1 was permitted.

GROUNDWATER CONDITIONS

82. The Diablo Range forms a surface water and groundwater divide between the San Joaquin Valley Basin to the east and the Livermore Valley Basin to the west.
83. In general, groundwater movement in the vicinity of the site is influenced by the local topography along each side of the groundwater divide. Groundwater is recharged mainly by direct infiltration of precipitation into alluvial deposits and weathered bedrock. During the dry months of May through October, discharge likely occurs through evapotranspiration from the shallow soil, with little or no observable storm-water flow. During the wetter months of November through April, groundwater discharge can locally exceed the evapotranspiration potential, resulting in springs and local, intermittent surface flow. Water levels vary seasonally in response to precipitation patterns.
84. Shallow groundwater is encountered at the site at depths ranging from approximately 140 ft bgs [RUST, 1994a] on hilltops to as little as 13 ft bgs in the valley bottoms (e.g., Harding ESE, 2001). Groundwater occurs primarily in the upper weathered portions of the Panoche Formation bedrock and in the valley alluvium. .
85. Vertical hydraulic gradients show a very consistent pattern, with downward gradients measured along the ridges (recharge areas) and upward gradients in the valleys (discharge areas). The magnitudes of vertical hydraulic gradients are generally in the range of 0.1 to 0.6 ft/ft. The maximum downward gradient is 1.31 ft/ft between groundwater monitoring wells E-20B and MW-3B, and the maximum upward gradient is 0.20 ft/ft between groundwater monitoring wells PC-2A and PC-2C.
86. Based on a conceptual hydrogeologic model developed for the site, groundwater migration in the vicinity of Fill Area 1 and Fill Area 2 is primarily controlled by the site topography. The site's steep grade and high relief are capable of generating large hydraulic gradients within groundwater, and thus potentially rendering local variations in geology of only secondary consequence. The Discharger states the following in regards to communication to deep zones: "Hydraulic testing conducted during the 2002 hydrogeologic investigation (LFR, 2002) concluded from three pumping and recovery tests that no measurable hydraulic communication exists between shallow and deeper groundwater zones. The contribution of local groundwater flow to Livermore-Amador Valley's main groundwater basin is considered negligible due to the very low permeability of the geologic materials (Alameda County Water District Zone 7, 2001). Rather, local groundwater flow that does occur, discharges as surface water into valley bottoms (Alameda County Water District Zone 7, 2001)."
87. In general, measured hydraulic conductivity has been observed to decrease with depth in the Panoche Formation beneath the site (Woodward-Clyde, 1975; Golder, 1993; Rust, 1994; LFR, 2001; LFR, 2002). The highest hydraulic conductivity values have been observed in the shallowest depth intervals (i.e., 4.3×10^{-2} centimeters per second [cm/sec] at OW-6, which is screened from 9.5 to 14.5 feet bgs). The more transmissive zones are associated with colluvium/alluvium and the upper, more pervasively

weathered portions of the underlying bedrock. Significantly lower hydraulic conductivity values (as low as 1.5×10^{-9} cm/sec at MW-5) have been measured at depths greater than 150 feet bgs. Results of slug testing of wells and piezometers screened across sandstone intervals also indicated permeabilities in the range of 10^{-3} to 10^{-7} cm/sec dependent on the degree of fracturing, induration and cementation of the sandstone unit (LFR, 2001; LFR, 2002; Rust, 1994). As reported in the Discharger's latest Semi-Annual Groundwater MRP (SCS, 2015a), the horizontal groundwater flow velocity in the alluvium and weathered bedrock is estimated to be approximately 1.4 feet/day.

88. In the vicinity of the ALRRF, the water table is typically encountered in the weathered bedrock or the colluvium/alluvium. The weathered bedrock generally consists of highly fractured claystone, siltstone, and sandstone, and the colluvium/alluvium is a relatively well-graded mixture of sand, silt and gravel. Although the pore sizes in the weathered claystone and siltstone are generally small, the degree of fracturing creates the opportunity for irregularly distributed large pore spaces in the matrix. Within the colluvium/alluvium, there is significant heterogeneity resulting in a variety of pore sizes. Fracture spacing in the weathered bedrock and layered heterogeneities in the colluvium/alluvium are both on the scale of one foot or less. Therefore, the height of the capillary fringe above static groundwater levels is expected to be of a corresponding scale of one (1) foot or less.
89. Groundwater within the Panoche Formation generally has high concentrations of most ions, particularly sodium and chloride [WCC, 1975; EMCON, 1987]. The high chloride concentrations have been attributed to a combination of connate water from the Jurassic- Cretaceous marine sediments and infiltration of surface water high in chloride concentrations due to evaporation [RUST, 1994a].
90. Total Dissolved Solids (TDS) is a measure of the total concentration of dissolved inorganic constituents in water. The results of the anion and cation analyses of groundwater samples collected during the site characterization investigation performed by Rust in August and February of 1993 showed TDS concentrations range from very low to brackish conditions (Rust, 1994). More recent studies indicate the TDS content of groundwater generally increases with depth (LFR, 2001). These investigations indicate TDS values increase with depth in the formation to maximum observed values of up to approximately 3,000 mg/L. Deeper groundwater is characterized as having TDS concentrations greater than 1,000 mg/L (LFR, 2001). The increasing TDS with depth indicates that deeper groundwater has a longer contact time with the formation than shallower groundwater, consistent with the hydraulic conductivity values, which decrease with depth. Groundwater geochemistry is primarily sodium bicarbonate to sodium chloride dominated.
91. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER MONITORING

92. In June 1998, the Discharger submitted to the Central Valley Water Board staff a proposed Detection Monitoring Program (DMP) that covered Fill Area 1 and a previously proposed Expansion Area (Rust, 1998b). In response to Central Valley Water Board staff concerns over the adequacy of the proposed monitoring network for Fill Area 1, the Discharger initiated further hydrogeologic investigations, including the installation of 13 additional monitoring wells. Since 1999, the Discharger has further characterized the hydrogeologic conditions at the perimeter of Fill Area 1. Those investigations have been thoroughly described in previous reports (e.g., Levine-Fricke, 2001; Levine-Fricke, 2002) and the results have been incorporated into the design of the Discharger’s Monitoring and Reporting Program. Fill Area 1 is currently monitored in accordance with the requirements of WDRs Order R5-2009-0055, adopted by the Central Valley Water Board on 24 April 2009. These WDRs require Fill Area 1 and Fill Area 2 groundwater quality to be monitored in accordance with the requirements of these WDRs and MRP.
93. The Discharger’s conceptual groundwater model for Fill Area 1 and Fill Area 2 suggests that the majority of the groundwater flow follows the original topography as it passes the facility boundary. Fracturing in the upper weathered zone controls vertical groundwater flow. The DMP should be designed, installed, sampled and maintained to assure the earliest possible moment of a release.

Current groundwater monitoring wells for Fill Area 1 are listed here and also in Section A.1 of MRP R5-2016-0042. Locations of monitoring wells are shown on Attachment D. Current groundwater monitoring points for Fill Area 1 are:

Fill Area 1- Current Groundwater Monitoring

Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone ³
MW-2A	Detection Monitoring	Unit 1 (U1) and Unit 2 (U2)	W
MW-4A	Detection Monitoring	U2	W
MW-5A ⁴	Detection Monitoring	U1	W
MW-6	Detection Monitoring	U2	W/U
MW-7	Detection Monitoring	U1	W/U
MW-11 ⁵	Detection Monitoring	U1	W
E-03A	Corrective Action	U1	W
E-05	Corrective Action	U1	A
E-07	Corrective Action	U1	W
E-17	Corrective Action	U1	W/U
E-20B	Corrective Action	U1	U

³ A= alluvium, W= weathered bedrock, U = Unweathered bedrock

⁴ MW-5A is also a detection monitoring point for the future FA1 surface impoundment.

⁵ MW-11 is also a detection monitoring point for the future FA1 surface impoundment.

Fill Area 1- Current Groundwater Monitoring

Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone³
E-23	Corrective Action	U1	W/U
MW-12	Corrective Action	U1	W
PC-1B	Corrective Action	U1	U
PC-1C	Corrective Action	U1	W/U

Groundwater monitoring wells E-20B, E-07, and E-05 associated with Fill Area 1 Unit 1 continue to indicate that a release of VOCs has occurred. These WDRs require the Discharger to perform corrective action for the release of VOCs from Fill Area 1.

94. Current groundwater monitoring system for Fill Area 2 is listed in Section A.1 of MRP R5-2016-0042. Locations of monitoring wells are shown on Attachment D. Current groundwater monitoring points for Fill Area 2 are:

Fill Area 2- Current Groundwater Monitoring

Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
MW-4A	Detection Monitoring	U1	W
MW-8A	Detection Monitoring	U1	A
MW-8B	Detection Monitoring	U1	W
MW-9	Detection Monitoring	U1 Phase 7-9	W
MW-10	Background	U1	W
MW-13A	Detection Monitoring	U1 Phase 3	A
MW-13B	Detection Monitoring	U1 Phase 3	W
MW-14	Detection Monitoring	U1 Phase 1	W
PC-1A	Detection Monitoring	U1	W
PC-1C	Detection Monitoring	U1	W/U

The Discharger also proposes to install additional monitoring wells to monitor future construction phases of Fill Area 2 Unit 1, as shown on Attachment D.

95. In addition to measuring water levels in the proposed wells that comprise the Detection Monitoring Program (DMP), Corrective Action Program (CAP), and upgradient monitoring program, the Discharger monitors water levels at additional monitoring wells and piezometers listed in Section A.1 of MRP R5-2016-0042 and shown on Attachment D. The Discharger uses the water level information for long-term monitoring of the potentiometric surface and vertical hydraulic gradients.
96. The Dischargers existing detection monitoring program (DMP) for groundwater at both Fill Area 1 and 2 needs to be further evaluated to ensure compliance with Title 27 section 20415(b)(1)(B). Specifically, there are areas in Fill Area 2 where insufficient

data are available to effectively generate groundwater elevation contour maps due to fact that some wells have gone dry. In addition, the spacing of wells in both the main canyons of Fill Area 1 and 2 may not be sufficient to provide effective detection monitoring. The Discharger also needs to further evaluate the need for monitoring wells along a canyon oriented southeast around groundwater monitoring well E-20B. Lastly, the Discharger needs to evaluate the potential effects that storm water basins may have on the ability to collect representative groundwater samples from wells located in close proximity to the basins. These WDRs in Provision H.8 require the Discharger to submit a workplan to address these items in order to ensure compliance with Title 27 section 20415.

GROUNDWATER MONITORING FOR SURFACE IMPOUNDMENTS

97. As stated in in the Previous Enforcement section above, the Discharger constructed an 8 million gallon surface impoundment and leachate conveyance system for handling liquid designated waste from Fill Area 2 Unit 1 Phase 1 and subsequent future phases. The Discharger proposes to construct two new Class II surface impoundments (currently sized at 4.6 and 4.8 million gallons each) for handling liquid designated waste from Fill Area 1. The Discharger shall establish WQPS's before using these impoundments.
98. The Discharger must comply with Title 27 section 20415(e)(6) which requires the Discharger to establish background values of groundwater quality for a period of one year, including times of expected highest and lowest annual elevations of the groundwater surface prior discharging waste to the Units. As of the date of these WDRs, the Discharger has not completed their groundwater detection monitoring system for the 8-million gallon Class II surface impoundment.
99. These WDRs in Provisions H.8 require the Discharger to submit a workplan to complete their groundwater detection monitoring network and establish background groundwater quality for each Class II surface impoundment that complies with Title 27 section 20415 before using these impoundments.

UNSATURATED ZONE MONITORING

100. Title 27 section 20164 defines the "containment structure" of a Unit as "an artificial feature designed and installed to contain waste constituents, including waste constituents mobilized as a component of leachate or of landfill gas." Title 27 section 20415(d) requires that the Discharger monitor the unsaturated zone to provide the best assurance of the earliest possible detection of a release from the Unit.
101. The Discharger's current unsaturated zone monitoring system for Fill Area1 Unit 1 includes; the valley underdrain collection sump (VD); and for Fill Area 1 Unit 2, the valley underdrain collection sump (VD2) and the underlying pan lysimeter (VZM-A).

102. Shown below is a summary of VOCs detected at 50 percent of the time or more in liquids in the unsaturated zone monitoring of Fill Area 1 Unit 1 which includes monitoring of the valley underdrain collection sump (VD):

Fill Area 1 Unit 1 (VD) Constituent of Concern	Year										% Detected
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
1,2-Dichlorobenzene	•	•	•	•	•	•	•	•	•	•	100%
1,4-Dichlorobenzene	•	•	•	•	•	•	•	•	•	•	100%
Benzene	•	•	•	•	•	•	•	•	•	•	100%
Chlorobenzene	•	•	•	•	•	•	•	•	•	•	100%
Diethyl ether	•	•	•	•	•	•	•	•	•	•	100%
Tetrahydrofuran	•	•	•	•	•	•	•			•	80%
tert-Butyl alcohol (TBA)				•	•	•	•	•		•	60%
Methyl-tert-butyl ether (MTBE)				•	•	•	•			•	50%
Xylenes		•		•	•			•		•	50%

Note that percentages may include detections that were re-sampled and may not be representative.

103. Shown below is a summary of VOCs detected 50 percent of the time or more in liquids in the unsaturated zone monitoring of Fill Area 1 Unit 2 which includes monitoring of the valley underdrain collection sump (VD2):

Fill Area 1 Unit 2 (VD2) Constituent of Concern	Year										% Detected
	2006	2007	2008	2009	2010	2011	2012	2013	2014		
Acetone	•	•	•	•	•	•		•	•	89%	
Ethylbenzene	•	•	•	•	•	•	•		•	89%	
Toluene	•	•	•	•	•	•	•		•	89%	
Xylenes	•	•	•	•	•	•	•		•	89%	
1,4-Dichlorobenzene		•	•	•	•	•	•		•	78%	
Naphthalene	•	•	•	•		•	•		•	78%	
Tetrahydrofuran	•	•	•	•		•	•		•	78%	
2-Butanone	•	•		•		•		•	•	67%	
Chlorobenzene		•	•	•	•	•			•	67%	
cis-1,2-Dichloroethene	•	•	•	•	•				•	67%	
Diethyl ether	•	•	•	•	•				•	67%	
tert-Butyl alcohol (TBA)				•	•	•	•	•	•	67%	
Benzene	•	•	•	•					•	56%	

Note that percentages may include detections that were re-sampled and may not be representative.

Shown below is a summary of VOCs detected 50 percent of the time or more in liquids in the pan lysimeter (VZM-A) below the Fill Area 1 Unit 2 LCRS sump which monitors the unsaturated zone below the WMU:

Fill Area 1 Unit 2 (VZM-A) Constituent of Concern	Year									% Detected
	2006	2007	2008	2009	2010	2011	2012	2013	2014	
1,4-Dichlorobenzene	•	•	•	•	•	•	•	•		89%
Acetone	•	•	•	•	•	•	•	•		89%
Benzene	•	•	•	•	•	•	•	•		89%
cis-1,2-Dichloroethene	•	•	•	•	•	•	•	•		89%
Ethylbenzene	•	•	•	•	•	•	•	•		89%
Tetrahydrofuran	•	•	•	•	•	•	•		•	89%
Toluene	•	•	•	•	•	•	•	•		89%
Xylenes	•	•	•	•	•	•	•	•		89%
1,2-Dichlorobenzene	•	•	•		•	•	•	•		78%
Chlorobenzene	•	•	•	•	•	•	•			78%
Diethyl ether	•	•	•	•	•		•	•		78%
2-Butanone		•	•		•	•	•	•		67%
tert-Butyl alcohol (TBA)				•	•	•	•	•	•	67%
Dichloromethane	•	•	•	•		•				56%
Methyl-tert-butyl ether (MTBE)				•	•	•	•	•		56%
Naphthalene	•		•			•	•	•		56%

Note that percentages may include detections that were re-sampled and may not be representative.

104. Title 27 requires that waste containment structures “*contain waste constituents, including waste constituents mobilized as a component of leachate or of landfill gas.*” In Fill Area 1 Unit 1 and Fill Area 1 Unit 2 the Discharger has continued to report the detection of VOCs such as but not limited to 1,4-dichlorobenzene, diethyl ether, and xylenes in the valley underdrains VD and VD2 respectively. The Discharger has also reported VOCs in groundwater point of compliance monitoring wells E-05, E-07, and E-20B associated with Fill Area 1 Unit 1. The Discharger has attributed the VOCs to landfill gas releases from Fill Area 1 and has proposed installation of additional landfill gas extraction wells as corrective action. In order to demonstrate that the Discharger’s corrective action for controlling releases of VOCs due to gas migration is effective these WDRs in Provisions H.8 require the Discharger to submit a work plan and updated sample collection and analysis plan for installation of soil-pore gas monitoring devices in the unsaturated zone at the edge of waste for Fill Area 1 Unit 1 in the vicinity of point of compliance monitoring wells E-05 and E-20B and in Fill Area 1 Unit 2 in the vicinity at the edge of waste closest to the underdrain collection sump (VD2) and underlying pan lysimeter (VZM-A). Monitoring and Reporting Program No R5-2016-0042 also requires the Discharger monitor perimeter gas probes along the southern edge of the Facility and other probes where landfill gas has been reported.

105. The Discharger in its 2015 First Semiannual MRP report stated that “Previous studies identified LFG as the source of VOC detections at VZM-A and VD2 (Geomatrix, 2001), and this is likely also the case for VD. To reduce the influence of LFG as these locations, ALRRF has been extracting LFG from VD2, LS2, and VZM-A piping systems. Liquids that are captured in the VZM-A, VD, and VD2 containment systems are handled (e.g., collected and disposed) in the same way as leachate.” These WDRs and MRP require the Discharger to monitor and report landfill gas removed from VD2 and LS2 piping systems and manage liquids originating from outside the WMUs (e.g., liquids captured in underdrains VD and VD2) differently from liquids originating inside the WMUs (such as leachate, landfill gas condensate, and liquids captured in any pan lysimeter used to monitor the unsaturated zone beneath a WMU).
106. The Discharger also proposes to monitor the unsaturated zone below the 8 million gallon class II surface impoundment using a pan lysimeter (VZM-B) as shown in Attachment E. The Discharger also proposes to monitor the unsaturated zone beneath Fill Area 2 Unit 1 with a pan lysimeter that will be constructed below the future Fill Area 2 Unit 1 LCRS sump. However, the construction of the LCRS sump and this pan lysimeter will not occur until the Discharger completes construction of several future phases of waste disposal in Fill Area 2 Unit 1 as shown in Attachment E. The Discharger’s projection of construction of these future phases is years away and therefore currently proposed monitoring of Fill Area 1 Unit 1 does not satisfy Title 27 requirements of unsaturated zone monitoring.
107. The Discharger has also constructed a leak detection system below the containment structure of Fill Area 2 Unit 1 Phase 1. However, monitoring of this leak detection system was not included as part of the Discharger’s unsaturated zone monitoring system. These WDRs in Provisions H.8 require the Discharger to submit a work plan and updated sample collection and analysis plan for monitoring the unsaturated zone associated with each phase of construction for Fill Area 2 Unit 1 which will include but not limited to:
- a. Monitoring and reporting of liquid collected in the underdrains associated with each phase of construction in Fill Area 2 Unit 1. The liquid shall be collected as close to edge of waste as possible in order to provide representative samples;
 - b. Monitoring and reporting of liquid collected in the leak detection system associated with each phase of construction in Fill Area 2 Unit 1. The liquid shall be collected as close to edge of waste as possible in order to provide representative samples; and
 - c. Submit a workplan to perform gas monitoring and reporting in the unsaturated zone for each phase of construction in Fill Area 2 where a pan lysimeter will not be constructed to serve as a proxy until installation of a pan lysimeter below the final LCRS sump for Fill Area 2 Unit 1. The Discharger does not plan to construct pan lysimeters under each temporary LCRS collection point constructed for each phase of construction in Fill Area 2. Where the Discharger does not construct a LCRS sump and underlying pan lysimeter for any phase of construction, the workplan will include installation of soil-pore gas monitoring devices at the edge of that phase of

construction of Fill Area 2 closest to the LCRS collection point to determine if gas containing VOCs is being released from that phase of the Unit.

SURFACE WATER MONITORING

108. The Discharger is required to monitor surface water discharges associated with storm water drainage from the Facility. The Discharger is not permitted to discharge to surface waters from the Facility except under its Industrial Activities Storm Water General Permit requirements, which comply with the State’s National Pollutant Discharge Elimination System (NPDES) requirements administered under the State Water Resources Control Board Industrial General Permit (IGP) Order No. 2014-0057-DWQ. These WDRs require the Discharger to monitor its storm water detention basins to ensure that storm water at the Facility is either diverted away from the WMUs or storm water that contacts waste is properly contained and disposed of or reused. These WDRs require the Discharger to monitor storm water exiting sedimentation basins A, B, C, SB-A, SB-1, and SB-2 in conjunction with the Discharger’s notice of intent to comply with IGP Order No. 2014-0057-DWQ which was filed on 1 July 2015.
109. A summary of the Discharger’s surface water monitoring is shown in the table below (data source: Geotracker). The table shows the number of detections for storm water detention basins per year. The data indicates that runoff from the Facility to storm water basins contains multiple COCs such as 2-butanone (MEK), 4-methyl-2-pentanone (MIBK), acetone, and n-hexane extractable material. These WDRs in Provisions H.8 require the Discharger to submit a work plan and technical report to determine the source of COCs discharged to surface waters and provide preventive measures to eliminate such discharges.

	2009			2010			2011			2012			2013			2014		
	Basin			Basin			Basin			Basin			Basin			Basin		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
# COC Detections per basin	7	6	7	0	6	5	4	0	14	5	12	9	Did not sample			1	1	8
Total # of COC Detections per year	20			11			18			26						10		

In addition to storm-water runoff, natural groundwater seepage contributes to the discharge from the Altamont Hills. The locations of groundwater seeps in the vicinity of the ALRRF are shown on Attachment G. These seeps were identified on the National Wetlands Inventory “Altamont” and “Byron Hot Springs” maps prepared by U.S. Department of Interior in 1987, and in the RUST Environment & Infrastructure, Inc. *Class II Expansion Area Site Characterization Report, Altamont Landfill and Resource Recovery Facility* (RUST report [1994a]). Groundwater seepage is common in the region as evidenced by areas of standing water in the valley bottoms that remains into the dry season. These WDRs require the Discharger in Provisions H.8 to prepare an

updated technical report identifying all groundwater seeps/springs within one mile of the drainage basins downgradient of Fill Area 1 and Fill Area 2 where groundwater potentially originated and/or flowed below a WMU and may have expressed itself as a seep/spring.

LEACHATE MONITORING

110. Leachate produced within Fill Area 1 is monitored at locations designated as LS, LS2, and Wastewater Plant Effluent. The estimate annual quantity of leachate collected from unlined Fill Area 1 Unit 1 and lined Fill Area 1 Unit 2 are shown below:

Monitoring Point(s)	Fill Area 1 Estimated Leachate Volumes (Million Gallons)									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Unit 1 LCRS (LS) & Valley Drain (VD)	1.217	1.900	1.118	1.204	0.838	1.002	1.399	1.535	2.174	2.065
Unit 2 LCRS (LS-2)	2.558	1.384	1.850	1.808	2.165	1.773	1.980	1.865	1.858	2.743

Currently the Discharger is combining leachate collected in Fill Area 1 Unit 1 (LS) with underdrain flows collected in the Fill Area 1 Unit 1 valley underdrain (VD). These WDRs require the Discharger in Provisions H.8 to manage flows from the underdrains such that the direct discharge of liquids originating from outside a WMU into a solid waste WMU for waste disposal purposes does not occur.

111. The results for leachate monitoring reported in Annual Reports from 2001 through 2015 for unlined Fill Area 1 Unit 1, at Point LS are provided below:

		Sample Location LS (Fill Area 1, Unit 1 LCRS)																
Sample Date		1/15/01	1/8/02	2/26/03	2/27/04	2/16/05	9/8/05	3/9/06	2/9/07	3/7/08	3/4/10	3/2/11	12/1/11	12/5/12	12/16/13	12/5/14	12/1/15	
FIELD PARAMETERS	pH (pH units)	6.67	7.16	7.05	6.60	7.14	6.51	6.83	7.86	6.76	7.03	6.37	6.45	6.40	6.84	6.78	7.63	
	Turbidity (NTU)	6.18	23.2	454.0	20.4	---	10.1	13.4	177	157	14	9.50	0.0	332.8	208	108	54.2	
	Temperature (Celsius)	30.7	22.3	26.3	26.2	27.0	30.7	28.6	24.0	23.3	28.2	23.8	27.8	29.8	30.6	30.9	31.3	
	Specific Conductance (µmhos/cm)	2,930	3,359	2,660	10,000	6.0	100	2,450	3,090	19,800	4,300	3,850	4,020	4,580	4,020	4,680	5,150	
GENERAL CHEMISTRY (mg/L)	Total Dissolved Solids	1,600	6,720Q	1,600	1,600C	1,500	1,800	1,700	2,000G	1,100	1,900	1,800	1,900	2,000	2,000	2,300	2,600	
	Carbonate Alkalinity	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	
	Bicarbonate Alkalinity	896	2,170	920	920	910	880	950	880	900	1,100	1,000	970C	1,000	1,000	1,200	1,400C	
	Chloride	392Q	749Q	390Q	380Q	350Q	490CQ	480Q	550Q	320Q	570	620	630	640	660C	750	860	
	Sulfate	34.2	2,380Q	40	19	4.8AC	28	19C	34CQ	47Q	19	19	14	7.7	7.3	3.9A	6.1	
	Nitrate as Nitrogen	<0.1	0.32	<0.1	<0.1	0.21	<0.1	0.12	<0.2G	0.43	<0.1	<0.1	<0.1	0.085A	<0.1	<0.1	0.33C	
	Calcium (dissolved)	131	78.2	140	150C	150	170	140	150C	190C	170	170	160	160	140	150	150	
	Magnesium (dissolved)	105	869	120	120	110	130	120	110	100C	130	130	120	130	130	140	150	
	Potassium (dissolved)	7.26	47.5	7.4	8.8	8.8	9.8C	12	12	10	23	18	13	25	22	50	80	
	Sodium (dissolved)	276	753	290	290	290	350	320	350	310C	400	410C	440C	440C	390	500	560C	
	VOLATILE ORGANIC COMPOUNDS (µg/l)	Acetone	<34	460	3.8AC	2.7A	<34	7.5A	<68	2.3A	5.0A	12A	<34	2.8A	<10	3.0A	2.8AX	9.6AT
		Benzene	1.9A	4.5A	2.0A	3.0A	1.7A	1.9A	2.0A	1.2A	1.8A	2.0A	2.4A	2.0	1.9	2.2	2.8	2.7
		2-Butanone (MEK)	<10	980	<10	<10	3.1A	<10	<20	<10	<10	4.9A	<10	<6	<6	<6	<6	<6
		Carbon Disulfide	0.86A	2.2A	<5	<5	0.32A	<5	<10	<5	<5	<5	<5	<2	<2	<2	<2	<2
		Chloroethane	<10	<10	<10	<10	<10	<10	<20	<10	<10	<10	<10	<2	<2	<2	<2	<2
		Chloroform	<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5	<1	<1	<1	<1	<1
Chlorobenzene		2.8A	<5	2.7A	3.5A	1.8A	2.1A	2.3A	1.4A	2.3A	2.4A	2.5A	2.7	2.3	2.5	3.5	3.0	
1,2-Dichlorobenzene		0.63A	<10	0.67A	0.91A	0.64A	0.96A	0.78A	0.61A	0.76A	0.88A	0.76A	0.93A	0.65A	0.94A	1.1	0.98A	
1,3-Dichlorobenzene		0.69A	<10	0.70A	0.96A	0.58A	1.0A	0.83A	0.57A	0.70A	0.61A	0.65A	0.93A	0.54A	0.58A	0.42A	0.50A	
1,4-Dichlorobenzene		12	4.7A	9.9A	13	7.1A	12	11A	7.7A	12	11	11	15	12	14	13	13	
1,1-Dichloroethane		0.83A	5.8	0.88A	1.0A	0.51A	0.31A	0.34A	<5	0.26A	<5	<5	<1	<1	<1	<1	<1	
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Cis-1,2-Dichloroethene		0.85A	2.7A	1.9A	2.8A	1.7A	0.8A	1.3A	0.7A	2.6A	2.2A	3.3A	2.5	1.7	3.5	2.1	1.7	
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5	<1	<1	<1	<1	<1	
Dichlorofluoromethane		0.36A	2.1A	0.27A	0.36A	<10	<10	<20	<10	<10	<10	<10	<2	<2	<2	<2	<2	
trans-1,2-Dichloroethene		<10	<10	0.25A	0.29A	<10	0.15A	<20	<10	0.19A	0.18A	0.20A	0.22A	<1	0.15A	<1	<1	
1,2-Dichloropropane		<5	<5	0.23A	0.25A	<5	<5	<10	<5	<5	<5	<5	<1	<1	<1	<1	<1	
Ethylbenzene		<5	5.9	0.96A	1.2A	3.1A	1.1A	0.71A	0.3A	0.25A	0.21A	<5	<1	0.18A	<1	0.47A	0.74A	
Diethyl ether (Ethyl ether)		4.2A	11	3.7A	3.6A	3.0A	3.5A	2.5A	2.6A	3.6A	3.1A	3.4A	2.9	3.0	3.3	3.0	2.4	
2-Hexanone		<10	<10	<10	<10	<10	<10	3.0A	<10	<10	<10	<10	<5	<5	<5	<5	<5	
Methylene chloride		<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5	0.35AC	<2	<2	<2	<2	
4-Methyl-2-pentanone (MIBK)		<10	28	<10	<10	<10	<10	<20	<10	<10	2.8A	<10	<5	<5	<5	3.4A	<5	
Naphthalene		<10	<10	0.96A	1.1A	1.8A	0.64A	0.51A	0.69A	<10	1.8A	0.97A	0.80A	1.8	1.3	2.0	1.7	
Styrene		<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5	<1	<1	<1	<1	<1	
Tetrahydrofuran		8.5A	150	19	18	22	22	22	27	23	41	30	20	29	33	45	33	
Tetrachloroethene		<5	<5	<5	<5	<5	<5	<10	<5	<5	<5	<5	<1	<1	<1	<1	<1	
Toluene		<5	11	0.48A	0.54A	1.8A	0.25A	0.47A	0.19A	0.29A	0.72A	0.36A	0.23A	0.91A	0.40A	0.71A	0.49A	
1,2,4-Trichlorobenzene		<5	<5	<5	0.22A	<5	<5	<10	<5	<5	<5	<5	<1	<1	0.26A	<1	0.22A	
Trichloroethene		<5	<5	<5	0.17A	<5	<5	<10	<5	<5	<5	<5	<1	<1	<1	<1	<1	
Vinyl chloride		1.7A	1.2	1.9	2.4	1.1	1.2	0.99A	0.63	1.7	1.9	1.8	2.7	1.4	1.9	0.68	1.1	
Xylenes (total)		<10	8.8A	0.85A	1.1A	4.7A	1.0A	1.3A	<10	<10	0.24A	<10	<2	<2	<2	2.8	4.7	
Tert-Butyl Alcohol		---	---	---	---	---	---	310	---	---	---	370	250	200	220	230	200	240
Methyl tert-butyl ether (MTBE)	---	---	---	---	---	0.85A	---	---	---	---	0.80A	2.6A	0.76A	0.74A	0.89A	0.65A	0.65A	

Source: Altamont Landfill 2015 Annual Report, Table 10 –Analytical Results for Leachate Monitoring, Altamont Landfill and Resource Recovery Facility

- A. Flag denotes concentration reported is estimated because it is below the reporting limit and above the method detection limit.
- C. Flag denotes analyte was also detected in the associated method blank at a reportable limit.
- G. Flag denotes elevated reporting limit due to matrix interference.
- Q. Flag denotes elevated reporting limit due to high analyte levels.
- X. Flag denotes analyte was detected in trip, field, and/or method blank associated with a different lot during the same monitoring event.
- T. Flag denotes constituent also found in trip blank.

112. The results for leachate monitoring reported in Annual Reports from 2001 through 2015 for Fill Area 1 Unit 2, at Point LS-2 are provided below:

		Sample Location LS-2 (Fill Area 1, Unit 2 LCRS)																	
Sample Date		1/15/01	1/8/02	2/26/03	2/27/04	2/16/05	9/7/05	3/9/06	2/9/07	6/6/07	2/29/08	1/13/09	11/5/10	12/1/11	12/5/12	12/6/13	12/5/14	12/1/15	
FIELD PARAMETERS	pH (pH units)	7.14	7.06	7.85	7.10	7.16	6.76	6.97	7.21	7.36	7.13	7.05	7.21	7.01	7.03	7.10	8.10	8.44	
	Turbidity (NTU)	9.67	51.8	50.6	65.8	---	290	5.9	28	39	33	198	30	6.0	0.0	173	500	51	
	Temperature (Celsius)	27.7	21.8	26.9	32.9	33.7	36.3	29.5	31.9	33.6	31.3	27.6	32.5	31.2	32.7	31.9	32.1	35.1	
	Specific Conductance (µmhos/cm)	13,880	7,474	6,020	8,140	9,480	3,220	3,110	24,200	1,570	18,500	3,110	2,020	12,600	11,500	16,020	17,500	16,100	
GENERAL CHEMISTRY (mg/L)	Total Dissolved Solids	11,800Q	6,480Q	3,800	6,500C	8,500Q	2,200Q	1,900	15,000Q	13,000Q	14,000Q	13,000Q	1,200	12,000	11,000	13,000	13,000	12,000	
	Carbonate Alkalinity	702	<5	<5	<5	<5	<5	<5	<5	<5	<20	<5	<5	<5	<5	<5	<5	<5	
	Bicarbonate Alkalinity	3,000	2,100	1,800	2,700	3,100G	1,200	1,100	4,800	4,000	3,800Q	3,200	<5	3,300C	2,500	2,500	2,400	2,400C	
	Chloride	1,280Q	668Q	270Q	650Q	1,100Q	120CQ	130Q	2,300Q	2,200Q	2,300Q	2,500Q	2,700	2,900	2,900	2,700	3,000	3,200	
	Sulfate	4,100Q	2,470Q	1,200Q	2,200Q	3,000C	470Q	340C	5,000C	4,400Q	4,700Q	5,700Q	4.1	3,300	3,000	4,700	4,000	3,600	
	Nitrate as Nitrogen	<0.1	<0.1G	<0.2G	<0.5G	<0.5	<0.1	0.15A	<1.0G	1.2G	0.57AC	0.67AG	<0.42	<0.21	<0.21	<0.21	<0.21	<0.21	1.3C
	Calcium (dissolved)	96.6	79.9	55	78C	79	58	44	73C	79C	88	130	110	110	120	130	110	110	
	Magnesium (dissolved)	1,820	823	290	940	1,300	52	36	1,700	1,500	1,700	1,700	1,300	1,100	1,000	1,400	1,300	1,100	
	Potassium (dissolved)	128	45.8	16	64	100	5.7C	5.7	230	190	210	190	230	200	190	200	210	210	
	Sodium (dissolved)	1,170	743	680	590	1,000	670	600	1,900	1,800	2,000C	2,000C	2,100C	2,100C	2,000C	2,000	2,100	2,200C	
	Acetone	550A	450	74C	1,900	400	13A	<34	200	88	72CT	<68	<34	40	26	40	<10	36T	
VOLATILE ORGANIC COMPOUNDS (µg/L)	Benzene	9.9A	5	2.9A	8.9A	4.4A	1.7A	0.76A	4.3A	3.1A	3.1A	14	1.7A	1.4	1.7	1.3	1.0	0.76A	
	2-Butanone (MEK)	2,000	980	220	6,300	1,000	33	7.7A	300	170	140	<20	<10	13	<8	27	<10	<6	
	Carbon Disulfide	<100	1.4A	0.34A	<250	<50	<5	<5	<20	1.1A	4.4A	3.1A	<5	<2	<2	<2	<2.3	<2	
	Chloroethane	<200	<10	0.30A	<500	<100	0.29A	<10	<40	<10	<10	<20	<10	<2	<2	<2	<2.1	<2	
	Chloroform	<100	<5	<5	<250	<50	<5	<5	<20	<5	<5	<10	<5	<1	<1	<2	<1	<1	
	Chlorobenzene	<100	<5	1.5A	<250	<50	1.6A	0.97A	<20	0.48A	0.39A	0.53A	<5	0.38A	<1	<1	<1	<1	
	1,2-Dichlorobenzene	<200	<10	0.41A	<500	<100	0.5A	0.44A	<40	0.43AX	0.32AC	0.40A	<10	0.47A	<1	<1	<1	<1	
	1,3-Dichlorobenzene	<200	<10	<10	<500	<100	<10	<10	<40	<10	<20	<10	<1	<1	<1	<1	<1	<1	
	1,4-Dichlorobenzene	<200	6A	5.9A	11A	7.1A	5.9A	5.8A	7.6A	8.1AX	4.5A	6.3A	7.3A	7.1	6.3	5.0	3.6	3.5	
	1,1-Dichloroethane	14A	6.7	3.2A	<250	<50	0.92A	0.98A	1.3A	1.1A	0.69A	0.46A	<5	<1	<1	<1	<1.1	<1	
	1,2-Dichloroethane	<100	<5	0.98A	<250	<50	<5	<5	1.9A	1.7A	1.2A	<10	<0.52	<0.5	<0.52	<0.52	<0.65	<0.5	
	Cis-1,2-Dichloroethene	6.8A	3.3A	6.3A	7.3A	4.3A	5.0A	2.7A	3.6A	2.8A	2.5A	1.8A	1.1A	0.97A	0.94A	0.70A	<1	0.32A	
	1,1-Dichloroethene	<100	<5	<5	<250	<50	<5	<5	0.91A	0.35A	<5	<10	<5	<1	<1	<1	<1.2	<1	
	Dichlorofluoromethane	4.4A	2.4A	0.65A	<500	<100	<10	<10	4.5A	<10	0.50A	<20	<10	<2	<2	<2	<2	<2	
	trans-1,2-Dichloroethene	<200	<10	0.23A	<500	<100	0.15A	<10	<40	<10	<10	<20	<10	<1	<1	<1	<1	<1	
	1,2-Dichloropropane	<100	<5	0.35A	<250	<50	0.23A	0.20A	<20	0.33A	0.24A	<10	<5	<1	<1	<1	<1	<1	
	Ethylbenzene	15A	6.9	3.5A	21A	13A	2.9A	0.48A	9.9A	7.6	5.9	5.6A	4.0A	4.0	3.2	2.3	1.6	1.1	
	Diethyl ether (Ethyl ether)	16A	13	5.3A	<500	3.9A	2.4A	1.5A	3.6A	<10	2.2A	1.7A	1.1A	0.82A	1.2A	<2	<2	0.55A	
	2-Hexanone	<200	<10	<10	<500	<100	<10	<10	<40	<10	<10	<20	<10	<5	<6.8	<6.8	<8.5	<5	
	Methylene chloride	<100	<5	<5	<250	3.3AC	<5	<5	1.5AX	0.39AC	0.43AC	<10	<5	0.99AC	<2	<2	<2	<2	
	4-Methyl-2-pentanone (MIBK)	<200	27	6.6A	230A	36A	3.6AT	0.98A	9.6A	7.3A	4.9A	<20	<10	<5	<5	<5	<5	<5	
	Naphthalene	28AC	<10	1.6A	<500	<100	0.8A	<10	3.9A	5.6AX	4.3A	3.6A	<10	3.9	2.3	3.1	4.9	1.3	
	Styrene	<100	<5	<5	<250	<50	<5	<5	<20	0.94A	<5	<10	<5	<1	<1	<1	<1	<1	
	Tetrahydrofuran	300	150	50	410A	180	7.0A	1.8A	200	110	76	61	82	82	66	12	48	61	
	Tetrachloroethene	<100	<5	0.42A	<250	<50	0.63A	0.41A	<20	0.31A	<5	<10	<5	<1	<1	<1	<1	<1	
	Toluene	35A	13	5.4	57A	20A	3.2A	0.41A	14A	6.8	6.6	4.8A	3.5AT	2.9	2.9	2.3	2.4	1.2	
	1,2,4-Trichlorobenzene	<100	<5	<5	<250	<50	<5	<5	<20	<5	<5	<10	<5	<1	<1	<1	<1.1	<1	
	Trichloroethene	<100	<5	0.91A	<250	<50	0.86A	0.63A	0.95A	0.53A	0.29A	<10	<5	<1	<1	<1	<1	<1	
	Vinyl chloride	<200	1.4	1.3	<25	<5	0.84	0.64	1.6A	<0.5	0.49A	<1	<1.6	<0.5	<0.5	<0.5	<0.5	<0.5	
	Xylenes (total)	26A	10	5.3A	45A	21A	4.5A	0.82A	17A	10	8.3A	2.0A	8.3AT	4.9	3.6	2.1	1.0A	1.4A	
Tert-Butyl Alcohol	---	---	---	---	---	67	---	---	---	---	1100	1500	1300	1,200	800	920	860		
Methyl tert-butyl ether (MTBE)	---	---	---	---	---	1.4A	---	---	---	---	3.8A	2.2A	1.9A	1.6A	1.2A	<5	0.90A		

Source: Altamont Landfill 2015 Annual Report, Table 10 –Analytical Results for Leachate Monitoring, Altamont Landfill and Resource Recovery Facility

- A. Flag denotes concentration reported is estimated because it is below the reporting limit and above the method detection limit.
- C. Flag denotes analyte was also detected in the associated method blank at a reportable limit.
- G. Flag denotes elevated reporting limit due to matrix interference.
- Q. Flag denotes elevated reporting limit due to high analyte levels.
- T. Flag denotes constituent also found in trip blank
- X. Flag denotes analyte was detected in trip, field, and/or method blank associated with a different lot during the same monitoring event.

113. As part of the amended RWD/JTD, the Discharger submitted a December 2008 *Leachate and Condensate Recirculation Plan* requesting approval for returning leachate and landfill gas condensate to units with similar classification and waste characteristics from which they originated to reduce leachate and condensate management costs. Title 27 CCR 20340(g) requires that leachate be returned to the unit of origination (or unit of similar classification) or be discharged in a manner approved by the Central Valley Water Board. This section also references State Water Board Resolution No. 93-62 regarding liquids restrictions in 40CFR 258.28 for MSW landfills, which 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 leachate collection system. Therefore, leachate and landfill gas condensate from composite lined units at the landfill may be returned to the unit from which they came or units of the same classification (Class II in this case). This Order includes requirements for returning leachate and landfill gas condensate back to the units in such a way that it is not exposed to surface water runoff, will not cause instability of the landfill, will not seep from the edges of the units.

LANDFILL GAS MONITORING

114. The facility has installed vertical and horizontal landfill gas collection wells and piping into the waste in Fill Area 1, Unit 1 and Unit 2. The collection system utilizes high density polyethylene (HDPE) collection pipe and Schedule 80 PVC or steel riser pipe for wells. As the landfill expands, new wells and collection piping is brought online. Landfill gas collected from the system is collected and drawn to the landfill gas-to-energy facility, which consumes an average of 3.6 million cubic feet of landfill gases per day. The existing landfill gas collection system for Fill Area 1 and proposed landfill gas collection system for Fill Area 2 is shown in Attachment F.

115. Landfill gas condensate generated within Fill Area 1 is collected and either gravity flows or is pumped through the lateral and header pipes to a storage tank located at the former landfill gas flare station. The condensate is then removed from the storage tank for destruction in the landfill flare(s) or returned to Unit 2. Alternatively, if the Discharger restarts the WWTP, the Discharger may separate the aqueous phase from the landfill gas condensate for processing in the WWTP. The Discharger historically has injected the following volumes of gas condensate collected from Fill Area 1 into Fill Area 1 Unit 2.

Landfill Gas Condensate Injected into Fill Area 1 Unit 2 (Million Gallons)					
Year	2010	2011	2012	2013	2014
Volume	1.122	2.599	2.588	2.605	2.325

116. There are 26 landfill gas monitoring probes around the Facility as shown in Attachment F. Typically landfill gas monitoring falls under the jurisdiction of CalRecycle unless the Discharger has determined that landfill gas is the cause of the release of VOCs from a

WMU to receiving waters. Under those conditions the Central Valley Water Board in accordance with Title 27 section 20425 can require the Discharger to perform landfill gas monitoring in order to determine the effectiveness of the Discharger's corrective action program. Due to continued detection of VOCs in groundwater and the underdrain associated with Fill Area 1, these WDRs require the Discharger to install a gas monitoring system in close vicinity to where VOCs have been detected and perform additional gas monitoring in perimeter probes. These WDRs also require the Discharger to perform gas monitoring in the unsaturated zone for each phase of construction in Fill Area 2 as a proxy for final installation of a pan lysimeter below the final LCRS sump since the Discharger does not plan to construct pan lysimeters under each temporary LCRS sump constructed for each phase in Fill Area 2.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

117. Locations of groundwater monitoring wells are shown on Figure F. The downgradient edge of Fill Area 1 Unit 1 has historically been impacted by VOCs. Currently, groundwater monitoring wells in corrective action are:

Fill Area 1- Corrective Action Monitoring

Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone ¹
E-03A	Corrective Action	U1	W
E-05	Corrective Action	U1	A
E-07	Corrective Action	U1	W
E-17	Corrective Action	U1	W/U
E-20B	Corrective Action	U1	U
E-23	Corrective Action	U1	W/U
MW-12	Corrective Action	U1	W
PC-1B	Corrective Action	U1	U
PC-1C	Corrective Action	U1	W/U

¹ A= alluvium, W= weathered bedrock, U = unweathered bedrock

118. Low concentrations of VOCs were detected in groundwater below the Fill Area 1, Unit 1 landfill toe in 1982. Monitoring wells E-05 and E-07 were installed near the toe in 1985 to assist in the monitoring. A groundwater interceptor barrier (GWIB) was installed in 1987 to contain and extract groundwater in the toe area. The toe area of the landfill was closed with a prescriptive cover liner system, and landfill gas collection and control were implemented as corrective actions. The VOCs reported during the initial operation of the GWIB have not been detected above reporting limits since 1992 (SCS Engineers, July, 2003). A detailed evaluation and pilot study program was conducted in 2003 and 2004 to assess the effectiveness of the GWIB. The results of the study indicated that extraction from the GWIB had no consequential effect on groundwater quality at the site, and groundwater extraction from the GWIB, therefore, was terminated in 2004. Based on review of the data, a Revised Engineering Feasibility Study was submitted in 2005,

which included continued landfill gas extraction coupled with monitored natural attenuation as the appropriate remedial action. Groundwater monitoring continues in this area. These WDRs adopt the corrective action measures for this area as described in the 2005 Revised Engineering Feasibility Study. Monitoring wells E-05 and E-07 are currently the Point of Compliance wells in this area.

119. Low concentrations of VOCs were detected on the east side of Fill Area 1, Unit 1 at monitoring well E-20B in 1999. Monitoring data collected from the E-20B area over the past several years have shown a continuing decrease in the concentrations of VOCs. The source of the low concentrations of VOCs detected in E-20B has been attributed to landfill gas. Landfill gas collection and extraction systems were installed as corrective actions to mitigate the impact. These efforts have resulted in improved groundwater quality at E-20B. Based on review of the data, a Revised Engineering Feasibility Study was submitted in 2005, which included continued landfill gas and condensate extraction. These WDRs adopt the corrective action measures for this area as described in the 2005 Revised Engineering Feasibility Study.
120. The Discharger in its 2015 First Semiannual MRP report stated that "Previous studies identified LFG as the source of VOC detections at VZM-A and VD2 (Geomatrix, 2001), and this is likely also the case for VD (Valley Drain location). To reduce the influence of LFG as these locations, ALRRF has been extracting LFG from VD2, LS2, and VZM-A piping systems. Liquids that are captured in the VZM-A, VD, and VD2 containment systems are handled (e.g., collected and disposed) in the same way as leachate." The Discharger states that LFG is only being extracted from VD2 and LS2, therefore, these WDRs and MRP require the Discharger to monitor and report landfill gas removed from VD2, LS2, and piping systems as well as monitor the effectiveness of their active landfill gas extraction system in Fill Area 1.

WATER QUALITY PROTECTION STANDARDS

121. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill Unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill Unit in accordance with Title 27, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
122. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). Water Code section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.

123. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill Unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill Unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [aka 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.
124. For a naturally occurring constituent of concern, the Title 27 requires concentration limits for each constituent of concern be determined as follows:
- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
 - b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).
125. The methods for calculating concentration limits were included in the Discharger's JTD. The method uses Practical Quantitation Limits (PQLs) as the concentration limits for VOCs, and the Shewart-CUSUM control chart for intra-well statistical analysis of inorganic monitoring parameters.
126. These WDRs in Provisions H.8 required the Discharger to submit a WQPS including concentration limits and a sample collection and analysis plan that complies with the following requirements:
- a. The Discharger in its WQPS shall clearly indicate the concentration limits for each monitored medium (i.e. ground water, surface water, and unsaturated zone).
 - b. The sample collection and analysis plan shall comply with the quality assurance/quality control requirements of Title 27 section 20415(e)(4)-(5).
 - c. For naturally occurring monitoring parameters the Discharger shall establish concentration limits based on background monitoring data that represents the quality of ground water that has not been affected by a release from the Unit.
 - d. For non-naturally occurring monitoring parameters, the Discharger shall use non-detect as the concentration limit for determination if there is measurably significant evidence of a release; or the Discharger shall submit a technical report in accordance with Title 27 section 20400 requesting establishing concentration limits

greater than background if the Discharger determines that for areas where a release has occurred, and the Discharger is implementing a corrective action program, it is technically or economically infeasible to achieve concentration limits based on background water quality.

FUTURE OPERATIONS

127. The Discharger in its JTD has proposed the development of the following additional ancillary facilities at ALRRF:

- a. **A Materials Recovery Facility (MRF)** to complement and expand on the recovery of recyclables, wood waste and green waste materials. The MRF will be an enclosed facility with several processing/sorting lines that will be capable of handling 400 to 500 tons per day (tpd) of incoming waste to recover recyclables (e.g., metal, glass, plastic, paper, wood and green materials). The residual fraction will be disposed at the working face of the landfill. The MRF will be located near the LNG facility within the CUP permit area, but not within the permitted waste footprint of the ALRRF. The Discharger is currently permitted to dispose of MRF fines at ALRRF. These WDRs require the discharger to monitor and report all liquid waste generated at the MRF Facility that is classified as non-hazardous waste or designated waste and requires the Discharger to appropriately dispose of such liquid.
- b. **A new truck wash facility at Fill Area 2** to service primarily outbound Fill Area 2 refuse trucks. Attachment C shows the approximate location of the truck wash facility. These WDRs contain prohibitions and specifications related to the new truck wash facility serving either Fill Area 1 or Fill Area 2

LINER SYSTEM FOR FILL AREA 2

128. The Discharger's proposed a bottom liner system in Fill Area 2 consisting of, from top to bottom:

- a. A minimum 12-inch thick operations layer with minimum hydraulic conductivity of greater than 1×10^{-4} cm/sec⁶;
- b. A 8 ounce/yard² geotextile separator
- c. A minimum one-foot thick granular LCRS layer;
- d. A 12 ounce/yard² geotextile cushion layer
- e. A double-sided textured 60-mil thick HDPE geomembrane;
- f. A minimum two-foot compacted low-permeability soil layer⁷;

⁶ The Discharger may use a sufficient number of gravel drainage windows as an alternative within the operations layer properly placed to achieve the minimum hydraulic conductivity requirement in order to ensure that leachate is able to percolate through the operations layer.

⁷ The Discharger's current test pad results per Title 27 section 20324(g) determined that the on-site clay source materials required addition of 3% by weight of bentonite in order to meet the maximum 1×10^{-7} cm/sec hydraulic conductivity requirements of State Water Board Resolution 93-62. The need for and percentage of bentonite admix may be modified based on additional soil source characterization and-additional test pad results.

- g. A minimum one-foot compacted general earth fill layer (wetted footprint⁸ area only);
- h. A 8 ounce/yard² geotextile separator (wetted footprint area only);
- i. A minimum one-foot thick groundwater subdrain gravel layer (wetted footprint area only);
- j. A 8 ounce/yard² geotextile separator (wetted footprint area only); and
- k. Prepared subgrade.

129. Side slope liners for Fill Area 2 are proposed to be constructed of, from top to bottom:

- a. A minimum 24-inch thick operations layer
- b. A double-sided geocomposite drainage layer LCRS;
- c. A 60-mil single-sided textured HDPE geomembrane;
- d. A two-foot compacted low-permeability soil layer or a Geosynthetic Clay Layer (GCL);
- e. A minimum one-foot compacted general earth fill layer (wetted footprint only);
- f. A double-sided subdrain drainage geocomposite (wetted footprint area only); and
- g. A prepared subgrade.

130. The LCRS for the bottom liner consists of a one-foot permeable gravel layer overlying a geotextile fabric and the HDPE geomembrane; intermediate perforated collection pipe network; a depressed sump area; and a side-slope riser with leachate pump. The leachate collection and removal system for the side-slope liner consists of a double-sided geocomposite. The estimated design leachate generation rate is 580 gallons per minute. The estimated design extraction rate is 1,160 gallons per minute using a leachate pump once the Discharger constructs a depressed leachate sump at its final location at the toe of Fill Area 2 Unit 1.

131. Based on the current site development plans in the 2015 JTD, the LCRS for Fill Area 2 will consist of a 12-in. thick GDM layer at the floor of the landfill and a drainage geocomposite along the side-slopes. A perforated HDPE collection pipe will be placed within a trench running along the central axis of the floor. A series of lateral LCRS perforated pipes, spaced an average of 500 feet apart, will collect leachate across the floor and channel it towards the central collection pipe. Additionally, leachate collection pipes will be placed along benches on the side-slopes, and a perimeter collection network of pipes will be installed along the perimeter of the Fill Area 2 floor. The leachate will drain down through the geocomposite, granular LCRS layer, and piping network towards a single sump, riser pipe, and clean-out pipe at the southeastern end of the landfill.

132. The Phase 1 of Fill Area 2 containment system design features an 80-ft long 3-in. diameter HDPE LCRS test pipe (solid on slope and perforated on floor). The pipe will be placed on top of side slope geocomposite and on top of floor LCRS granular drainage layer. The pipe shall be used to perform annual LCRS testing of the Fill Area 2 Phase 1.

⁸ Wetted footprint includes capillary fringe.

These WDRs require that the Discharger make provisions that in each construction phase the Discharger shall install a means to perform the annual LCRS test required in Title 27 section 20340(d).

133. The July 2015 JTD includes a stability analysis for Fill Area 1 and Fill Area 2 pursuant to Title 27, section 21750(f)(5). The Discharger's stability analysis includes components to demonstrate the integrity of the landfill foundation, refuse fill slopes, 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 demonstrates that the structural components of Fill Area 1 and Fill Area 2 landfill foundation and containment systems will withstand the forces of the Maximum Credible Earthquake (MCE) without failure of the containment systems or environmental controls. The Discharger's July 2015 JTD states that the Discharger must perform laboratory testing to verify final slope stability of the final closure cover for Fill Area 1 and Fill Area 2. These WDRs require the Discharger to perform a slope stability analysis report based on fill sequencing for each phase of construction of Fill Area 2 prior to construction of each phase.
134. The liner system for Fill Area 2 complies with the prescriptive standards for waste containment specified in 40 Code of Federal Regulations section 258 (aka Subtitle D) and State Water Resources Control Board Resolution 93-62 Section III.A.1.
135. This Order approves the Discharger's proposed liner system for future phases of construction in Fill Area 2 Unit 1 and Fill Area 2 Unit 2 as described in Specifications D.1 and D.2 and requires that the Discharger submit design plans and construction quality assurance (CQA) plans for each new module or modules for review and approval at least 120 days prior to construction unless the Discharger chooses to proceed at their own risk.
136. Construction will proceed only after all applicable construction quality assurance plans have been approved by Central Valley Water Board staff unless the Discharger chooses to proceed at their own risk.

LINER PERFORMANCE DEMONSTRATION

137. 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."
138. The Discharger submitted a liner performance appraisal for construction of the composite liner system at the facility Class II waste management units (Golder

Associates, Inc. October 2001; and GeoSyntec Consultants, Inc., July 2004). The liner performance was evaluated using the Giroud and Bonaparte [1989] leakage model as incorporated in the USEPA-approved HELP [Schroeder et al., 1997] model. The results of the liner performance demonstration showed that the estimated leakage potential of the composite liner proposed for the site is very small, and conversely, the containment efficiency of the proposed liner system is “high” (i.e., computed as greater than 99.999%). The leakage potential is predicted to range from zero to a very small amount (maximum calculated potential leakage rate of 1.5×10^{-3} gal/acre/day during initial operations) based upon the results of the HELP analyses. Upon buildout of the landfill, the HELP analyses predict a maximum calculated potential leakage rate of 3.9×10^{-4} gal/acre/day and a containment efficiency of 99.9997%. The HELP analyses are in agreement with the observations from double-lined landfills presented in a study sponsored by the USEPA [Bonaparte, et al., 2002]. Therefore, the liner performance appraisals comply with the requirements in Title 27.

FINAL CLOSURE COVERS

139. The Discharger in its July 2015 JTD proposes the following final closure cover systems:
- a. For unlined Fill Area 1 Unit 1 an engineered alternative (from bottom to top):
 - (1) 2-feet of compacted soil
 - (2) 2-feet of soil placed loosely at below optimum moisture; and
 - (3) A vegetative cover selected to maximize removal of moisture from the cover.
 - b. For composite lined Fill Area 1 Unit 2 and Fill Area 2 (from bottom to top):
 - (1) 2-feet of foundation layer comprised of random soils;
 - (2) Minimum 1-foot of low-permeability layer of compacted fine grained soils or GCL equivalent, which will yield an equivalent low flow-through rate of 1×10^{-7} cm/s or less;
 - (3) a flexible membrane liner (FML) consisting of a minimum 60-mil HDPE cover;
 - (4) a synthetic drainage layer (e.g., geonet) overlain by 16-ounce/sy geotextile material; and
 - (5) a 1-ft vegetative layer comprised of random soils.
140. Title 27 section 21090(a)(2) requires that the prescriptive standard for a final closure cover contain a 1-foot low permeability layer with a hydraulic conductivity of either 1×10^{-6} cm/sec (i.e., 1 ft/yr) or less, or equal to the hydraulic conductivity of any bottom liner system or underlying natural geologic materials, whichever is less permeable, or another design which provides a correspondingly low through-flow rate throughout the post-closure maintenance period.
141. Fill Area 1 Unit 1 is an unlined Unit that is currently in corrective action for known releases of VOCs to groundwater. Title 27 section 20950(a)(2)(A)(1) requires that part of

the performance standard for closed Units is that *"the final cover constitutes the Unit's principal waste containment feature"*. The Discharger is therefore required to construct a final closure cover over Fill Area 1 Unit 1 that conforms to the provisions of Title 27.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

142. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste landfills that is consistent with the federal municipal solid waste regulations promulgated under 40 Code of Federal Regulations section 258 (aka 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.
143. Title 27, section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27, section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080(b)(2).
144. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
145. The Discharger proposes an engineered alternative liner system for the Class II surface impoundments 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 municipal solid wastes.

ENGINEERED ALTERNATIVE FOR GROUNDWATER SEPARATION

146. The Discharger submitted a Report of Waste Discharge requesting approval of an engineered alternative to five feet of groundwater separation for Fill Area 2 similar to that constructed in Fill Area 1, Unit 2. The Discharger proposes to install an underdrain drainage network below the WMU's liner system in order to achieve three feet of separation in Fill Area 2. This Order conditionally approves the proposed three feet of

separation for Fill Area 2 and requires that the Discharger monitor the water in the groundwater underdrain for impacts. If impacts are found and confirmed, the Discharger must re-evaluate the previously approved alternative design. If a new alternative design is proposed and approved by staff, a WDR revision by the Central Valley Water Board will be required in order to implement the new alternative. Otherwise, the Discharger must provide five feet of separation in all future units in Fill Area 2 constructed after the impacts are found (Discharge Specification B.8). The Discharger must also investigate and remediate the impacts as required in section G. Detection Monitoring Specifications of these WDRs.

ENGINEERED ALTERNATIVE FOR CLASS II SURFACE IMPOUNDMENTS LINER SYSTEM

147. The Discharger proposes an engineered alternative to the prescriptive liner requirements of Title 27 for the three Class II surface impoundments. The engineered alternative consists of from the top down:
- a. 1 foot gravel operations layer (optional, base area only);
 - b. 40-mil sacrificial HDPE geomembrane (optional, side slopes only);
 - c. the primary 60-mil-thick HDPE geomembrane;
 - d. HDPE Geonet drainage layer;
 - e. LCRS gravel (in LCRS sump area only);
 - f. The secondary 40-mil HDPE geomembrane;
 - g. A geosynthetic clay liner (GCL) (engineered alternative containment layer);
 - h. A pan lysimeter single sided geocomposite;
 - i. Pan lysimeter gravel;
 - j. A 40-mil HDPE geomembrane (only under pan lysimeter);
 - k. 4-inch select soil liner bedding; and
 - l. A compacted subgrade.
148. The Discharger has proposed substituting the prescriptive requirement for a two-foot compacted low-permeability soil layer as part of the composite liner system for waste containment with a geosynthetic clay liner (GCL) with equivalent or better low permeability qualities.
149. For the 8-million gallon Fill Area 2 Class II surface impoundment, the Discharger proposed an optional operations layer and sacrificial geomembrane layer to protect the primary liner when the impoundments are cleaned out. These layers are also optional in the other two Class II surface impoundments based on operational and maintenance needs.
150. The Class II surface impoundments will be graded with positive slopes such that the geocomposite LCRS layer will drain to a LCRS collection sump. The Discharger's design consultant has certified that a 0.5% drainage slope (non-standard slope specification) on the bottom of the Fill Area 2 Class II surface impoundment is sufficient to ensure unconfined flow of leachate in the LCRS drainage layer. The LCRS sump will

have minimum plan dimensions of 3 meters (10 feet) square, a minimum thickness of 0.3 meters (one-foot), and a minimum volume of about 2.83 meters³ (~100 cubic feet). The LCRS sump will contain drainage gravel and a minimum 0.45-meter (18-inch) diameter perforated HDPE collection pipe(s) for removal of any liquid from the leak detection system.

151. The LCRS geocomposite drainage layer will have a minimum transmissivity of 4×10^{-4} meters² per second (4×10^{-3} feet² per second). Assuming a hypothetical damage to the primary geomembrane liner equal to a 1 millimeter diameter hole for every acre of lined area (suggested standard value for modern liner construction & CQA) and a maximum permitted hydraulic head of 0.3m (e.g., 12-inch maximum), the LCRS geocomposite will have a flow capacity of 20 meters³ per acre per day (e.g., >5,000 gallons per acre per day). The minimum 0.45-meter (18-inch) diameter perforated HDPE collection pipe(s) and LCRS sump will both have capacities of at least 21 meters³ per acre per day (~5,550 gallons per acre per day). Given a recommended Action Leakage Rate of 7.57 meters³ per acre per day (2,000 gallons per acre per day) for the Class II Impoundments, the proposed LCRS geocomposite drainage layer, sump, and pump system will exceed the volume of leachate by 2.5 times. This exceeds the minimum requirement of 2.0 times as required by Title 27.
152. For Fill Area 2 Unit 1, the Discharger has installed an approximately 1-mile long 8-inch inside diameter double-walled conveyance pipe to convey leachate collected via gravity to the 8-million gallon leachate storage pond. The pipeline and leachate pond are shown on Attachment C. The Discharger's sizing of the 8-inch conveyance pipe relied upon the Discharger diverting a majority of a 1000-year 24-hour storm event (design storm) falling on the WMUs when waste is initially placed. These WDRs require the Discharger to install stormwater diversion structures in accordance with Title 27 section 20365 in order to prevent inundation of the leachate conveyance pipe and exceedance of the 1-foot maximum head requirement on the LCRS primary liner.
153. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner for all three Class II surface impoundments would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. The Discharger 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.

ENGINEERED ALTERNATIVE FOR LANDFILL CLOSURE COVER

154. Title 27 CCR Sections 21780(c)(3) and (d)(1) [sections promulgated by the CIWMB] require the Discharger to submit the final closure and post-closure maintenance plan, or for the closure of discrete units, the partial final closure and post-closure maintenance plan, at least two years prior to the anticipated date of closure.
155. 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, no more than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system or underlying natural geologic materials, whichever is less permeable.
- c. One-foot soil erosion resistant/vegetative layer.

156. 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.
157. In 1989, the Discharger closed approximately 9 acres of Fill Area 1, Unit 1 with a soil cover. In 1992, the Discharger closed approximately 17.8 acres of Fill Area 1, Unit 1 with a soil cover consisting of a one foot vegetative soil layer over a one foot compacted clay soil layer over existing interim cover.
158. The Discharger submitted a December 2008 Alternative Final Cover (AFC) Design Report ((Dwyer, Valceschini, and Obereinier, December 2008 hereafter referred to as AFC Report) for the remainder of Fill Area 1 (Units 1 and 2). The proposed alternative final cover is an evapotranspirative (ET) cover, also known as a water balance cover. This type of cover functions by storing moisture between the soil particles during the rainy season, and releasing that moisture during the growing season and dry season through plant uptake and evaporation. The AFC Report states that this type of cover has advantages over a prescriptive cover that include better ability to accommodate settling and subsidence, increased rooting depth for native vegetation, better static and seismic slope stability, reduced complexity for long-term maintenance, better ecological diversity and density, and potentially increased end-use capabilities.
159. Federal regulations allow for alternative final covers that provide an “equivalent reduction in flux” to the prescriptive standard, and State regulations under Title 27 indicate that a “similar low through-flow rate” should be achieved. State regulations also say that alternatives can be approved that “will continue to isolate the waste in the Unit from precipitation and irrigations waters at least as well as would a final cover built in accordance with applicable prescriptive standards.”
160. The AFC Report presented results from a five-year pilot study of a four-foot thick ET cover conducted under the Alternative Covers Assessment Project (ACAP), a US EPA program. The project was one of many ACAP projects conducted in California and the United States. The ACAP cover performed well until the third year of the study at which point increased percolation was measured in the underlying lysimeter. Moisture probe and lysimeter data indicated an immediate response to rainfall even at the deepest points in the cover. The Discharger concluded that preferential flow was occurring, and that it was caused by shrinkage of the soil away from the edges of the lysimeters and moisture probes. The Discharger also concluded that the cause was its placement at above-optimum moisture and with too much compaction that would cause the soil to shrink when it dried out during the summer.

161. The AFC Report also presented information from the examination of the existing final covers that were installed in 1989 and 1992. Several trenches were dug into the covers to examine the soil and rooting depths. The soil was found to be in generally good condition, with no evidence of preferential flow having developed during the almost 20 years since the covers were installed. The Discharger also conducted a borrow source investigation to verify the properties of the particular types of soil needed to complete the proposed final cover.
162. Based on the above information, the Discharger designed a proposed four-foot thick ET cover consisting of two feet of soil placed loosely at below-optimum moisture over two feet of compacted soil, a design similar to the cover placed in 1992. The cover would be vegetated using native annual and perennial species selected to maximize removal of moisture from the cover. The Discharger conducted extensive modeling of the proposed cover over a ten-year period, including the two wettest years on record (1982-83) using rainfall data from the nearby Livermore station. The cover was also modeled under conditions of five consecutive years of above average precipitation of 17.7 inches per year based on 2005 rainfall. Rainfall was measured at the ACAP test plot during the study and indicated rainfall at the site is similar to, but slightly less than that measured at the Livermore station that averages 14.8 inches per year. The modeling indicated that the proposed cover would allow percolation to a maximum depth of 23.2 inches into the cover over the ten year period under the above average precipitation conditions that included the wettest two years on record. The modeling also indicated that the proposed cover would allow percolation to a maximum depth of 20.1 inches over the five-year period of above-average rainfall. These results indicate that there would be negligible flux through the proposed four-foot (48-inch) cover under either scenario, and that it would therefore meet both the State and federal regulatory requirements.
163. This Order approves the proposed alternative ET final cover design for closure of the remainder of Fill Area 1, Unit 1, with a contingency that the Discharger can demonstrate that the ET cover isolates the underlying wastes from precipitation as required by Title 27 sections 20950(a)(2)(A)(1) and 21090(a) for correspondingly low through-flow rate in the case where there is the absence of a bottom liner system (unlined WMU). These WDRs require the Discharger to substantiate the correspondingly low through-flow rate through monitoring and other means of validation and verification. The Discharger shall implement an approved contingency plan if the installed ET cover over Fill Area 1 Unit 1 fails to meet the performance objectives described in the AFC Report for providing correspondingly low through-flow rate per Title 27 regulations in the case where there is the absence of a bottom liner system and known releases are occurring.
164. Prior to approval of an alternative final cover for Fill Area 1, Unit 2, or for Fill Area 2, this Order requires the Discharger to monitor the performance of a minimum 10-acre ET cover over Fill Area 1 Unit 1 for a maximum monitoring period of four years after it is installed on Fill Area 1, Unit 1. This Order requires that the Discharger provide a monitoring and contingency plan for review and approval by the Executive Officer to monitor the installed ET cover for the maximum period of four years. The purpose of the monitoring period is to provide additional data upon which to evaluate whether the ET

cover will perform as modeled, given that the ACAP cover did not perform as expected, prior to approval of an alternative ET cover for the remainder of the landfill WMUs. Once the four year monitoring period is completed and the Discharger demonstrates that the minimum 10-acre ET Cover meets the performance objectives described in the AFC Report and provides correspondingly low through-flow rate per Title 27 regulations for WMUs with a bottom liner system, the Discharger may install the alternative ET final cover over Fill Area 1, Unit 2, and if desired, over Fill Area 2 with any necessary adjustments to the proposed design based on the monitoring results and Central Valley Water Board staff approvals.

165. The Discharger proposes that side slopes for closed Fill Area 1 will be sloped at 2H:1V and will include 10-foot wide benches every 50 vertical feet with a top deck area having slope gradients of no less than 5% to promote drainage of precipitation from the WMU final closure cover. The Discharger's JTD indicates that final grading the top deck area with a minimum 5% slope gradient will account for settlement allowing the top deck area to continue to meet the 3% slope gradient requirement of Title 27 during the post closure maintenance period. Title 27 section 21090(a) also requires 15-foot wide benches every 50 vertical feet. These WDRs include specifications requiring the Discharger to construct 15-foot wide benches every 50 vertical feet on the side slopes of closed Fill Area 1 where the side slopes have not already been constructed with 10-foot benches at the time of adoption of these WDRs and the Discharger has indicated that the narrower bench will not prevent the Discharger from performing post closure maintenance in these areas.
166. Title 27 section 21090(a) requires that designs having any slopes steeper than 3H:1V, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required under Title 27 section 21750(f)(5). The Discharger has performed a slope stability analysis for the proposed final cover for Fill Area 1. The Discharger determined that for side slopes of 2H:1V the compatibility of the cover materials selected for construction must be evaluated prior to construction of the cover system by comparing site-specific laboratory interface shear strengths (obtained from tests performed at low normal stresses consistent with cover conditions) with the strengths presented in the slope stability analyses. The combination of cohesion or adhesion and friction angle must be sufficient to meet or exceed the minimum required strength envelope. The Discharger determined that given the slope inclinations, if the materials as tested do not meet the design strength envelopes for one or more of the scenarios, reinforcement or an engineered alternative cover system may be required to achieve an acceptable degree of stability and deformation control. These WDRs in the specifications require the Discharger to perform the necessary laboratory tests and analysis required to ensure that the Discharger complies with the slope stability requirements of Title 27.
167. Based on the current site development plans in the 2015 JTD, the Discharger proposes that side slopes for closed Fill Area 2 will be sloped at 3H:1V and will include 20-foot wide benches every 50 vertical feet with a top deck area having slope gradients of no less than 5% to promote drainage of precipitation from the WMU final closure cover. The

Discharger's JTD indicates that final grading the top deck area with a minimum 5% slope gradient and in other areas at 8% (i.e., access roads) will account for settlement allowing the top deck area to continue to meet the 3% slope gradient requirement of Title 27 during the post closure maintenance period. While final closure configurations will vary, final design must conform to minimum slope stability and drainage standards.

168. Title 27 section 21090(a) requires that designs having any slopes steeper than 3H:1V, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required under Title 27 section 21750(f)(5). The Discharger's proposed final closure cover for Fill Area 2 includes a geosynthetic component and requires a slope stability analysis. The Discharger determined that the compatibility of the cover materials selected for construction must be evaluated prior to construction of the cover system by comparing site-specific laboratory interface shear strengths (obtained from tests performed at low normal stresses consistent with cover conditions) with the strengths presented in the slope stability analyses. The combination of cohesion or adhesion and friction angle must be sufficient to meet or exceed the minimum required strength envelope. These WDRs in the specifications require the Discharger to perform the necessary laboratory tests and analysis required to ensure that the Discharger complies with the slope stability requirements of Title 27.
169. This Order approves the proposed final cover(s) with provisions where required and also requires that a final closure and post-closure maintenance plan to be submitted at least two years prior to the anticipated closure date for review and approval, with the exception of Fill Area 1. This Order allows the Discharger additional time to conduct a demonstration of the ET cover; therefore, the final closure and post-closure maintenance plan may be submitted 6 months prior to closure. This Order also requires that design documents and associated CQA plan be submitted for review and approval at least 120 days prior to construction unless the Discharger chooses to proceed at their own risk.

CLOSURE OF FILL AREA 1

170. The Discharger submitted a 2015 Preliminary Closure and Postclosure Maintenance Plan for closure and post-closure maintenance of all the unlined and composite-lined landfill Units at the facility as part of its 2015 JTD. The Discharger in its July 2015 JTD provided a tentative schedule to construct a 10-acre ET demonstration project in 2017, monitor the demonstration project for four years, and then start closing Fill Area 1 in 20 to 30 acre increments over the next ten years. The starting closure date is contingent upon the remaining airspace in Fill Area 1 which, at the time of this revision, was equal to 4 to 5 million tons. Based on this information, these WDRs in Provisions H.8 require the Discharger to construct the 10-acre ET Demonstration Project by December 2017, monitor the effectiveness of the ET cover from 2018 to 2022, submit an updated plan to address closure of Fill Area 1 over the next ten years in 2023, and to initiate closure operations in 2023.

CLOSURE OF CLASS II SURFACE IMPOUNDMENTS

171. For the Class II surface impoundments Section 21400(b)(1) of CCR Title 27 states: Unless the Discharger demonstrates, and the RWQCB finds, that it is infeasible to attempt clean-closure of the impoundment, then all residual wastes, including sludges, precipitates, settled solids, and liner materials contaminated by wastes, shall be completely removed from the impoundment and discharged to an approved Unit. Remaining containment features shall be inspected for contamination and, if not contaminated, can be dismantled. Any natural geologic materials beneath or adjacent to the closed impoundment that have been contaminated shall be removed for disposal at an appropriate Unit. For surface impoundments that are successfully clean-closed, as herein described, the RWQCB shall declare the Unit no longer subject to the SWRCB-promulgated requirements of this title. If, after reasonable attempts to remove such contaminated materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the surface impoundment shall be closed as a landfill or land treatment unit, as appropriate, pursuant to 21400(b)(2) of CCR Title 27. The Discharger must submit a clean closure plan at least 180 days prior to clean closure of a Class II surface impoundment.

LEACHATE, LANDFILL GAS CONDENSATE, AND UNDERDRAIN LIQUIDS MANAGEMENT AFTER CLOSURE

172. Title 27 section 20950(a)(2)(A)(1) states that "the goal of closure, including but not limited to the installation of a final cover, is to minimize the infiltration of water into the waste, thereby minimizing the production of leachate and gas. For such Units, after closure, the final cover constitutes the Unit's principal waste containment feature." The introduction of liquids such as but not limited to leachate, landfill gas condensate, and underdrain liquids management into a closed Unit is contrary to the goal of closure of a Unit for Units not designed or constructed to rely on the liner system as the principal means of waste containment. It has been proposed at the Facility that after closure the introduction of liquids into closed Units is recommended to increase landfill gas production, reduce waste volumes through degradation of waste in the production of landfill gas, and to accelerate settlement of waste as seen in normal operations of a WMU designed as a bioreactor. However, the Discharger did not design the WMUs at the Facility as bioreactors where the Discharger after closure continues to rely on the liner system as the WMU's principal waste containment feature. Therefore, these WDRs prohibit the intentional introduction of liquids into a Unit after installation of a final closure cover.

POST-EARTHQUAKE INSPECTION AND RESPONSE PLAN

173. As stated in Site Description and Geology sections above, the landfill property is situated in an area that historically has been susceptible to mass movement on natural slopes as shown in Attachment G. Furthermore, several geologic faults exist below the

WMUs. Therefore, to ensure that the Facility's waste containment structures have not sustained damage after a significant earthquake event the Discharger is required to implement its Post-Earthquake Inspection and Response Plan identified as one of its operations plans in its JTD section 2.7.9 as required by this Order and report the results of the inspection. An inspection will be conducted following an earthquake of Magnitude (M_w) 5.0 or greater within 25 miles of the facility or a Magnitude (M_w) 6.0 or greater earthquake within 50 miles of the facility.

LANDFILL POST-CLOSURE MAINTENANCE

174. The Discharger submitted a 2015 *Preliminary Closure and Postclosure Maintenance Plan* as part of their 2015 JTD for closure and post-closure maintenance of Fill Area 1 and Fill Area 2. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, groundwater corrective action system, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.
175. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
176. Once every five years during the post-closure maintenance period, aerial photographic maps of the closed landfill area will be made to identify and evaluate landfill settlement. Iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to Title 27, section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.
177. Pursuant to California Code of Regulations, Title 17, section 95471(c) and Title 27, section 21090(a)(4)(A) the Discharger is required to carry out periodic monitoring of the integrity of the low-hydraulic-conductivity layer, including a method for effectively identifying and repairing breaches in that layer. Defects will be repaired and tested for adequacy based on the closure CQA Plan. This Order requires the Discharger to carry out periodic monitoring of the integrity of the low-hydraulic-conductivity layer, including a method for effectively identifying and repairing breaches in that layer.

FINANCIAL ASSURANCES

178. 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 *Preliminary Closure and*

Post Closure Maintenance Plan updated in the Discharger's 2015 JTD includes a cost estimate for landfill closure. The lump sum estimate is for the cost to close the largest future area needing closure at any one time. The total amount of the closure cost estimate in 2015 dollars is \$34.86 million for closure of Fill Area 1 Unit 1, Fill Area 1 Unit 2, and Fill Area 2 Unit 1 Phase 1 (\$5.92 million, \$23.22 million, and \$5.65 million, respectively). The closure costs assume the cost for installation of an ET final cover over Fill Area 1 Unit 1 and a geocomposite final cover over Fill Area 1 Unit 2 and Fill Area 2 Unit 1 Phase 1. This Order requires that the Discharger provide future financial assurance closure cost estimates in compliance with Title 27, and maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate. As of 2015, the balance of the closure fund was \$34.8 million in the form of an irrevocable bond with CalRecycle as the beneficiary.

179. The Discharger has constructed an 8 million gallon surface impoundment and leachate conveyance system to collect and store leachate from Fill Area 2, Unit 1 and proposes to construct two 4.6 and 4.8 million gallon Class II surface impoundments to collect and store leachate from Fill Area 1 in the near future. However the Discharger has not provided closure cost estimates or financial assurances for clean closure of these Units. These WDRs in Provisions H.8 require the Discharger to update its preliminary closure plan to include cost estimates for closure of any constructed Class II surface impoundment and provide financial assurances for clean closure.
180. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's 2015 *Preliminary Closure and Post Closure Maintenance Plan* updated in the Discharger's 2015 JTD includes a cost estimate for landfill post-closure maintenance Fill Area 1 Unit 1, Fill Area 1 Unit 2, and Fill Area 2 Unit 1 Phase 1. The amount of the cost estimate for annual post-closure maintenance in 2015 dollars is \$0.774 million or \$23.21 million for a 30-year period. 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.
181. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 2015 cost estimate of \$1 million for corrective action of all known or reasonably foreseeable releases (\$1 million for water release and \$0.58 million for non-water release, whichever is higher). This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation. As of 2015, the balance of the corrective action fund was \$1 million in the form of an irrevocable bond with CalRecycle as the beneficiary.
182. The Discharger has constructed an 8 million gallon surface impoundment and leachate conveyance system to collect and store leachate from Fill Area 2, Unit 1 and proposes to construct two Class II surface impoundments (4.6 and 4.8 million gallon) to collect and store leachate from Fill Area 1 or Fill Area 2 as well as other sources of Class II liquid waste in the near future, provided the water balance for the leachate pond

accommodates leachate from other units. However the Discharger has not provided cost estimates or financial assurances for corrective action for all known or reasonably foreseeable releases from these Units. These WDRs in Provisions H.8 require the Discharger to update its cost estimate for corrective action of all known or reasonably foreseeable releases from all constructed Class II surface impoundments and provide financial assurances for corrective action due to a water release prior to their initiation of operation.

CEQA AND OTHER CONSIDERATIONS

183. Waste Management of Alameda County owns and operates the facility under the existing Conditional Use Permit (CUP) C-6395. The March 1996 Final Environmental Impact Report (EIR), consisting of the Draft EIR together with the Response to Comments document, was certified by the Zoning Administrator and the Alameda County Board of Supervisors in 1996 for expansion of the landfill into Fill Area 2. The new CUP (C-5512) was issued by the Zoning Administrator in May 1996. It was appealed and upheld by the Alameda County Board of Supervisors through the adoption of Resolution No. R-97-284 on 5 December 1996, which imposed additional conditions on the approved expansion and reduced the expansion to 80 million tons. Subsequent litigation in California Superior Court in 1997 led to the withdrawal of CUP C-5512 by the Alameda County Board of Supervisors. A negotiated settlement to the lawsuit was reached by all parties in December 1999, approving the development of 40 million tons of MSW landfill capacity for Fill Area 2, plus additional associated capacity for daily and immediate cover soil, alternate daily cover materials, and final cover system. The settlement also limited the area of Fill Area 2 to 250 acres. The Alameda County Board of Supervisors certified and amended the Final EIR and reissued CUP C-5512 on 9 March 2000. The EIR identified the following potential significant impacts:
- a. Leachate may infiltrate groundwater
 - b. Potentially increase leachate generation
 - c. Storm water runoff contacting landfill waste
184. The EIR evaluated the impacts and found that compliance with Title 27 and Subtitle D will provide adequate water quality protection and reduce potential impacts to a less than significant level.
185. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, section 15301.
186. The *Statement of Policy With Respect to Maintaining High Quality of Waters in California*, SWRCB Order WQ 68-16 (hereinafter "Anti-Degradation Policy") was adopted by the State Water Board in October 1968. Anti-Degradation Policy limits the Board's discretion to authorize the degradation of "high-quality waters." This policy has

been incorporated into the Board's Basin Plans. "High-quality waters" are defined as those waters where water quality is more than sufficient to support beneficial uses designated in the Board's Basin Plan. Whether or not a water is a high-quality water is established on a constituent-by-constituent basis, which means that an aquifer can be considered a high-quality water with respect to one constituent, but not for others. (SWRCB Order No. WQ 91-10.)

187. Anti-Degradation Policy applies when an activity discharges to high quality waters and will result in some degradation of such high quality waters. When it applies, the 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 the activity will not result in the degradation of high quality waters, Anti-Degradation Policy does not apply, and the Discharger need only demonstrate that it will use "best efforts" to control the discharge of waste.
188. Anti-Degradation Policy does not apply to the discharge of waste to Altamont Landfill and Resource Recovery Facility. The requirements of 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 of this Order reflect the Discharger's best efforts to control such wastes.
189. This order implements:
 - a. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;
 - b. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
 - c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
 - d. The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.
190. Based on the threat and complexity of the discharge, the Facility is determined to be classified 1-A 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 A complexity, defined as, "Any discharge or toxic wastes; any small volume discharge containing toxic waste; any facility having numerous discharge points and groundwater monitoring; or any Class 1 waste management unit."

191. Water Code section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who has discharged, discharges, or is suspected of having discharge or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
192. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2016-0042 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

193. 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.
194. 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.
195. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
196. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality
or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order R5-2009-0055 is rescinded except for purposes of enforcement, and that Waste Management of Alameda County, Inc., a wholly owned subsidiary of Waste Management, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of 'hazardous waste' or 'designated waste' into Fill Area 1, Unit 1, a Class III landfill WMU is prohibited except Fill Area 1, Unit 1 may accept asbestos in the designated area shown in Attachment C. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq., and 'designated waste' is as defined in Title 27 and described in Monitoring and Reporting Program (MRP) 2016-0042.
2. The discharge of 'hazardous waste' into any Class II WMU is prohibited except for asbestos in designated areas documented by the Discharger. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq. Any violation of Prohibitions 1 and 2 shall be reported in accordance with the Discharger's MRP R5-2016-0042.
3. The discharge of treated auto shredder wastes at the landfill facility is prohibited if DTSC makes the determination that this material requires management at a Class I facility. The discharge of all untreated auto shredder waste is prohibited.
4. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.
5. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
6. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
7. The discharge of wastes that have the potential to reduce or impair the integrity of containment structures is prohibited.
8. The discharge of wastes which, if commingled with other wastes in the Unit, 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.
9. The Discharge of any liquid wastes to the Class II surface impoundments 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

approval of the construction, and approval of financial assurance documents by the Central Valley Water Board staff is prohibited.

10. 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 Unit is prohibited.
11. The Discharger is prohibited from discharging any waste that contains liquid in excess of the moisture holding capacity of the waste in the Class III and Class II landfill, or which contains liquid in excess of the moisture holding capacity as a result of waste management operations, compaction, or settlement, per Title 27 section 20200(d).
12. The Discharger is prohibited from discharging liquids generated at the MRF Facility (once constructed) that are classified as non-hazardous waste or designated waste to any WMU other than Class II surface impoundments unless it meets the conditions of Prohibition A.13 above.
13. The Discharger is prohibited from disposing of liquid waste including but not limited to liquid waste generated from recycling operations, truck wash facilities, landfill gas-to-energy plants, and vehicle maintenance facilities, to a WMU except for the intent and purposes listed in Title 27 section 21090(a)(5)(B) for closed WMUs and Title 27 section 20705(f) for active and inactive WMUs. The prohibition does not apply to leachate and landfill gas condensate returned to the lined landfill Unit from which it came so long as 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.
14. 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 ponds, 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.
15. 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.

16. The Discharger is prohibited from installing underground utilities in or below any low permeability layer of a final cover.
17. 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.
18. 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.
19. 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 into the Unit.
20. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015 which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall only discharge the wastes listed in Table 1 below.

Table 1. Waste Acceptance by Waste Management Unit

Title 27 Waste Type	Fill Area 1, Unit 1	Fill Area 1, Unit 2 & Fill Area 2	Class II Surface Impoundments	Solidification Basins
Inert	Yes	Yes	No	No
MSW	Yes	Yes	No	No
Non-Hazardous Solid Waste	Yes	Yes	No	No
Designated ¹	No	Yes	No	No
Leachate	No	Recirculation ²	Yes	No
LFG Condensate	No	Recirculation ²	No ³	No
Asbestos containing wastes	Yes	Yes	No	No
Treated auto shredder waste	Yes ⁴	Yes	No	No
Treated Wood Waste	No	Yes	No	No
Non-hazardous liquid and semi-solid wastes ⁵	No	No	No	Yes
Additional Liquid Waste ³	No	No	Yes	No

1. Designated wastes include commercial and industrial waste, nonhazardous ash, nonhazardous petroleum and/or metal contaminated soils, salty waste, construction and demolition waste, solidified wastes, and dewatered sewage and wastewater treatment plant waste sludge.
2. Leachate and landfill gas recirculation may occur in composite lined modules following Water Board approval.
3. The Executive Officer may approve additional liquid waste for disposal in a Class II surface impoundment in accordance with Discharge Specification B.19.
4. Disposal limited to the top lift of Fill Area 1 Unit 1 where the treated auto shredder waste will not be exposed to acidic leachate.
5. Typical liquid-content wastes that may be solidified include: grease trap waste; monitoring well purge water; commercial, industrial or residential waste waters and sludges; rinse waters; and sludges (excluding sewage) with total volatile organic content (VOC) of less than 1000 µg/L. The facility can also solidify the sludge that can be generated from the facility's Wastewater Treatment Plant. Currently, the solidification of non-hazardous liquid and semi-solid wastes takes place in clay-lined pits located in the Class II area to prevent rapid infiltration of the discharged liquid waste. Following discharge to the designated area, on-site soils, ash, ground wood waste, processed construction and demolition (C&D) debris, or non-hazardous contaminated soils are used to solidify any free liquid present in the designated area such that the moisture content of the resulting mixture is not in excess of the waste holding capacity.

2. The discharge of a liquid or semi-liquid that will undergo a solidification process must follow Title 27 requirements and SOPs to be developed by WMAC.
3. The Discharger may not use any material as alternative daily cover (ADC) that is not listed 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 approval that it may begin using the material as ADC. The currently approved ADCs are TASW, shredded tires, solidified waste with approved extender⁹, biosolids (treated sewage sludge), combination biosolids and TASW, geosynthetic blankets and tarps, processed C&D material, material recycling facility (MRF) fines, mixture of TASW and biosolids, and/or geo-synthetic blankets and tarps.
4. The Discharger shall monitor and report the amount of liquid waste including but not limited to liquid waste generated from recycling operations, truck wash facilities, landfill gas-to-energy plants, and vehicle maintenance facilities, applied to each WMU in accordance with intent and purposes listed in Title 27 section 21090(a)(5)(B) for closed WMUs and Title 27 section 20705 for active and inactive WMUs in accordance with the Dischargers MRP R5-2016-0042.
5. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the contiguous landfill units unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
6. The Discharger shall notify the Central Valley Water Board staff in accordance with the Discharger's MRP R5-2016-0042 any wastes discharged at this facility in violation of this Order. If the waste is a hazardous waste, the Discharger shall also immediately notify the Department of Toxic Substances Control.
7. Wastes shall be discharged only into waste management units (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 and leachate from the waste management units.
8. A minimum separation of five feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying groundwater including the capillary fringe, except at Fill Area 1, Unit 2 and Fill Area 2 where minimum separation shall be three feet due to engineered drainage structures (i.e., underdrains) separating wastes (including leachate) from groundwater. If monitoring of the groundwater underdrain system at Fill Area 2 indicates landfill waste constituents have impacted groundwater, the engineered alternative liner design shall be reevaluated for future construction

⁹ Approved extenders include soil, green waste, TASW, ash, cement, kiln dust, ground-treated woods or a combination of these materials.

phases of Fill Area 2; the Discharger shall either provide a minimum of five feet of separation between wastes including leachate and groundwater, or propose a new engineered alternative design. Implementation of a new engineered alternative design will require revision to the WDR and adoption by the Central Valley Water Board.

9. 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.
10. "Treated wood" wastes may only be discharged to a WMU equipped with a composite liner and leachate collection and removal system, (i.e., WMUs Fill Area 1 Unit 2, and Fill Area 2), as described in Construction Specification D1 and D.2, and only if the wastes are handled in accordance with California Health and Safety Code sections 25143.1.5 and 250150.7.
11. The Discharger shall manage treated wood at the Facility in accordance with California Health and 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 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 R5-2016-0042. If a release of leachate is verified from the waste management unit where treated wood is disposed, the Discharger shall follow the SPRRs to address the release.
12. Discharge Specifications B.10 and B.11, 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.
13. 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.
14. The handling and disposal of friable asbestos-containing wastes at the facility shall be in accordance with all applicable federal and state laws and regulations.
15. All wells within 500 feet of a waste management unit shall have a sanitary seal that meets the requirements of Zone 7 of the Alameda County Flood Control and Water Conservation District 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 the Zone 7 water agency.
16. 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 waste management unit.

17. Leachate and landfill gas condensate collected from the landfill WMU (Fill Area 1 and Fill Area 2) shall be discharged in accordance with this Order and either to a wastewater treatment plant under permit, to a flare system for disposal, to a Class II surface impoundment, or to a composite-lined Fill Area, so long as the receiving Fill Area's LCRS was designed and constructed to accommodate additional leachate and landfill gas condensate flows from other areas of the landfill. 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.10 of this Order.
18. 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 section 20375) and has also shown that the addition of such liquids are compatible with the containment features and other wastes in the WMU. The water balance submitted for the 8-million gallon Class II surface impoundment only included leachate from Fill Area 2, therefore, the only waste approved for discharge to the 8-million gallon Class II surface impoundment is leachate generated from Fill Area 2 Unit 1. 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.
19. Prior to discharge of waste to a newly constructed phase in Fill Area 2, Unit 1 or Unit 2, the Discharger shall submit a slope stability analysis report based on the anticipated fill sequencing for the new unit as each phase of construction is submitted for review to Staff. The slope stability report will take into consideration but not be limited to saturation of the waste and liner components, the additional weight of saturated waste, and static and dynamic factors of safety required ensuring that slope failure does not occur during fill operations of each phase of construction.
20. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated December 2015 which are attached hereto and made part of this Order.

2. 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 and Safety Code section 25143), the Discharger upon discovery shall immediately notify Central Valley Water Board staff and DTSC of any violations and provide a schedule for the hazardous waste's removal.
3. For any unauthorized designated waste discharged at this facility in violation of this Order, the Discharger shall immediately notify Central Valley Water Board staff of any violations and provide a schedule for the removal of the unauthorized designated waste in order to prevent leachate generation and a release from unauthorized disposal of waste. 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 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.
4. The Discharger shall immediately notify the Central Valley Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
5. Liquid used for facility maintenance shall be limited to the minimum amount necessary for dust control and construction per Title 27 section 20705(f).
6. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
7. 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.
8. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
9. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 2014-0057-DWQ, or retain all storm water on-site.
10. In order to ensure that the Facility's waste containment structures have not sustained damage after an earthquake of Magnitude (Mw) 5.0 or greater within 25 miles of the facility or a Magnitude (Mw) 6.0 or greater earthquake within 50 miles of the facility

the Discharger shall implement its Post-Earthquake Inspection and Response Plan identified as one of its operations plans in its JTD section 2.7.9 and report the results of the inspection in its MRP R5-2016-0042.

11. The Discharger shall operate an active landfill gas collection and control system in Fill Area 1 and Fill Area 2 in order to control existing impacts 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 Fill Area 2 until the Discharger has an approved landfill gas monitoring program and the basal waste containment system where waste will be placed is installed.

SURFACE IMPOUNDMENT SPECIFICATIONS

12. No waste shall be discharged into any new surface impoundments until all applicable financial accounts for these waste management units have been properly funded.
13. At no time shall the freeboard of the Class II surface impoundments be less than two feet. The Class II surface impoundments shall be clearly marked to indicate when liquid levels encroach into the two foot minimum freeboard requirement.
14. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
15. The surface impoundments shall be maintained to prevent scouring and/or erosion of the liner and other containment features at points of discharge to the impoundment and by wind-caused wave action at the waterline.
16. Leachate removed from the secondary containment of the surface impoundments shall be placed back into the surface impoundments.
17. The surface impoundments bottom slope shall be graded to provide positive drainage of LCRS leachate to the leachate sump and ensure unconfined leachate flow in the LCRS drainage layer.
18. 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 (including leachate) 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.

19. The **Action Leakage Rate (ALR)** for each Class II surface impoundment is **2,000 gallons per acre per day (gpad)** as averaged over a 30-day period. If leachate generation in an LCRS of a Class II surface impoundment exceeds the required ALR, the Discharger shall immediately take steps to locate and repair leak(s) in the liner system and notify the Central Valley Water Board. If repairs do not result in a leakage rate less than the required ALR, the Discharger shall immediately cease the discharge of waste, including leachate, to the surface impoundment and notify the Central Valley Water Board. The notification shall include a timetable for remedial action to repair the upper liner of the surface impoundment or action necessary to reduce leachate production. The ALR for the current 8-million gallon surface impoundment and future 4.6 and 4.8 million gallon surface impoundments are as follows:

Surface Impoundment Volume	Size (Acres)	ALR (Gallons per day)
8 million gallons	2.5 acres	5000 gallons per day
4.6 million gallons ¹⁰	1 acre ¹⁰	2000 ¹⁰ gallons per day
4.8 million gallons ¹⁰	1 acre ¹⁰	2000 ¹⁰ gallons per day

20. The LCRS for each Class II surface impoundment shall be 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.
21. The LCRS shall be designed and operated to function without clogging through the scheduled closure of the surface impoundments. The surface impoundments shall be equipped to facilitate annual testing to demonstrate proper operation as required by §20340(d) of Title 27.
22. If liquid is detected in a pan lysimeter of a surface impoundment, the Discharger shall:
- a. Immediately sample the liquid for all COCs listed in the Monitoring and Reporting Program.
 - b. If a leak is confirmed,

¹⁰ The volume of these surface impoundments can increase by up to 50% which could affect the surface impoundment size and resulting action leakage rate.

- i. Immediately cease discharge of waste (including leachate) to the surface impoundment until the leaks can be found and repaired.
 - ii. Report to the Central Valley Water Board that the containment structures have failed within 72 hours of the discovery.
 - iii. Submit written notification of the release to the Central Valley Water Board within seven days and include a time schedule to repair the containment structures.
 - iv. Discharge of wastes to the surface impoundment shall not resume until the Central Valley Water Board has determined that repairs to the liners are complete and there is no further threat to water quality.
23. The depth of the fluid in the leachate sump of the Class II surface impoundments 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.
24. The Discharger shall install storm water diversion structures in accordance with Title 27 section 20365 for each phase of construction in Fill Area 2 in order to prevent inundation of the 8-inch inside diameter leachate conveyance pipe and exceedance of the 1-foot maximum head requirement on the LCRS primary liner 1000-year 24-hour storm event (design storm) falling on the WMUs when waste is initially placed. If portions of the base of each phase will not be covered by waste prior to the wet season to limit the production of leachate, storm water diversion structures shall be in place by 30 September of the initial year of operation of each phase and reported in the Discharger's MRP R5-2016-0042.
25. 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.
26. Sediment or solids that accumulate in the Class II surface impoundments shall be removed when necessary to maintain the designed storage capacity. Sludge and solids removal shall be accomplished in a manner that ensures the continued integrity of liners and leachate collection systems in accordance with the facility's operations plan. Prior to disposal of these solids, sufficient samples shall be taken for their characterization and classification pursuant to Title 27. The Discharger shall submit a workplan 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.

27. Following sediment/solids removal from the Class II surface impoundments, 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..

D. CONSTRUCTION SPECIFICATIONS

LANDFILL LINER SYSTEM COMPONENTS

1. The Discharger shall construct the approved composite bottom liner system in Fill Area 2. The composite liner system shall consist of, from top-to-bottom, the following:
 - a. A minimum 12-inch thick operations layer with minimum hydraulic conductivity of greater than 1×10^{-4} cm/sec¹¹;
 - b. A 8 ounce/yard² geotextile separator
 - c. A minimum one-foot thick granular LCRS layer
 - d. A geotextile cushion layer if needed¹²;
 - e. A textured 60-mil thick HDPE geomembrane, or equivalent;
 - f. A minimum two-foot compacted low-permeability soil layer¹³;
 - g. A minimum one-foot compacted general earth fill layer (wetted footprint¹⁴ area only);
 - h. A 8 ounce/yard² geotextile separator (wetted footprint area only) ;
 - i. A minimum one-foot thick groundwater subdrain gravel layer (wetted footprint area only);
 - j. A 8 ounce/yard² geotextile separator (wetted footprint area only); and
 - k. Prepared subgrade.
2. The Discharger shall construct the approved composite side slope liner¹⁵ system in Fill Area 2. The side slope liner shall consist of, from top-to-bottom, the following:
 - a. A minimum 24-inch thick operations layer with minimum hydraulic conductivity of greater than 1×10^{-4} cm/sec¹¹;
 - b. A geocomposite drainage layer LCRS;

¹¹ As an alternative, the Discharger may use a sufficient number of gravel drainage windows within the operations layer properly placed to achieve the minimum hydraulic conductivity requirement in order to ensure that leachate is able to percolate through the operations layer.

¹² The thickness of the geotextile cushion layer if needed, shall be specified based on the LCRS granular size and physical characteristics (rounded, semi-rounded, etc.) in order to prevent damage to the primary geomembrane from static and dynamic loads.

¹³ The Discharger's current test pad results per Title 27 section 20324(g) determined that the on-site clay source materials required addition of 3% by weight of bentonite in order to meet the maximum 1×10^{-7} cm/sec hydraulic conductivity requirements of State Water Board Resolution 93-62. The need for and percentage of bentonite admix may be modified based on additional soil source characterization and additional test pad results.

¹⁴ Wetted footprint includes capillary fringe.

¹⁵ The Discharger has defined the side slopes of Fill Area 2 to include the side slope benches and any sloped areas greater than 8%.

- c. A 60-mil HDPE geomembrane;
- d. A two-foot compacted low-permeability soil layer or GCL that is equivalent to a minimum of 2-foot of compacted soil that has a hydraulic conductivity of no more than 1×10^{-7} cm/sec;
- e. A one-foot compacted general earth fill layer (wetted footprint area only);
- f. A double-sided subdrain drainage geocomposite (wetted footprint area only); and
- g. Prepared subgrade.

CLASS II SURFACE IMPOUNDMENT LINER SYSTEM

- 3. The surface impoundment base liner system for the Class II surface impoundments shall consist of the following layers from the top-to-bottom:
 - a. 1 foot gravel operations layer (optional);
 - b. 60-mil-thick HDPE Primary Geomembrane;
 - c. HDPE Geonet (and LCRS gravel in the sump);
 - d. 40-mil HDPE Secondary Geomembrane;
 - e. Geosynthetic Clay Liner (GCL) that is equivalent to a minimum of 2-foot of compacted soil that has a hydraulic conductivity of no more than 1×10^{-7} cm/sec;
 - f. Single Sided Geocomposite and gravel in the pan lysimeter under sump;
 - g. 40-mil HDPE geomembrane (part of pan lysimeter liner under sump)
 - h. 4-inch select soil liner bedding (unless native soils are sufficiently graded to provide appropriate liner bedding; and
 - i. Suitable subgrade.
- 4. The surface impoundment side slope liner system for the Class II surface impoundments shall consist of the following layers from the top-to-bottom:
 - a. 40-mil sacrificial HDPE geomembrane (where deemed necessary);
 - b. 60-mil-thick HDPE Primary Geomembrane;
 - c. HDPE Geonet;
 - d. 40-mil HDPE Secondary Geomembrane;
 - e. GCL that is equivalent to a minimum of 2-foot of compacted soil that has a hydraulic conductivity of no more than 1×10^{-7} cm/sec;
 - f. 4-inch select soil liner bedding (unless native soils are sufficiently graded to provide appropriate liner bedding; and
 - g. Suitable subgrade.
- 5. The surface impoundments and related containment structures shall be constructed and maintained to prevent, to the greatest extent possible, inundation, erosion, slope failure, washout, and overtopping under 1,000-year, 24-hour precipitation conditions, and shall be designed to contain the 100-year wet season precipitation without using the required two feet of freeboard.

GENERAL CONSTRUCTION SPECIFICATIONS

6. The Discharger may propose changes to the liner or 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 or closure cover system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design as determined by the Executive Officer require reevaluation as an engineered alternative and approval by the Central Valley Water Board.
7. Materials used to construct LCRSs shall have appropriate physical and chemical properties to ensure the required transmission of leachate over the life of the waste management unit and the post-closure maintenance period.
8. During construction (if necessary) and following the completion of construction of any Unit (including the Class II surface impoundments) or portion of a Unit, the Discharger shall conduct a leak detection test. This test will be completed on both primary and secondary geomembranes of a Class II surface impoundment. In the case of a landfill WMU, one test will be completed on either (1) the primary geomembrane layer of the floor or base containment system and the side-slope areas, or (2) on the floor or base containment system including the side slope areas after the installation of the LCRS, overlying operations layer, and gravel windows (if gravel windows are required). The Discharger shall use the protocol outlined in ASTM standard 7007, or other equivalent standard. Any defects found shall be identified and repaired accordingly.
9. All WMU(s) with an LCRS component shall be constructed with a means to perform the annual LCRS test required in Title 27 section 20340(d).
10. The Discharger shall, design, construct, operate, and maintain an adequate underdrain drainage network below Fill Area 1 Unit 2 and Fill Area 2 in order to satisfy the approved engineered alternative to the 5-foot separation requirements of Title 27 section 20240(c) for all areas of the WMU where groundwater does not meet the 5-foot separation requirement. The approved engineered alternative to the 5-foot separation requirements of Title 27 does not apply to Class II surface impoundments at the Facility. The Discharger must maintain 5-foot groundwater separation including the capillary fringe without the use of an underdrain drainage network below the Class II surface impoundments.
11. The Discharger shall, design, construct, operate, and maintain an adequate leak detection system below the main collector trench for each phase of construction in Fill Area 2 (does not apply to Class II surface impoundments).
12. The Discharger shall remove any known historical landslides within the footprint of the Fill Area 2 to provide a foundation that complies with Title 27 section 20240(d) and 21750(f)(5). If new landslides are unearthed during construction, such deficiencies will

be mapped and removed. If the Discharger proposes to not remove any landslide within the Fill Area 2 footprint the Discharger shall submit a risk analysis report including a revised slope stability analysis report comparing the cost benefit for not removing the landslide versus the cost of repairing the landfill liner if it were to fail during the Unit's life, closure period, and post-closure maintenance period due to the identified landslide not being removed.

CLOSURE CONSTRUCTION SPECIFICATIONS

13. For the remaining unclosed area of Fill Area 1, Unit 1, the Discharger shall install the proposed engineered alternative evapotranspirative (ET) cover described below and as proposed in the Discharger's December 2008 *Alternative Final Cover Design Report* (from bottom to top):
 - a. 2-feet of compacted soil
 - b. 2-feet of soil placed loosely at below optimum moisture; and
 - c. A vegetative cover selected to maximize removal of moisture from the cover.
14. This Order requires the Discharger to construct the 10-acre ET Demonstration Project by December 2017, monitor the effectiveness of the ET cover from 2018 to 2022, submit an updated plan to address closure of Fill Area 1 over the next ten years in 2023, and to initiate closure operations in 2023.
15. The Discharger shall submit a monitoring for the alternative ET cover to demonstrate its effectiveness in isolating the waste from precipitation. The demonstration shall verify that the performance objectives described in the 2008 Alternative Final Cover Design Report, Fill Area 1–Partial Unit 1 and Unit 2, ALRRF (Dwyer, Valceschini, and Obereiner, December 2008) has been met for use on unlined Fill Area 1 Unit 1 prior to its use over the entire area of Fill Area 1 Unit 1.
16. If the Discharger proposes to use the ET cover design on lined Fill Area 1 Unit 2 and lined Fill Area 2 Unit 1, the Discharger shall demonstrate that the ET cover meets the performance objectives described in the 2008 AFC Design Report and provides correspondingly low through-flow rate per Title 27 regulations. If the cover fails to isolate the waste from precipitation, the contingency plan will be implemented.
17. For Fill Area 1, Unit 2 and Fill Area 2 at the landfill, where the final cover system is not an ET Cover, the final cover system shall consist of, from top-to-bottom, the following:
 - a. A one-foot vegetative layer comprised of suitable soils;
 - b. A synthetic drainage layer (e.g., geonet) overlain by a geotextile material;
 - c. A flexible membrane liner (FML) consisting of a minimum 60-mil HDPE cover;
 - d. A low-permeability layer of compacted fine grained soils or GCL equivalent, which will yield an equivalent low flow-through rate of 1×10^{-7} cm/sec or less with a minimum thickness of 1 foot of low permeability soil; and

- e. A two-foot foundation layer comprised of soils, which may include non-hazardous impacted Class II soils.
18. At closure, the Discharger must initiate an effort to clean close the Class II surface impoundments. If clean closure is infeasible, the surface impoundments shall be closed as a landfill. The Discharger must submit a clean closure plan at least 180 days prior to clean closure of a Class II surface impoundment.
19. Prior to closure, the Discharger shall submit a Final Closure Plan or Partial Final Closure Plan for review and approval for the Unit or portion of the Unit to be closed at least 2 years prior to the anticipated date of closure. The Discharger shall also submit a Post-Closure Maintenance Plan at least 2 years prior to the anticipated date of closure.
20. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. The Discharger must allow Central Valley Water Board staff at least 120 days for review and approval of these documents unless the Discharger chooses to proceed at its own risk.
21. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
22. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan prior to proposed closure of any portion of the landfill in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the SPRRs. For Fill Area 1 the Discharger shall submit a final closure and post-closure plan in accordance to the schedule provided in Provisions H.8.
2. The Discharger shall close landfill Units with a final cover as approved by this Order, or as approved by the Executive Officer. The components of the approved final cover are listed in Construction Specifications D.20 through D.23 above.
3. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, unless the Discharger provides a slope stability analysis that complies with Title 27 requirements that supports steeper slopes. The top deck areas are required to maintain minimum of three percent grade and maintain positive drainage.

4. The Discharger shall close Fill Area 1 with side slopes that include at a minimum 15-foot wide benches every 50 vertical feet except in areas side slopes have already been constructed with 10-foot benches at the time of adoption of these WDRs and the Discharger has indicated that the narrower bench will not prevent the Discharger from performing post closure maintenance in these areas. 15-foot wide benches every 50 vertical feet are required in Fill Area 2 unless a slope stability analysis shows that wider benches are necessary. The current slope stability analysis shows that 20-foot wide benches are required every 50 vertical feet.
5. Landfill gas shall be extracted from closed landfill Units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.
6. For closure with a final cover that includes a geomembrane, the Discharger shall seal the edges of the final cover by connecting the cover geomembrane to the liner geomembrane (applicable to Fill Area 1 Unit 2 WMU and Fill Area 2 WMU).
7. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.
8. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
9. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
10. Pursuant to Title 27, section 21090(e)(1), the Discharger shall survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
11. Pursuant to Title 27, section 21090(e)(2) the Discharger shall once every five years during the post-closure maintenance period, prepare aerial photographic maps of the closed landfill area to identify and evaluate landfill settlement. The Discharger will prepare iso-settlement maps to determine the amount of differential settlement occurring over the previous five years.
12. Pursuant to California Code of Regulations, Title 17, section 95471(c) and Title 27, section 21090(a)(4)(A) the Discharger shall carry out periodic monitoring of the integrity of the low-hydraulic-conductivity layer, including a method for effectively

identifying and repairing breaches in that layer. Defects will be repaired and tested for adequacy based on the closure CQA Plan.

F. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for all Units at the landfill in at least the amounts described in the Financial Assurance section above, and as adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
2. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The PCPCMP shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in F.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in the Financial Assurances section above.
4. The Discharger shall maintain cost estimates and funding for initiating and completing corrective action for all known or reasonably foreseeable releases from **Fill Area 1**, each unit of **Fill Area 2** prior to discharge of waste, and the Class II surface impoundments prior to discharge of waste.
5. Pursuant to Title 27, section 22221, the Discharger shall obtain and maintain financial assurances for corrective action of all known or reasonably foreseeable releases for **Fill Area 1** in at least the amount of the approved cost estimate.
6. Pursuant to Title 27, section 22221, the Discharger shall submit a cost estimate and proposed financial assurance mechanism to the Central Valley Water Board for corrective action for a reasonably foreseeable release for each unit of **Fill Area 2**, prior to discharge, meeting the requirements of Title 27, chapter 6. Once approved,

the Discharger shall establish an irrevocable fund for corrective action financial assurance with the CIWMB **prior to discharge** to each Unit.

7. Pursuant to Title 27, section 22222, the Discharger shall submit a cost estimate and proposed financial assurance mechanism to the Central Valley Water Board for corrective action of all reasonably foreseeable releases from the **Class II surface impoundments**. Once approved, the Discharger shall establish an irrevocable fund for corrective action financial assurance with the Central Valley Water Board using the approved mechanism, in the amount of the approved cost estimate, and naming the "CIWMB" as beneficiary, **prior to discharge** to the units.
8. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. The report shall demonstrate that the financial assurance fund for corrective action for **Fill Area 1** has been updated in accordance with the fund balance calculations provided in Section 22226 of Title 27. The report shall also demonstrate that the financial assurance fund for a reasonably foreseeable release from **Fill Area 2** has been updated in accordance with the fund balance calculations provided in Title 27, section 22226. The report shall also demonstrate that the financial assurance fund for a reasonably foreseeable release from all **Class II surface impoundments** has been updated in accordance with the fund balance calculations provided in Title 27, section 22226. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
9. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

G. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) R5-2016-0042, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
2. The Discharger shall, for any landfill Unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP R5-2016-0042, and the Standard Monitoring Specifications listed in Section I of SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP R5-2016-0042, and the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill Unit that extends through the uppermost aquifer underlying the Unit) shall not exceed the concentration limits established pursuant to MRP R5-2016-0042.
5. Fill Area 2 will be filled in stages; a detection monitoring well shall be installed at the downgradient edge of each phase. As a result, the footprint of the waste management unit will expand over time. The Discharger must develop and implement a plan that will ensure there will be a groundwater monitoring well at the downgradient edge of the waste throughout the life of the facility.
6. The Discharger shall monitor the underdrain, LCRS, and leak detection system associated with each phase of construction in Fill Area 2 Unit 1. 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. The Discharger shall monitor and report all liquid waste generated at the proposed MRF Facility (if constructed) that is classified as non-hazardous waste or designated waste in accordance with MRP R5-2016-0042.
8. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP R5-2016-0042 and the Standard Monitoring Specifications in Section I of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.
9. 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.
10. The Discharger shall add any confirmed COCs detected during its 5-year monitoring schedule using Tables V and VI of MRP R5-2016-0042 for detection monitoring purposes, as appropriate based upon consideration of laboratory false-positives, the repeatability of detections and the effectiveness of a particular COC in providing early indication of a potential release.
11. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP R5-2016-0042 and the SPRRs dated December 2015 which are part of this Order, and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. 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 that are not specifically referred to in this Order.
4. The Discharger shall comply with MRP R5-2016-0042, which is incorporated into and made part of this Order by reference.
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 January 2012, 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 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:

<u>Task</u>	<u>Compliance Date</u>
<p>a. Closure of Fill Area 1: The Discharger shall:</p> <ol style="list-style-type: none"> 1. By 15 April 2017, provide a technical report, work plan, and schedule (including a final closure and post-closure maintenance plan) to install and maintain an ET final closure cover over Fill Area 1 Unit 1. The schedule shall include incremental closure of Fill Area 1 Unit 1 such that installation of the approved ET final closure cover over all of Fill Area 1 Unit 1 is initiated by 1 August 2023. 2. By 1 December 2017 install the approved 10-acre ET final closure cover over Fill Area 1 Unit 1 and ET final closure cover performance monitoring system to begin the 4-year demonstration period. 3. By 15 April 2018, the Discharger shall submit the final CQA report for the construction and installation of the 10-acre ET final closure cover and leakage low through-flow rate monitoring system. 4. By 1 April 2023, submit a Technical Report including a workplan that shall include the results of the four-year monitoring period and determination whether the proposed ET cover system complies with Title 27, and if it is proposed to be used on Fill Area 1 Unit 2 and/or Fill Area 2 Unit 1. 	<p>15 April 2017</p> <p>1 December 2017</p> <p>15 April 2018</p> <p>1 April 2023</p>
<p>b. Evaluate Effectiveness of the Groundwater Detection Monitoring Program: The Discharger shall:</p> <ol style="list-style-type: none"> 1. Submit a technical report that considers the adequacy of the existing monitoring well network for Fill Area 1 and 2, and identifies if additional monitoring wells are necessary for detection monitoring in accordance with Title 27 section 21760(a)(3), and assess the adequacy of the current Sample Collection and Analysis Plan (SAP); 2. If additional monitoring wells are considered 	<p>15 December 2016</p>

<u>Task</u>	<u>Compliance Date</u>
<p>necessary, submit a workplan to install the monitoring wells within 60 days of Water Board staff approval of the Technical Report, and implement the approved workplan for well installation within 90 days of workplan approval; and</p> <p>3. Submit Final Documentation for groundwater monitoring well installation completion and revised SAP within 90 days of well installation.</p>	
<p>c. Evaluate Compliance of Solidification Activities with Title 27 Requirements:</p> <p>1. Provide Standard Operating Procedures for the solidification process at ALRRF.</p> <p>2. Submit a technical report to demonstrate that solidification operations do not result in the introduction of liquids into a solid waste WMU in excess of the moisture holding capacity of the WMU as a result of waste management operations, compaction, or settlement.</p>	<p>30 September 2016</p> <p>1 April 2017</p>
<p>d. Discharges of COCs to Storm Water Detention Basins: The Discharger shall:</p> <p>1. Submit a work plan and implementation schedule that complies with Title 27 section 20430 that investigates the source of COCs that have been periodically discovered in storm water detention basins. The work plan shall include an accelerated monitoring schedule for at least one year (e.g., quarterly monitoring or more frequently to determine the sources of VOCs);</p> <p>3. Implement work plan including accelerated monitoring schedule; and</p> <p>4. Submit Technical Report including source control methods, operation and maintenance and best management practices to prevent release of COCs to storm water detention basins.</p>	<p>1 December 2016</p> <p>1 March 2017</p> <p>30 June 2018</p>

<u>Task</u>	<u>Compliance Date</u>
<p>e. Expansion of the unsaturated zone monitoring system for Fill Area 1 and Fill Area 2: The Discharger shall:</p> <ol style="list-style-type: none"> 1. Submit a workplan, updated sample collection and analysis plan, and schedule for installation of soil-pore gas monitoring devices in the unsaturated zone that complies with Title 27 section 21760(a)(3) and section 20430 (for corrective action purposes) at the edge of waste for Fill Area 1 Unit 1 in the vicinity of point of compliance monitoring wells E-05, E-07, and E-20B and in Fill Area 1 Unit 2 in the vicinity at the edge of waste closest to the underdrain collection sump (VD2) and underlying pan lysimeter (VZM-A) to monitor the effectiveness of the landfill gas extraction system as a corrective action measure. The workplan shall also include installation of soil-pore gas monitoring devices at the edge of waste closes to the LCRS collection point for each phase of construction of Fill Area 2 where a pan lysimeter is not being used to monitor the unsaturated zone to determine if gas containing VOCs is being released from the Unit; 2. Implement workplan for installation of soil-pore gas monitoring devices; and 3. Submit Final Documentation regarding installation completion of soil-pore gas monitoring devices. 	<p>28 February 2017</p> <p>30 April 2017 or 60 days after Water Board staff approval</p> <p>31 July 2017 or 60 days after completion of work</p>
<p>f. Monitoring of underdrains, leachate, and leak detection systems nearest the edge of waste for each phase of construction in Fill Area 2: The Discharger shall submit an updated sample collection and analysis plan, and schedule monitoring and reporting of liquid collected in the underdrain, LCRS, and leak detection system associated with each phase of construction in Fill Area 2 Unit 1. The liquid shall be collected as close to edge of waste as possible for each phase of</p>	<p>1 August 2016 for Phase 1 and at least 120 days prior to discharge for each future phase of construction</p>

<u>Task</u>	<u>Compliance Date</u>
<p>construction in order to provide representative samples.</p>	
<p>g. Submit Water Quality Protection Standards for the Class II Surface Impoundment that complies with Title 27 section 20390. The Discharger shall receive Water Board staff approval prior to the discharge of waste.</p>	<p>30 days prior to discharge</p>
<p>h. Groundwater Monitoring for each phase of construction in Fill Area 2:</p> <ol style="list-style-type: none"> 1. The Discharger shall submit a work plan(s) that complies with Title 27 section 21760(a)(3) to install groundwater monitoring wells for Fill Area 2 to complete well installation and required initial sampling prior to placement of waste in the corresponding units. The work plan(s) shall propose monitoring wells for the following areas: <ol style="list-style-type: none"> i. In the weathered zone at the intersection of the northern extent of Fill Area 2 and the West Fault. ii. At the downgradient edge of each module with appropriate spatial distribution to provide sufficient number of POC wells and piezometers to establish groundwater flow and direction of Fill Area 2 as the area expands into the permitted landfill footprint. 2. The Discharger shall submit a well installation report. <p>Prior to discharge to new phases of construction (modules) in Fill Area 2, the Discharger shall submit a Water Quality Protection Standard that complies with Title 27 section 20390 for detection monitoring wells based on un-impacted background groundwater data.</p>	<p>15 December 2016</p> <p>Within 30 days after installation of the wells.</p> <p>At least 90 days prior to discharge</p>

<p>i. Groundwater Monitoring for Future Class II Surface Impoundments:</p> <ol style="list-style-type: none"> 1. The Discharger shall submit a work plan proposing a monitoring program that complies with Title 27 section 21760(a)(3) for each Class II surface impoundment. 2. Within 30 days after installation of a monitoring well network (if applicable), the Discharger shall submit a monitoring well network installation report. 3. Prior to discharge to the Class II surface impoundments, the Discharger shall submit a Water Quality Protection Standard that complies with Title 27 section 20390 for detection monitoring based on un-impacted background data. 	<p>At least 2 years prior to placement of waste in order to establish background water quality</p> <p>Within 30 days after installation of monitoring network.</p> <p>At least 90 days prior to discharge.</p>
<p>j. Water Quality Protection Standards (WQPS) and Concentration Limits Technical Report: The Discharger shall:</p> <ol style="list-style-type: none"> 1. Submit a WQPS and concentration limits Technical Report that complies with Title 27 section 20390 for each Unit that shall clearly indicate the concentration limits for each compliance point and for each monitored medium i.e. ground water, surface water, unsaturated zone. The WQPS shall contain a sample collection and analysis plan that complies with Title 27 sections 20415(e)(4)-(5). 	<p>Prior to placement of waste in a newly constructed WMU</p>

<p>k. Groundwater seeps/springs within one mile of the drainage basins downgradient of Fill Area 1 and Fill Area 2 :</p> <ol style="list-style-type: none"> 1. By 1 September 2017 the Discharger shall conduct a survey that complies with Title 27 section 21750(g)(5) within one mile of the WMU boundaries at times when groundwater seeps/springs are most likely to be evident and prepare and submit a technical report identifying all seeps/springs that have the potential to contain groundwater that may have originated and/or flowed from below a WMU. 2. Based on the results of this survey, the Discharger shall include seeps/springs as identified by Water Board staff in the approved technical report into its (MRP) R5-2016-0042 for monitoring and reporting purposes. 	<p>1 September 2017</p> <p>Immediately following Central Valley Water Board staff approval.</p>
<p>I. Management of Fill Area 1 Unit 1 leachate LCRS (LS) flows from non-leachate Valley Underdrain (VD) flows. The Discharger shall:</p> <ol style="list-style-type: none"> 1. Submit a workplan and schedule for managing liquids collected from the Unit 1 LCRS as leachate and the non-leachate valley underdrain for the purpose of proper waste disposal in accordance with Title 27 section 20200(d) requirements; 2. Implement workplan for managing the two sources as leachate and non-leachate liquid waste; and 3. Submit Final Documentation for completion of changes necessary to manage the two sources of liquid waste consistent with Title 27 requirements. 	<p>1 July 2017</p> <p>1 July 2018</p> <p>1 February 2019</p>
<p>m. Financial Assurances for Class II Surface Impoundments:</p> <p>The Discharger shall revise its preliminary closure plan to include clean closure of any constructed Class II surface impoundment. The preliminary closure plan shall include a cost estimate for clean closure. The Discharger shall provide financial</p>	<p>Prior to discharge of waste into any Class II surface impoundment</p>

<p>assurances for clean closure of any constructed Class II surface impoundment and include financial assurances for corrective action costs due to all known or reasonably foreseeable releases from any constructed Class II surface impoundment prior to initiating its operation.</p>	
<p>n. Final Construction Report: Prior to discharge to any newly constructed WMU phase in Fill Area 2, or discharge to any newly constructed Class II surface impoundments, or discharge to any existing WMU where the containment system was repaired or replaced, the Discharger shall submit a final construction report that contains all information concerning the placement of the containment system. These reports shall provide information demonstrating that the CQA plan was implemented as proposed and that the construction proceeded in accordance with design criteria, plans, and specifications. The Discharger shall submit copies of the Final Documentation report to the Central Valley Water Board staff as prepared by the CQA officer for approval. The Discharger must receive approval of the construction before the use of the Unit commences (Title 27 section 20310(e)).</p>	<p>At least 90 days prior to the projected date to commence discharge.</p>

9. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs dated December 2015 which is incorporated into and made part of this Order by reference.

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 24 June 2016.

ORIGINAL SIGNED BY

 PAMELA C. CREEDON, Executive Officer

WMH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2016-0042
FOR
WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.
ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY
CLASS II AND CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE,
AND CORRECTIVE ACTION
ALAMEDA COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, unsaturated zone, leachate, gas condensate, 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, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order R5-2016-0042, and the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015. 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.

Upon adoption of Monitoring and Reporting Program (MRP) Order R5-2016-0042, MRP Order R5-2009-0055 shall remain in effect until 23 September 2016, on which date MRP Order R5-2016-0042 shall go into effect.

A. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 for groundwater, surface water, leachate, gas condensate, and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section G of the WDRs. All monitoring shall be conducted in accordance with the most current approved *Sample Collection and Analysis Plan (SAP)*, which includes quality assurance/quality control standards. The most current SAP was submitted in July 2015. WDRs Order R5-2016-0042 in Provisions H.8 requires the Discharger to submit a revised SAP.

All compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater 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 field parameters, monitoring parameters, and constituents of concern (COCs) where applicable as indicated and listed in Tables I through VI.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower

than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the approved Sample Collection and Analysis Plan.

The monitoring program of this MRP includes:

Section Monitoring Program

- A.1 Groundwater Monitoring
- A.2 Unsaturated Zone Monitoring (Gas Probes, Lysimeters, Leak Detection System, and Underdrains)
- A.3 Leachate and Landfill Gas Condensate Monitoring (LCRS Monitoring, Seep Monitoring, Class II Surface Impoundment Monitoring, and LCRS Testing)
- A.4 Surface Water Monitoring (Including springs)
- A.5 Facility Monitoring (Including Wastewater Treatment Plant Operations)
- A.6 Corrective Action Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of Title 27, Subchapter 3 “Water Monitoring”. The monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. As identified in the WDRs, the current groundwater monitoring system is being further evaluated to ensure compliance with Title 27 Detection Monitoring Program requirements

The current groundwater monitoring network shall consist of the following:

<u>Fill Area 1- Groundwater Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone¹
MW-2A	Detection Monitoring	Unit 1 (U1) and Unit 2 (U2)	W
MW-4A	Detection Monitoring	U2	W
MW-5A	Detection Monitoring	U1	W
MW-6	Detection Monitoring	U2	W/U
MW-7	Detection Monitoring	U1	W/U
MW-11	Detection Monitoring	U1	W
E-03A	Corrective Action	U1	W
E-05	Corrective Action	U1	A
E-07	Corrective Action	U1	W
E-17	Corrective Action	U1	W/U
E-20B	Corrective Action	U1	U

¹ A= alluvium, W= weathered bedrock, U = unweathered bedrock

<u>Fill Area 1- Groundwater Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone¹
E-23	Corrective Action	U1	W/U
MW-12	Corrective Action	U1	W
PC-1B	Corrective Action	U1	U
PC-1C	Corrective Action	U1	W/U

<u>Fill Area 1- Water Level Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
E-18	Water Level	U1	W
E-21	Water Level	U1	A/W
E-22	Water Level	U1	A/W/U
MW-1A	Water Level	U2	W
MW-1B	Water Level	U2	W
MW-2B	Water Level	U1 and U2	U
MW-2C	Water Level	U1 and U2	U
MW-3B	Water Level	U1	W/U
MW-3C	Water Level	U1	U
MW-4B	Water Level	U2	W/U
MW-5B	Water Level	U1	U

Note: WM-1 abandoned in July 2013.

<u>Fill Area 2- Groundwater Monitoring</u>			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
MW-4A	Detection Monitoring	U1	W
MW-8A	Detection Monitoring	U1	A
MW-8B	Detection Monitoring	U1	W
MW-9	Detection Monitoring	U1 Ph7-9	W
MW-10	Detection Monitoring	U1	W
MW-13A	Detection Monitoring	U1 Ph3	A
MW-13B	Detection Monitoring	U1 Ph3	W
MW-14	Detection Monitoring	U1 Ph1	W
PC-1A	Detection Monitoring	U1	W
PC-1C	Detection Monitoring	U1	W/U

Fill Area 2- Water Level Monitoring			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
WM-2	Water Level	U1	U
ARC-2	Water Level	U1	U
P-2	Water Level	U1	W
PC-1A	Water Level	U1	W
PC-1B	Water Level	U1	U
PC-1C	Water Level	U1	W/U
PC-2A	Water Level	U1	A
PC-2C	Water Level	U1	W
PC-6B / -6B(R)	Water Level	U1	U

Note: WM-1 and HSA-6 abandoned in July 2013.

Fill Area 2 Surface Impoundment SI-1, Groundwater Monitoring			
Well No.	Monitoring Program	WMU/Phase	Stratigraphic Zone
MW-15B	Detection Monitoring	U1	To Be Determined
MW-16	Detection Monitoring	U1	To Be Determined
MW-17	Detection Monitoring	U1	To Be Determined
MW-18	Detection Monitoring	U1	To Be Determined

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. Also, refer to section A.7 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(e)(15). All groundwater elevations shall be reported using only one common datum (e.g., NGVD29 or NAVD88, etc.) for the entire network.

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 November 2015 and shall be monitored again in

November 2020. 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, Leak Detection System, and Underdrains)

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 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 current unsaturated zone monitoring network shall consist of:

<u>Monitoring Point</u>	<u>Status</u>	<u>Device Type</u>	<u>Units Being Monitored</u>
VD	Corrective Action	Underdrain	Fill Area 1, Unit 1
VZM-A	Detection Monitoring	Pan Lysimeter	Fill Area 1, Unit 2
VD2	Corrective Action	Underdrain	Fill Area 1, Unit 2
VZM-B	Detection Monitoring	Pan Lysimeter	Leachate Pond SI-1
UD-1	Detection Monitoring	Underdrain	Fill Area 2, Unit 1, Phase 1
LD-1	Detection Monitoring	Leak Detection	Fill Area 2, Unit 1, Phase 1
LD-2	Detection Monitoring	Leak Detection	Fill Area 2, Unit 1 Leachate Conveyance Pipe (annular space)
GP-1	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1 and Fill Area 2
GP-7	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-8	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-9	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-10	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-11	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-12	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1
GP-20	Detection, Soil-Pore Gas	Gas Probe	Fill Area 1 and Fill Area 2

a. Gas Probes

The Discharger operates perimeter LFG probes adjacent to the WMUs as required by CalRecycle which currently act as a proxy for a portion of the unsaturated zone detection monitoring system. Unsaturated zone samples of landfill gas shall be collected from the monitoring network listed above and shall be analyzed for the

soil-pore gas monitoring parameters and constituents listed in Table II in accordance with the specified methods and frequencies. 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 (phase of construction).

b. Lysimeters (Pan type or other soil-pore liquid type monitoring device)

Lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry lysimeter, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning again in 2020.

All pan type lysimeters in Fill Area 1 shall also be monitored for landfill gas in the unsaturated zone. The Discharger shall sample for landfill gas for the Monitoring Parameters listed in Table II.

c. Leak Detection System Monitoring

The leak detection system in each phase of Fill Area 2 shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry leak detection system, the Discharger shall verbally and via email communication notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II. Samples collected for the 5-year COC analyses specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years, beginning at the time of the first sample collection.

The Discharger shall monitor the leak detection system associated with each phase of construction in Fill Area 2 Unit 1.

The Discharger shall monitor the leak detection system, the annular space between double walled leachate conveyance pipe for Fill Area 2 Unit 1. The presence of liquid in the annular space shall be monitored monthly at a point immediately prior to the discharge point of leachate to the 8-million gallon Class II surface impoundment. If liquid is detected in a previously dry leak detection system, the Discharger shall verbally and via email communication 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 and 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. Based on the monitoring results, the Discharger shall determine if a release from the primary containment system within the leachate conveyance pipe has occurred following SPRRs guidelines.

All leak detection systems in each phase of Fill Area 2 shall also be monitored for landfill gas. The Discharger shall sample and test for landfill gas for the Monitoring Parameters listed in Table II.

d. Underdrain Monitoring

The Discharger shall operate, maintain, and monitor an underdrain system below Fill Area 1 and Fill Area 2 in order to satisfy the requirements of the WDRs R5-2016-0042 for the approved alternative to 5-foot separation siting requirements (Title 27 section 20240(c)) and provide detection monitoring for a release of landfill leachate and landfill gas to the underdrain system.

The Discharger shall monitor the underdrain system associated with each phase of construction in Fill Area 2 Unit 1. The liquid shall be collected as close to edge of waste as possible for each phase of construction in order to provide representative samples.

All underdrains shall be monitored **monthly** for the presence of liquid, and flow shall be recorded in accordance with Table II. The Discharger shall sample and test any liquid and gas present in the underdrain for Field and Monitoring Parameters listed in Table II. All underdrain samples shall be analyzed for the 5-year COCs specified in Table II every five years, beginning at the time of the first sampling in Fill Area 2 and on the schedule already provided for Fill Area 1 (i.e., next event November 2020).

All underdrains for Fill Area 1 shall also be monitored for landfill gas. All underdrains in each phase of Fill Area 2 shall also be monitored for landfill gas. The Discharger shall sample and test for landfill gas for the Monitoring Parameters listed in Table II.

3. LCRS Monitoring, Seep Monitoring, Annual LCRS Testing, Landfill Gas Condensate Monitoring, Class II Surface Impoundment Monitoring

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

The Discharger shall operate and maintain a LFG condensate collection and removal system, and conduct monitoring and reporting of the quantity and quality of the gas condensate collected.

a. LCRS Monitoring

The Discharger shall operate and maintain a leachate collection and removal system (LCRS) including but not limited to all LCRS gravel windows, all LCRS collection systems, and all LCRS removal systems (LCRS sumps).

The Discharger shall monitor the LCRS with each phase of construction in Fill Area 2.

The current LCRS leachate sump monitoring points are:

<u>Monitoring Point</u>	<u>Waste Management Unit Where LCRS Sump and/or LCRS Discharge Pump is Located</u>
LS	Fill Area 1, Unit 1 LCRS Sump
LS2	Fill Area 1, Unit 2 LCRS Sump
LS-3	Surface Impoundment Leachate Pond SI-1 LCRS Sump
LS-4	Fill Area 2, Unit 1, Phase 1 LCRS Discharge Pipe

All LCRS sumps and/or LCRS discharge pipes 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 for the Leachate Pond, the Discharger shall verbally and via email communication 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 and/or LCRS Discharge Pipe shall be sampled for all parameters and constituents in accordance with the frequencies listed in Table III. All LCRS sump and/or LCRS discharge pipe samples shall be analyzed for the 5-year COCs specified in Table III when initially operated and then every five years, beginning again in 2020 for LCRS sumps previously monitored in 2015.

b. Seep Monitoring

Leachate that seeps to the surface from any landfill WMU including its side slopes, intermediate and/or final cover 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 separately as Leachate Seep Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B of this MRP, below.

c. Annual LCRS Testing

All LCRSs shall be tested annually pursuant to Title 27, section 20340(d) to demonstrate proper operation. The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report and shall include comparisons with earlier tests made under comparable conditions.

d. Landfill Gas Condensate Monitoring

The Discharger shall sample and analyze for the Field and Monitoring Parameters listed in Table III landfill gas condensate collected from all WMUs where landfill gas condensate is to be returned to the WMU. The quantity of landfill gas condensate returned to a WMU shall be measured and reported separately for each WMU as Landfill Gas Condensate Flow Rate (in gallons/month. Reporting for landfill gas condensate shall be conducted as required in Section B.1 of this MRP below.

e. Class II Surface Impoundment Monitoring

Samples shall be collected from each Class II surface impoundment in accordance with the Table III. One sample shall be collected from each surface impoundment

during each semi-annual monitoring period. The following additional parameters will be monitored and reported as part of the semiannual reporting requirement:

Additional Class II Surface Impoundment Monitoring			
<u>Field Parameters</u>	<u>Units</u>	<u>Monitoring Frequency</u>	<u>Reporting Frequency</u>
Flow Rate to each impoundment ¹	gallons/month	Weekly	Semiannually
Reapplication Flow Rate to each landfill WMU ⁵	gallons/month	Daily	Semiannually
Precipitation ²	Inches & Tenths/month	Daily	Semiannually
Freeboard ³	Feet & Tenths	Monthly	Semiannually
Off Site Removal of Wastewater ⁴	Gallons per Event	Daily	Semiannually

¹ Flow of wastewater into Class II surface impoundments as measured and recorded at totalizing meter. If the Discharger discharges liquids other than landfill leachate or landfill gas condensate the Discharger shall report the flowrate of all other liquids to the surface impoundment separately.

² Precipitation shall be measured as described in Discharge Specifications.

³ Freeboard shall be measured and recorded monthly and prior to major storm events using permanent markings on the primary geomembrane liner or a free-standing gauge.

⁴ Each time wastewater is removed from the facility for disposal elsewhere, the Discharger shall document the date of removal, gallons removed, and the location of disposal. A copy of each hauling receipt shall be included in the semiannual report.

⁵ The Discharger shall monitor the flowrate to each landfill WMU. The Discharger is prohibited from discharging quantities of liquids to landfill WMUs greater than the amount of landfill leachate and landfill gas condensate permitted to be returned to the landfill WMUs.

Action Leakage Rate: The Discharger shall calculate the leakage rate for each Class II surface impoundment LCRS on a monthly basis, and convert the results into gallons per acre per day value. The results shall be included in the information in the semiannual reports, and compared to the Action Leakage Rates found in the WDRs under Facility Specification C.9. If monitoring of the flow rate into the LCRS shows an exceedance of the Action Leakage Rate required by the WDRs, the Discharger shall follow the procedures in the WDRs under “C. Facility Specifications”. Tabulated leakage rates shall be included in the semiannual monitoring reports.

4. Surface Water Monitoring (Including springs)

At the Altamont Landfill and Resource Recovery Facility, runoff from landfill areas flows to sedimentation basins that periodically discharge to natural drainages.

Discharges to natural drainages to the west of the facility flow west-southwest to channels along Dyer Road that drain to Altamont Creek which may flow into the San Francisco Bay. Discharges to natural drainages to the south and east of the facility flows eastward in un-named channels and ditches to Mountain House Creek, which flows to Old River in the Sacramento-San Joaquin Delta. The current surface water detection monitoring system meets the applicable requirements of Title 27.

The current surface water monitoring points for the landfill are:

<u>Point Identification</u>
Basin A
Basin A Discharge
Basin B
Basin B Discharge
Basin C
Basin C Discharge
SB-A (Sedimentation Basin A)
SB-A Discharge (Sedimentation Basin A Discharge)
SB-1 (Sedimentation Basin 1)
SB-1 Discharge (Sedimentation Basin 1 Discharge)
SB-2 (Sedimentation Basin 2)
SB-2 Discharge (Sedimentation Basin 2 Discharge)

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 5-year COCs specified in Table IV every five years, beginning again in 2020.

Following the field survey of springs within one mile of the Facility and a technical report in September 2017, and as approved by Water Board staff, downgradient springs within one mile of the drainage basins downgradient of Fill Area 1 and Fill Area 2 where groundwater potentially originated and/or flowed beneath a WMU may need to be monitored for the Field and Monitoring Parameters listed in Table III and sampled and analyzed following the methods and frequency specified in Table IV.

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 to ensure the facility is capable of satisfying the prohibitions, specifications, and provisions sections of the WDRs. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater, surface water, and unsaturated zone monitoring systems; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation

control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any 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 Section B.5 of this MRP.

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 or ET cover. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP. The next iso-settlement survey shall be conducted upon completion of installation of closure covers on Fill Area 1 Unit 1 and Fill Area 1 Unit 2 and every five years thereafter.

d. Biennial Closure Cover Leak Search for Closed Units

Pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A) the Discharger shall conduct biennial monitoring of the integrity of the low-hydraulic-conductivity layer, including a method for effectively identifying and repairing breaches in that layer. Defects will be repaired and tested for adequacy based on the closure CQA Plan. The results shall be reported as required in Section B.7 of this MRP.

e. Post-Earthquake Inspection and Response

In order to ensure that the Facility's waste containment structures have not sustained damage after an earthquake of Magnitude (Mw) 5.0 or greater within 25 miles of the facility or a Magnitude (Mw) 6.0 or greater earthquake within 50 miles of the facility the Discharger shall implement its Post-Earthquake Inspection and Response. The inspection shall include but not limited to inspecting WMU liners (where feasible) and covers; LCRS riser pipes, sump pump operation, and storage tanks; including the flare station; drainage control facilities; and detection monitoring facilities for damage.

The inspection shall be conducted in a timely manner following earthquakes of the magnitude specified above. A report of the inspection shall be submitted within 30 days after the inspection assessing any damage and shall contain proposals to repair or replace any damaged structures or facilities. The results shall be reported as required in Section B.11 of this MRP.

f. Material Recovery Facility

The Discharger shall monitor and report the parameters listed in Table III for all liquid waste generated at the proposed MRF Facility (if constructed) that is classified as non-hazardous waste or designated waste. The Discharger shall also report the disposal method of the liquid waste e.g., Class II surface impoundment, WWTP, etc.

g. Liquid Waste Handling Reporting

Discharger shall monitor and report the amount of liquid waste including but limited to liquid waste generated from recycling operations, truck wash facilities, landfill gas-to-energy plants, and vehicle maintenance facilities, applied to each WMU in accordance with intent and purposes listed in Title 27 section 21090(a)(5)(B) for closed WMUs and Title 27 section 20705 for active and inactive WMUs. The Discharger shall report the results as required in section B.9.

h. 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 (except where noted):

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

The Standard Observations shall include:

- 1) For the landfill Units:
 - a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 2) Along the perimeter and outward slopes of the of the landfill Units:
 - c) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - d) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
 - e) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 - f) Discoloration and turbidity - description of color, source, and size of affected area.

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

i. Incoming Waste Monitoring Program

1) Petroleum Contaminated Soils Monitoring

Monitoring requirements for soils accepted for direct disposal in any landfill unit are as follows:

<u>Reporting Parameter/Constituent</u>	<u>Units of</u>	<u>Sampling Frequency</u>
Amount of soil Before acceptance:	Cubic Yards	Every Lot*
for Gasoline: EPA 5030/8015 Modified EPA 5030/8020 TTLC Pb** ⁽¹⁾	mg/kg	Every Lot ¹
for Diesel & Virgin Oil: EPA 3550/8015 Modified	mg/kg	Every Lot
for Waste Oil EPA 3550/8015 Modified EPA 5030/8015 Modified EPA 8260 (or 8010 & 8020) EPA 8270 5520 E&F (total oil & grease) TTLC Metals**: Cd, Cr, Pb, Ni, and Zn	mg/kg	Every Lot
Aquatic 96-Hour Static Bioassay required if: Gasoline is greater than 5,900 ppm; or Diesel is greater than 20,000 ppm; or motor or waste oil is greater than 10,000 ppm.		Every Lot
After Treatment or Discharge: Final disposition of soil		Every Lot*

* The total amount of contaminated soil accepted from a site (gas station, pipeline spill, etc.) shall be defined as a lot. For every lot of soil, representative testing shall be conducted before the soil is accepted at Altamont.

** The WET method shall be run if any total metal concentration exceeds 10 times the STLC or the Designated Level if waste is discharged to the Class III landfill.

¹ The TTLC requirement for Pb applies to when the generator determines that leaded gasoline was or may have been present. In situations where there is proof that a generator's tank never contained leaded gasoline, the TTLC requirement for Pb can be omitted.

2) Designated and Non-Hazardous Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class III and Class II landfill units on a monthly basis and report to the Regional Water Board as follows:

<u>Reporting Parameter</u>	<u>Units of</u>	<u>Frequency of Reporting</u>
Quantity Discharged:		
Non-hazardous Solid Waste	Cubic Yards & Tons	Yearly
Designated Waste	Cubic Yards & Tons	Yearly
Petroleum Contaminated Soil	Cubic Yards & Tons	
Asbestos	Cubic Yards & Tons	Yearly
Sewage and Wastewater	Cubic Yards or Tons	Yearly
Treatment Sludges and Average % Solids	%	Yearly
Location of Discharge	--	Yearly
Capacity of each WMU Remaining for Waste Disposal	Cubic Yards	Yearly

When it is necessary to determine if a solid waste, including contaminated soil, is a 'designated waste', a Waste Extraction Test (WET) shall be run. The waste may be disposed of in a Class III landfill unit at this site only under the following conditions:

- a) If the concentrations of extractable constituents (expressed in mg/l of extract), as determined by the standard WET (CCR, Title 22, Division 4.5, Chapter 11), do not exceed the Maximum Concentrations specified in the following table, the waste may be co-disposed with 'non-hazardous solid waste'.
- b) If the concentrations of extractable constituents (expressed in mg/l of extract), as determined by the WET run with deionized water in place of the standard citrate buffer, do not exceed the Maximum Concentrations specified in the following table, the waste may be disposed of in an area where the waste will not contact degradable wastes or wastes capable of generating acidic leachate or landfill leachate, or be overlain by wastes capable of generating acidic leachate.

<u>Designated Level Parameter</u>	<u>Maximum Concentration in mg/l of WET Extract</u>
Cadmium	0.05
Chromium (VI)	0.5*
Copper	20
Lead	1.5
Mercury	0.02
Nickel	1.0
Zinc	200

* At the Discharger's discretion, may be met based on Total Chromium analyses, provided that the Total Chromium analyses is below 0.5 mg/l.

The designated levels for petroleum-contaminated soils are 100 mg/kg TPH Diesel by Modified EPA 8015 or equivalent method and non-detectable TPH Gasoline or BTXE by EPA Methods 8015 and 8020. Soils containing greater than 100 mg/kg TPH Diesel or detectable TPH Gasoline or BTXE shall be discharged only to a Class II landfill unit.

3) Treated Auto Shredder Waste Monitoring

Monitoring requirements for treated auto shredder waste accepted at ALRRF are as follows:

<u>Parameter/Constituent</u>	<u>Report in Units of</u>	<u>Sampling Frequency</u>
PCBs	mg/kg	every 1,000 tons*
Location of shredder waste disposal	--	Yearly
Amount of shredder waste accepted	tons	Yearly
BTX&E	mg/l or µg/l	Every 1,000 tons**
Total Petroleum Hydrocarbons (TPH)	mg/kg	Every 1,000 tons**
Designated Level Parameters	mg/l	Every 1,000 tons**

* Or more frequently as required by the Department of Toxic Substances Control.

** Only required for shredder waste discharged to Class III unit.

Testing for PCBs shall be conducted using composite samples collected at the shredder facility. The samples shall be analyzed for PCBs using EPA Method 8080.

4) Improper Designated and Hazardous Solid Waste Disposal

The Discharger shall monitor and exclude hazardous and designated wastes from the facility through its load checking and waste screening, as described in the Hazardous Waste Exclusion Program. Any improper disposal of designated waste or hazardous waste in a Class III WMU or hazardous waste in a Class II WMU shall be reported as required in Section B.12 of this MRP.

6. Corrective Action Monitoring

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective action in accordance with Title 27 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 parts A.1 and A.2 of this MRP, except as modified in this part of the MRP for any additional constituents or modified monitored frequencies.

The Discharger shall monitor the following corrective action monitoring wells as required in part A.1 and Table I of this MRP:

<u>Well</u>
E-03A
E-05
E-07
E-17
E-20B
E-23
MW-12
PC-1B
PC-1C

The Discharger shall monitor the following unsaturated zone monitoring points as required in part A.2, and Table II of this MRP:

<u>Well</u>	<u>Unit</u>
VD	Fill Area 1, Unit 1
VD2	Fill Area 1, Unit 2

The current unsaturated zone extraction system network is as follows:

<u>Extraction Point</u>	<u>Zone</u>	<u>WMU Being Addressed</u>
VD	Unsaturated	Fill Area 1 Unit 1
VD-2	Unsaturated	Fill Area 1 Unit 2
VZM-A	Unsaturated	Fill Area 1 Unit 2

The Discharger stated that in order to reduce the influence of landfill gas in Fill area 1, the Discharger is removing landfill gas from unsaturated zone piping systems as corrective action. So long as the Discharger finds that landfill gas is the cause of a

release of VOCs from Fill Area 1, the Discharger shall continue to remove landfill gas from the extraction points listed above and shall report the amount of VOCs removed.

The Discharger has reported that landfill gas from Unit 1 is the source of VOCs in groundwater and the unsaturated zone at the point of compliance in Fill Area 1 Unit 1 and Unit 2. The Discharger has reported that active landfill gas extraction has been an effective way to minimize the impacts to the groundwater and unsaturated zone.

Currently, the two areas with elevated VOC impacts are near groundwater monitoring wells E-05/E-07 and E-20B. The Discharger shall monitor its active gas extraction system near these two VOC impacted areas in accordance with Table VII. The Landfill Gas corrective action monitoring results shall be reported as required in Section B.13 of this MRP.

B. REPORTING

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

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	At Closure Completion and Every Five Years
B.7	Biennial Closure Cover Leak Search	Every Two Years	At Closure Completion and Every Five Years
B.8	Material Recovery Facility (when completed)	30 June, 31 December	1 August, 1 February
B.9	Liquid Waste Handling Report	31 December	1 February
B.10	Post-Earthquake Inspection and Response Report	Continuous	30 Days after Earthquake Event
B.11	Improper Solid Waste Disposal	Continuous	Immediately & 7 Days
B.12	Financial Assurances Report	31 December	1 June
B.13	Landfill Gas Corrective Action Report	31 December	1 February

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order R5-2016-0042 and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a

Release”). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Div. 3 of Title 27.

The results of **all monitoring** conducted at the site in accordance with this MRP 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. 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) Results derived by calculation (indicate that calculation was used to derive result); and
- f) Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported for 5-year COC events.

Required Reports

1. Semiannual Monitoring Report

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

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

used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;

- 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c. The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
 - d. Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater (MRP Section A.1), unsaturated zone (MRP Section A.2), leachate and gas condensate (MRP Section A.3), and surface water (MRP Section A.4). Concentrations below the reporting limit shall not be reported as non-detect "ND" unless the concentration is below the method detection limit (MDL) and the method detection limit is also given in the table. Laboratory results indicating trace values of COCs between the MDL and PQL (Reporting Limit or RL) shall be reported as estimated values (flagged and estimated value reported). Laboratory results of COCs at or above the PQL shall be reported and indicated clearly as exceeding the PQL relative to laboratory results reported below the PQL. Laboratory results shall clearly distinguish on time series graphs data that is reported as non-detect versus data that was reported at or above MDL (trace) levels. Units shall be monitored as required in Tables I through VI unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e. Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f. An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under SPRRs Section J: Response to a Release for verified exceedances of a concentration limit.
 - g. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.

- h. A summary of all Standard Observations for the reporting period required in Section A.d. of this MRP.
- 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 SPRRs.

2. Annual Monitoring Report

The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

- a. All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, than these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
- b. An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
- c. All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
- d. Hydrographs of each well showing the elevation of groundwater during each sampling event. Information regarding the elevations of the top and bottom of the screened interval, the elevation of the pump intake, and the groundwater elevation shall be provided in a table. These hydrographs and Table shall be prepared 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(s) 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 remaining capacity for each discrete landfill module.

- g. A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
- h. The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
- i. Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set as appropriate.
- j. A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.6.

3. Seep Reporting

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

- a. A map showing the location(s) of seepage;
- b. An estimate of the flow rate;
- c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
- d. Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
- e. Corrective measures underway or proposed, and corresponding time schedule.

4. Annual Facility Inspection Reporting

By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.5.a. of this MRP, above.

5. Major Storm Event Reporting

Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.b of this MRP, above.

6. Survey and Iso-Settlement Map for Closed 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(e). Refer to Section A.5.c of this MRP, above. The next report is due upon completion of each closed area and every five years thereafter by 1 February under a separate cover as part of the Annual Monitoring Report.

7. Biennial Closure Cover Leak Search 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(e). Refer to Section A.5.d of this MRP, above. The next report is due upon completion of each closed area and every two years thereafter by 1 February under a separate cover as part of the Annual Monitoring Report.

8. Material Recovery Facility

The Discharger shall report as part of the Semi-Annual Monitoring Report the results of monitoring all liquid waste generated at the proposed MRF Facility (if constructed) that are classified as non-hazardous waste or designated waste including the disposal method of the liquid waste e.g., Class II surface impoundment, WWTP, etc. Refer to Section A.5.f of this MRP, above.

9. Liquid Waste Handling Report

The Discharger shall report as part of the Annual Monitoring Report the results of all monitoring performed in Section A.5.g.

10. Post-Earthquake Inspection and Response Report

Discharger shall report the results of its Post-Earthquake Inspection and Response. The report shall include but not limited to the inspection of the WMU liners and covers; LCRS riser pipes, sump pump operation, and storage tanks; including the flare station; drainage control facilities; and detection monitoring facilities for damage. A report shall include assessing any damage and shall contain proposals to repair or replace any damaged structures or facilities as specified in Section A.5.e of this MRP.

11. Improper Solid Waste Disposal Reporting

The Discharger shall report by telephone any violation of disposal of designated waste or hazardous waste in a Class III WMU or hazardous waste in a Class II WMU **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 time and location(s) of improper disposal;
- b. An estimate of the quantity and type of waste that was disposed of;
- c. A description of the of the waste (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 (including the 5-year COCs) of this MRP (if the materials could be sampled), and an estimated date that the results will be submitted to the Central Valley Water Board; and
- e. Corrective measures underway or proposed to remove the waste, and corresponding time schedule.

12. Financial Assurances Report

By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for

closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.3 of the WDRs.

13. Landfill Gas Corrective Action Report

By **1 February** of each year, the Discharger shall submit a landfill gas corrective action report that presents the following:

- 1) A discussion of the landfill gas monitoring results;
- 2) An evaluation of the effectiveness of the landfill gas extraction system; and
- 3) For the landfill gas extraction system: a listing of the dates of shutdown, length of time shutdown, how the system was re-started, the cause of the shutdown, and steps that have been taken to prevent such a shutdown in the future.

The report shall include tabulated data for all field and monitoring parameters and, as requested by Water Board staff, the wells monitored for VOCs, time vs. concentration graphs showing the concentration of total VOCs in each well, as well as a separate graph for each non-methane organic compound (i.e., benzene, toluene, 1,1 dichloroethane, tetrachloroethylene, trichloroethylene, vinyl chloride, Cis 1,2 dichloroethene) detected in the landfill gas well.

The report shall include a discussion about the effectiveness of the Corrective Action Program including comparison of the current data with historical data, trends, and the status of the landfill gas extraction system, including sampling data, flow rates, and effectiveness.

This report may be included as part of the Annual Monitoring Report specified in B.2.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water Quality Protection Standard other than annual update of the concentration limits shall be submitted in a report for review and approval. The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the

unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.

- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The Water Quality Protection Standard (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 Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits in its June 2015 Joint Technical Document Appendix B Section 7.3 Statistical Methodology. The Discharger proposed using Intra-well analysis methodology for statistically determining if there is measurably significant evidence of a release from a WMU. As described in the findings in WDRs R5-2016-0042 and Provisions H.8 the Discharger is required to submit a WQPS.

The approved Water Quality Protection Standard including appropriate concentration limits shall be updated every 1 to 2 years for each monitoring well using new and historical monitoring data.

2. Monitoring Parameters

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

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2015 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in 2020.

4. Concentration Limits

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

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

The methods for calculating concentration limits were included in the Discharger’s JTD. The method uses Practical Quantitation Limits (PQLs) as the concentration limits for VOCs, and the Shewart-CUSUM control chart for intra-well statistical analysis of inorganic monitoring parameters.

5. Retesting Procedures for Confirming Evidence of a Release

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

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.
- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs. (Insert any additional information about the specific retesting procedure if an acceptable retesting procedure has been proposed by the Discharger in the Water Quality Protection Standard Report that complies with Title 27, section 20415(e)(8)(E). Refer to Standard Monitoring Specification I.47 for more information.)

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.

<u>Fill Area</u>	<u>Point of Compliance Monitoring Wells</u>
Fill Area 1	MW-2A, MW-4A, MW-5A, MW-6, MW-7, E-05, E-07, E-23, E-20B
Fill Area 2	MW-8A/B, MW-9, MW-13A/B (Phase 3), MW-14 (Phase 1), PC-1A/C (Phase 4)
Surface Impoundment SI-1	To Be Determined

7. Compliance Period

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

8. Monitoring Points

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

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall contain a statement by the Discharger that it has performed data analysis and whether in accordance with Title 27 section 20420(i) it has determined whether there is "measurably significant" evidence of a release from any WMU. 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

24 June 2016

(Date)

WMH

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

Field Parameters

Parameter²	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Groundwater Elevation	GWELEV	Ft. & 100ths, M.S.L.	Quarterly ¹	Semiannual
Temperature	TEMP	°C	Semiannual	Semiannual
Specific Conductance	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Turbidity	TURB	NTU Turbidity units	Semiannual	Semiannual

Monitoring Parameters³

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L ⁵	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Chemical Oxygen Demand (COD)	COD	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICACO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Kjeldahl, Total	KN	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (See Table V)	(See Table V)	ug/L ⁶	Semiannual	Semiannual

Supplemental Parameters⁴

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Carbonate as CaCO ₃	CACO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	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

TABLE I (CONTINUED)
GROUNDWATER DETECTION MONITORING PROGRAM

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov. 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	

- ¹ The Discharger shall monitor groundwater elevation at least quarterly including the times during the year of expected highest and lowest elevations of the water levels in the wells. Groundwater elevation for all groundwater monitoring points shall be reported using a common datum e.g. NGVD29 or NAVD88.
- ² Field parameters are collected for informational purposes to document groundwater conditions at the time of sampling, and are not included in statistical analysis.
- ³ The Discharger shall apply the statistical analyses described in Section C.4 of this MRP to the inorganic monitoring parameters included on this list.
- ⁴ Supplemental parameters provide important information regarding groundwater geochemistry, but these parameters are not included in routine statistical analysis.
- ⁵ Milligrams per liter
- ⁶ Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

GAS PROBES (SOIL-PORE GAS)¹

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Volatile Organic Compounds ² (Use USEPA Method TO-15)	(See Table V)	ug/cm ³	Annual	Annual
Methane	CH4	%	Semiannual	Annual
Carbon Dioxide	CO ₂	%	Semiannual	Annual
Oxygen	OXYGEN	%	Semiannual	Annual

LYSIMETERS, LEAK DETECTION SYSTEM, UNDERDRAINS³ (or any other unsaturated zone monitoring point where liquid and gas may be present)

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Specific Conductance	SC	umhos/cm	Monthly	Semiannual
pH	PH	pH units	Monthly	Semiannual
Volume of liquid removed		gallons	Monthly	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CACO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICACO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Manganese	MN	mg/L	Semiannual	Semiannual

¹ The Discharger may prescreen the gas sample to determine if the sample is required to be laboratory analyzed using Method TO-15 by using an approved gas analyzer to establish methane concentrations or an approved Photo Ionization Detector (PID) to establish total VOCs concentrations at the sampling point. If while using an approved sampling and analysis plan procedure the Discharger detects methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected with a PID at a concentration greater than 1.0 ppm then a gas sample shall be obtained and laboratory analyzed for specific 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.

² Particularly paying special attention to and analyzing for any VOCs historically detected in LCRS sumps LS, LS-2, LS-3, future LCRS sumps, and historically detected in all groundwater monitoring wells.

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 and via email communication 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.

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Pentachlorophenol	PCP	ug/L	Annual	Annual
Arsenic (dissolved)	AS	ug/L	Annual	Annual
Copper (dissolved)	CU	ug/L	Annual	Annual
Chromium (dissolved)	CR	ug/L	Annual	Annual
Volatile Organic Compounds ¹ (in liquid matrix) (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual
Volatile Organic Compounds ¹ in gas matrix (Use USEPA Method TO-15)	(See Table V)	ug/cm ³	Semiannual	Semiannual
Methane	CH4	%	Semiannual	Semiannual
Carbon Dioxide	CO ₂	%	Semiannual	Semiannual
Oxygen	OXYGEN	%	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov. 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	

¹ Particularly paying special attention to and analyzing for any VOCs historically detected in LCRS sumps LS, LS-2, LS-3, future LCRS sumps, and historically detected in all groundwater monitoring wells.

TABLE III

**LEACHATE MONITORING¹, GAS CONDENSATE MONITORING, SEEP MONITORING²,
 WWTP MONITORING, CLASS II SURFACE IMPOUNDMENT MONITORING, AND LCRS
 TESTING³**

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Flow Rate	FLOW	Gallons/Month	Monthly	Semiannual
Specific Conductance	SC	umhos/cm	Monthly	Semiannual
pH	PH	pH units	Monthly	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CaCO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICaCO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	mg/L	Semiannual	Semiannual
Calcium	CA	mg/L	Semiannual	Semiannual
Magnesium	MG	mg/L	Semiannual	Semiannual
Manganese	MN	mg/L	Semiannual	Semiannual
Potassium	K	mg/L	Semiannual	Semiannual
Sodium	NA	mg/L	Semiannual	Semiannual
Pentachlorophenol	PCP	ug/L	Annual	Annual
Arsenic (dissolved)	AS	ug/L	Annual	Annual
Copper (dissolved)	CU	ug/L	Annual	Annual
Chromium (dissolved)	CR	ug/L	Annual	Annual
Volatile Organic Compounds (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov. 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	
LCRS Testing³	---		Annually	Annually

¹ If leachate is detected in a previously dry sump, the Discharger shall verbally and via email communication 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 be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid are present.

² Leachate seeps shall be sampled and analyzed for the Field and Monitoring Parameters in this table upon detection and/or reappearance. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3

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

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

Field Parameters

Parameter	Geotracker Code	Units	Sampling Frequency¹	Reporting Frequency
Specific Conductance	SC	umhos/cm	Semiannual	Semiannual
pH	PH	pH units	Semiannual	Semiannual
Dissolved Oxygen	DOSAT	% Saturation	Semiannual	Semiannual
Turbidity	TURB	Turbidity units	Semiannual	Semiannual
Temperature	TEMP	°C	Semiannual	Semiannual
Discharge to Waters of U.S.		Yes or No	Semiannual	Semiannual

Monitoring Parameters

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Dissolved Solids	TDS	mg/L	Semiannual	Semiannual
Chloride	CL	mg/L	Semiannual	Semiannual
Carbonate as CaCO ₃	CACO ₃	mg/L	Semiannual	Semiannual
Bicarbonate as CaCO ₃	BICACO ₃	mg/L	Semiannual	Semiannual
Nitrogen, Nitrate (as N)	NO ₃ N	mg/L	Semiannual	Semiannual
Sulfate	SO ₄	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 (See Table V)	(See Table V)	ug/L	Semiannual	Semiannual

5-Year Constituents of Concern (see Table VI)

Parameter	Geotracker Code	Units	Sampling Frequency	Reporting Frequency
Total Organic Carbon (TOC)	TOC	mg/L	5 years	Nov 2020
Inorganics (dissolved)	See Table VI	ug/L	5 years	and every
Volatile Organic Compounds	See Table VI	ug/L	5 years	5 years
Semi-Volatile Organic Compounds	See Table VI	ug/L	5 years	thereafter
Chlorophenoxy Herbicides	See Table VI	ug/L	5 years	
Organophosphorus Compounds	See Table VI	ug/L	5 years	

¹ Semiannual surface water monitoring is required at a minimum of twice per year when there is water present in the designated surface water monitoring points at the beginning and the end of the wet season (15 October through 15 May). Reporting shall include whether there was flow from the facility to waters of the U.S. (as defined as the confluence of the storm water drainage course and a waterway identified on USGS maps) when the samples were collected.

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

<u>Analyte Description</u>	<u>Geotracker Code</u>
pH	PH
Total Dissolved Solids	TDS
Specific Conductance	SC
Chloride	CL
Sulfate	SO4
Nitrogen, Nitrate (as N)	NO3N

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

<u>Analyte Description</u>	<u>Geotracker Code</u>
Acetone	ACE
Acrylonitrile	ACRAMD
Benzene	BZ
Bromochloromethane	BRCLME
Bromodichloromethane	BDCME
Bromoform	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane	CLEA
Chloroform	TCLME
Dibromochloromethane	DBCME
1,2-Dibromo-3-chloropropane	DBCP
1,2-Dibromoethane	EDB
1,2-Dichlorobenzene	DCBZ12
1,3-Dichlorobenzene	DCBZ13
1,4-Dichlorobenzene	DCBZ14
trans-1,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane	FC12
1,1-Dichloroethane	DCA11
1,2-Dichloroethane	DCA12
1,1-Dichloroethene	DCE11
cis-1,2-Dichloroethene	DCE12C
trans-1,2-Dichloroethene	DCE12T
1,2-Dichloropropane	DCPA12
cis-1,3-Dichloropropene	DCP13C
trans-1,3-Dichloropropene	DCP13T
Di-isopropyl ether (DIPE)	DIPE
Ethanol (EtOH)	ETHANOL
Ethyl tert-butyl ether (ETBE)	ETBE
Ethylbenzene	EBZ
2-Hexanone	HXO2

TABLE V (Continued)

Volatile Organic Compounds, short list (continued)

<u>Analyte Description</u>	<u>Geotracker Code</u>
Hexachlorobutadiene	HCBU
Bromomethane	BRME
Chloromethane	CLME
Dibromomethane	DBMA
Dichloromethane	DCMA
2-Butanone	MEK
Methyl iodide	IME
Methyl-tert-butyl ether (MTBE)	MTBE
4-Methyl-2-pentanone	MIBK
Naphthalene	NAPH
Styrene	STY
tert-Amyl methyl ether (TAME)	TAME
tert-Butyl alcohol (TBA)	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA
Tetrachloroethene (PCE)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1-Trichloroethane	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethene (TCE)	TCE
Trichlorofluoromethane	FC11
1,2,3-Trichloropropane	TCPR123
Vinyl acetate	VA
Vinyl chloride	VC
Xylenes	XYLENES

TABLE VI
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>	<u>Geotracker Code</u>
Aluminum	6010	AL
Antimony	7041	SB
Barium	6010	BA
Beryllium	7131A	BE
Cadmium	6010	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	7062	MN
Arsenic	7421	AS
Lead	7470A	PB
Mercury	7521	HG
Nickel	7742	NI
Selenium	7841	SE
Thallium	9010C	TL
Cyanide, Total	9030B	CN
Sulfide	6010	S

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

<u>COC Description</u>	<u>Geotracker Code</u>
Acetone	ACE
Acetonitrile	ACCN
Acrolein	ACRL
Acrylonitrile	ACRAMD
Allyl chloride	CLPE3
Benzene	BZ
Bromochloromethane	BRCLME
Dibromochloromethane	DBCME
Bromoform	TBME
Carbon disulfide	CDS
Carbon tetrachloride	CTCL
Chlorobenzene	CLBZ
Chloroethane	CLEA
Chloroform	TCLME
2-Chloro-1,3-butadiene (Chloroprene)	CHLOROPRENE
Dibromochloromethane	DBCME
1,2-Dibromo-3-chloropropane	DBCP
1,2-Dibromoethane	EDB

TABLE VI (Continued)

Volatile Organic Compounds, extended list (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
1,2-Dichlorobenzene	DCBZ12
1,3-Dichlorobenzene	DCBZ13
1,4-Dichlorobenzene	DCBZ14
trans-1,4-Dichloro-2-butene	DCBE14T
Dichlorodifluoromethane	FC12
1,1-Dichloroethane	DCA11
1,2-Dichloroethane	DCA12
1,1-Dichloroethene	DCE11
cis-1,2-Dichloroethene	DCE12C
trans-1,2-Dichloroethene	DCE12T
1,2-Dichloropropane	DCPA12
1,3-Dichloropropane	DCPA13
2,2-Dichloropropane	DCPA22
1,1-Dichloropropene	DCP11
cis-1,3-Dichloropropene	DCP13C
trans-1,3-Dichloropropene	DCP13T
Di-isopropyl ether (DIPE)	DIPE
Ethanol (EtOH)	ETHANOL
Ethyl tert-butyl ether (ETBE)	ETBE
Ethylbenzene	EBZ
Ethyl methacrylate	EMETHACRY
Hexachlorobutadiene	HCBU
2-Hexanone	HXO2
Isobutanol	ISOBTOH
Methacrylonitrile	METHACRN
Bromomethane	BRME
Chloromethane	CLME
2-Butanone	MEK
Methyl iodide	IME
Methyl-tert-butyl ether (MTBE)	MTBE
Methylmethacrylate	MMETHACRY
4-Methyl-2-pentanone	MIBK
Dibromomethane	DBMA
Dichloromethane	DCMA
Naphthalene	NAPH
Propionitrile	PACN
Styrene	STY
tert-Amyl methyl ether (TAME)	TAME
tert-Butyl alcohol (TBA)	TBA
1,1,1,2-Tetrachloroethane	TC1112
1,1,2,2-Tetrachloroethane	PCA

TABLE VI (Continued)

Volatile Organic Compounds, extended list (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
Tetrachloroethene (PCE)	PCE
Toluene	BZME
1,2,4-Trichlorobenzene	TCB124
1,1,1-Trichloroethane	TCA111
1,1,2-Trichloroethane	TCA112
Trichloroethene (TCE)	TCE
Trichlorofluoromethane	FC11
1,2,3-Trichloropropane	TCPR123
Vinyl acetate	VA
Vinyl chloride	VC
Xylenes	XYLENES

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

<u>COC Description</u>	<u>Geotracker Code</u>
Acenaphthene	ACNP
Acenaphthylene	ACNPY
Acetophenone	ACPHN
2-Acetylaminofluorene	ACAMFL2
Aldrin	ALDRIN
4-Aminobiphenyl	AMINOBP4
Anthracene	ANTH
Benzo(a)anthracene	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	BIS2CEE
Bis(2-chloroisopropyl)ether	BIS2CIE
4-Bromophenyl phenyl ether	BPPE4
Benzyl butyl phthalate	BBP
Chlordane	CHLORDANE
4-Chloroaniline	CLANIL4
Chlorobenzilate	CLBZLATE

TABLE VI (Continued)

Semi-Volatile Organic Compounds (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
4-Chloro-3-methylphenol	C4M3PH
2-Chloronaphthalene	CNPH2
2-Chlorophenol	CLPH2
4-Chlorophenyl phenyl ether	CPPE4
Chrysene	CHRYSENE
2-Methylphenol (o-Cresol)	MEPH2
3-methylphenol	MEPH3
4-Methylphenol (p-Cresol)	MEPH4
4,4'-DDD	DDD44
4,4'-DDE	DDE44
4,4'-DDT	DDT44
Diallate (cis- or trans-)	DIALLATE
Dibenzo(a,h)anthracene	DBAHA
Dibenzofuran	DBF
Di-n-butyl phthalate	DNBP
3,3'-Dichlorobenzidine	DBZD33
2,4-Dichlorophenol	DCP24
2,6-Dichlorophenol	DCP26
Dieldrin	DIELDRIN
Diethyl phthalate	DEPH
azobenzene	AZOBENZENE
7,12-Dimethylbenz(a)anthracene	DMBZA712
3,3'-Dimethylbenzidine	DMBZD33
2,4-Dimethylphenol	DMP24
Dimethyl phthalate	DMPH
1,3-Dinitrobenzene	DNB13
2-Methyl-4,6-dinitrophenol	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

TABLE VI (Continued)

Semi-Volatile Organic Compounds (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
Heptachlor	HEPTACHLOR
Heptachlor epoxide	HEPT-EPOX
Hexachlorobenzene	HCLBZ
Hexachlorocyclopentadiene	HCCP
Hexachloroethane	HCLEA
Hexachloropropene	HCPR
Indeno(1,2,3-cd)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
2-Nitroaniline	NO2ANIL2
3-Nitroaniline	NO2ANIL3
4-Nitroaniline	NO2ANIL4
Nitrobenzene	NO2BZ
2-Nitrophenol	NTPH2
4-Nitrophenol	NTPH4
n-Nitroso-di-n-butylamine	NNSBU
N-Nitrosodiethylamine	NNSE
N-Nitrosodimethylamine	NNSM
N-Nitrosodiphenylamine	NNSPH
n-Nitrosodi-n-propylamine	NNSPR
N-Nitrosomethylethylamine	NNSME
N-Nitrosopiperidine	NNSPPRD
N-Nitrosopyrrolidine	NNSPYRL
5-Nitro-o-toluidine	TLDNONT5
Pentachlorobenzene	PECLBZ
Pentachloronitrobenzene	PECLNO2BZ
Pentachlorophenol	PCP
Phenacetin	PHNACTN
Phenanthrene	PHAN
Phenol	PHENOL
1,4-Phenylenediamine	ANLNAM4
Polychlorinated biphenyls (PCBs)	PCBS

TABLE VI (Continued)

Semi-Volatile Organic Compounds (continued)

<u>COC Description</u>	<u>Geotracker Code</u>
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
o,o,o-Triethyl phosphorothioate	TEPTH
1,3,5-Trinitrobenzene	TNB135

Chlorophenoxy Herbicides (USEPA Method 8151A):

<u>COC Description</u>	<u>Geotracker Code</u>
2,4-D	24D
Dinoseb	DINOSEB
2,4,5-TP (Silvex)	SILVEX
2,4,5-T	245T

Organophosphorus Compounds (USEPA Method 8141B):

<u>COC Description</u>	<u>Geotracker Code</u>
Atrazine	ATRAZINE
Chlorpyrifos	CLPYRIFOS
Thionazine	ZINOPHOS
Diazinon	DIAZ
Dimethoate	DIMETHAT
Disulfoton	DISUL
Parathion methyl	PARAM
Parathion ethyl	PARAE
Phorate	PHORATE
Simazine	SIMAZINE

TABLE VII
LANDFILL GAS (LFG) CORRECTIVE ACTION MONITORING PROGRAM

Parameter	Units	Sampling Frequency	Reporting Frequency
LFG Extraction Well Field (Only extraction well fields for WMUs in corrective action due to LFG related exceedances at WMU compliance points are required to be monitored). See Section A.6. Corrective Action Monitoring.			
<u>Gas concentrations at each well</u>			
Methane	% by volume	Monthly	Semiannually
Carbon Dioxide	% by volume	Monthly	Semiannually
Oxygen	% by volume	Monthly	Semiannually
Remainder gas	% by volume	Monthly	Semiannually
Gas Temperature at each well	°F	Monthly	Semiannually
Gas Flow rate	CFM	Monthly	Semiannually
<u>Gas Pressure at each well</u>			
Initial static pressure in wellhead	inches H ₂ O	Monthly	Semiannually
Adjusted static pressure in wellhead	inches H ₂ O	Monthly	Semiannually

Perimeter LFG Migration Monitoring Probes GP-1 and GP-7 through GP-12

Gas Concentration			
Methane	% by volume	Quarterly	Semiannually
Carbon Dioxide	% by volume	Quarterly	Semiannually
Oxygen	% by volume	Quarterly	Semiannually
Remainder gas	% by volume	Quarterly	Semiannually
Probe Pressure/Vacuum	inches H ₂ O	Quarterly	Semiannually

Landfill Gas Corrective Action Monitoring Points in Fill Area 1¹:

Gas Concentration			
Methane	% by volume	Monthly	Semiannually
Carbon Dioxide	% by volume	Monthly	Semiannually
Oxygen	% by volume	Monthly	Semiannually
Remainder gas	% by volume	Monthly	Semiannually
Probe Pressure/Vacuum	inches H ₂ O	Monthly	Semiannually
VOCs ² by	µg/cm	Semiannually	Semiannually
USEPA Method TO-15			

1. Landfill Gas Corrective Action Monitoring Points for Fill Area 1 are listed in Section A.6 of this MRP.

2. The Discharger may prescreen the gas sample to determine if the sample is required to be laboratory analyzed using Method TO-15 by using an approved gas analyzer to establish methane concentrations or an approved Photo Ionization Detector (PID) to establish total VOCs concentrations at the sampling point. If while using an approved sampling and analysis plan procedure the Discharger detects methane concentrations exceeding 1.0 percent by volume OR organic vapors (total VOCs) are detected with a PID at a concentration greater than 1.0 ppm then a gas sample shall be obtained and laboratory analyzed for specific 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.

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 all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].
25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

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

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

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

I. STANDARD MONITORING SPECIFICATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].

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

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

48. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately

verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

1. Measurably Significant Evidence of a Release Has Been Confirmed. If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:
 - a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
 - b. **Within 14 days** of confirming measurably significant evidence of a release, the Discharger shall (for releases from MSW landfill units) notify all persons who own the land or reside on the land that directly overlies any portion of the plume of contamination if contaminants have migrated off-site if indicated by sampling of detection monitoring wells [40 C.F.R. § 258.55(g)(1)(iii)].
 - c. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)]. For releases from MSW landfill units, the Evaluation Monitoring Program shall also include any additional proposals necessary to comply with 40 C.F.R. § 258.55, particularly the additional monitoring well required by 40 C.F.R. § 258.55(g)(1)(ii).
 - d. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an initial engineering feasibility study for a Corrective Action Program necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed

description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

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

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

K. GENERAL PROVISIONS

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

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

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

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

operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.

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

L. STORM WATER PROVISIONS

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

infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].

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

9. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
10. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
11. Any drainage layer in the final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].

INFORMATION SHEET

ORDER R5-2016-0042
WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.
ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY
CLASS II AND CLASS III LANDFILL
CONSTRUCTION, OPERATION, CLOSURE, POST-CLOSURE MAINTENANCE, AND CORRECTIVE ACTION

WASTE MANAGEMENT OF ALAMEDA COUNTY, INC.; ALTAMONT LANDFILL AND RESOURCE RECOVERY FACILITY CLASS II AND CLASS III LANDFILL; ALAMEDA COUNTY

The active landfill facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; Title 27 section 20005 et seq.; and 40 Code of Federal Regulations section 258 (aka Subtitle D) in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.

The facility is on a 2,064 acre property at 10840 Altamont Pass Road, in the unincorporated area of Alameda County. The existing and future landfill area is approximately 472 acres (in plan) of which 259 acres have been constructed. The facility consists of 7 waste management units including:

- Fill Area 1 Unit 1 (active),
- Fill Area 1 Unit 2 (active),
- Fill Area 2 Unit 1 (active),
- Fill Area 2 Unit 2 (future), and
- Three surface impoundments (1 constructed and 2 planned).

The facility also has other ancillary operations such as but not limited to gas-to-energy plant and a landfill gas to liquid natural gas conversion facility. Fill Area 1 is currently in corrective action for known releases of volatile organic compounds (VOCs).

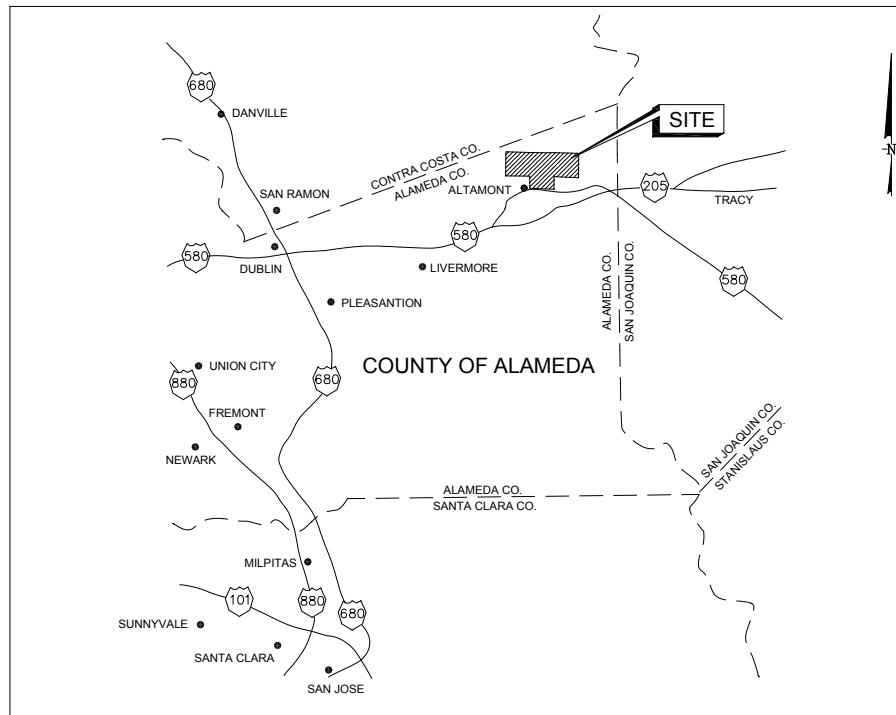
Information submitted by the Discharger has been used to make the following major revisions to WDRs R5-2009-0055:

- Requirements for closure of Fill Area 1;
- Construction of a Materials Recovery Facility (MRF);
- Construction of three new Class II surface impoundments;
- Provisions requiring improvements to the facility's groundwater monitoring system;
- Provisions requiring additional water quality monitoring in Fill Area 2;
- Additional corrective action for gas and/or leachate releases from Fill Area 1;
- Provisions requiring submittal of a Title 27 compliant water quality protection standards (WQPS) including appropriate concentration limits and an approved sample collection and analysis plan; and
- Additional requirements associated with the collection and disposal/beneficial reuse of liquids generated at the site including but not limited to underdrains, landfill leachate, landfill gas condensate, recycling operations, truck wash facilities, landfill gas-to-energy plants, and vehicle maintenance facilities;

WMH



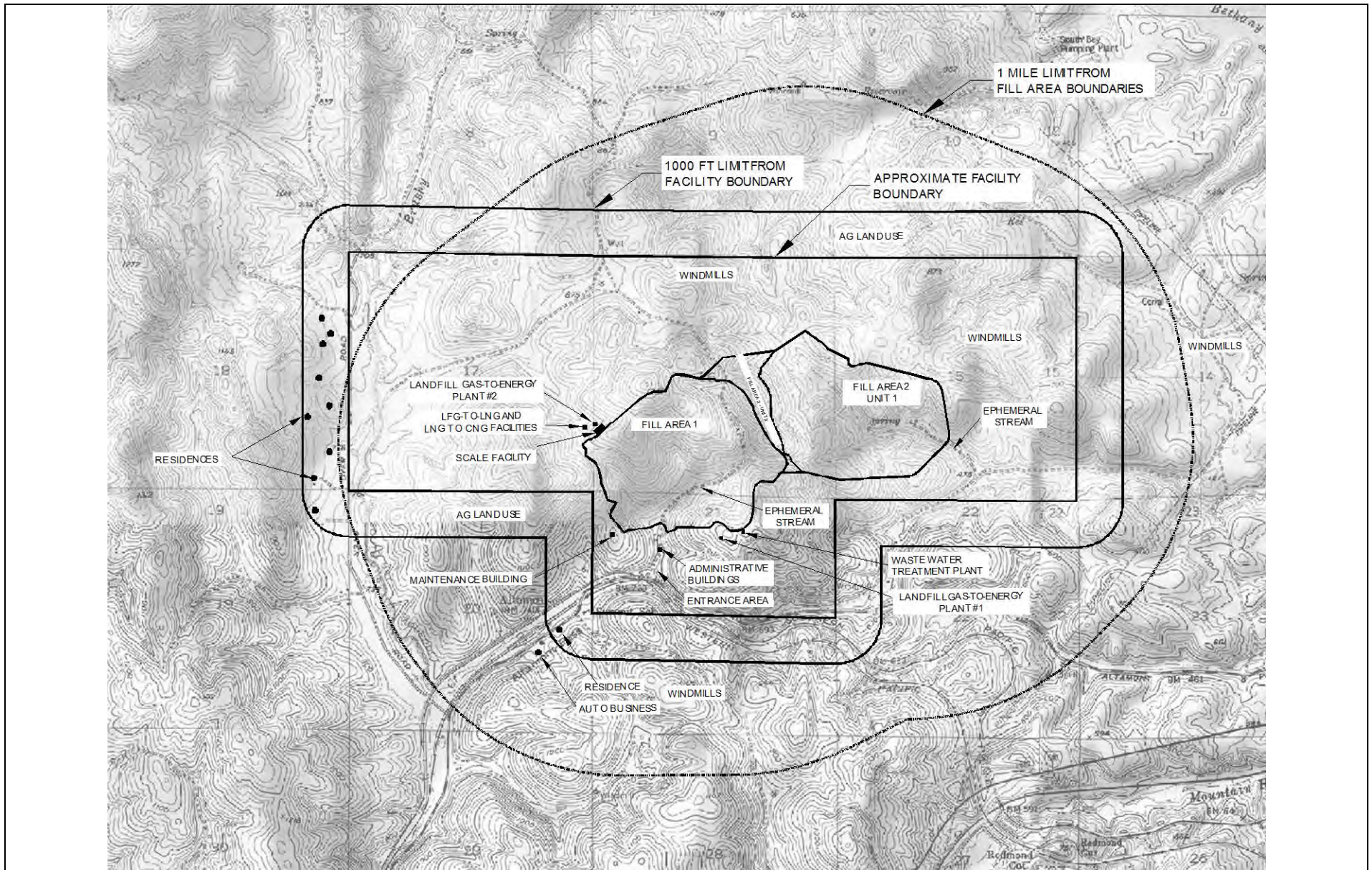
VICINITY MAP



LOCATION MAP

Drawing Reference:
Geosyntec Consultants
JTD Figure 1 (30 July
2015)

SITE LOCATION MAP
Waste Management of Alameda County, Inc.
Altamont Landfill and Resource Recovery Facility
Alameda County

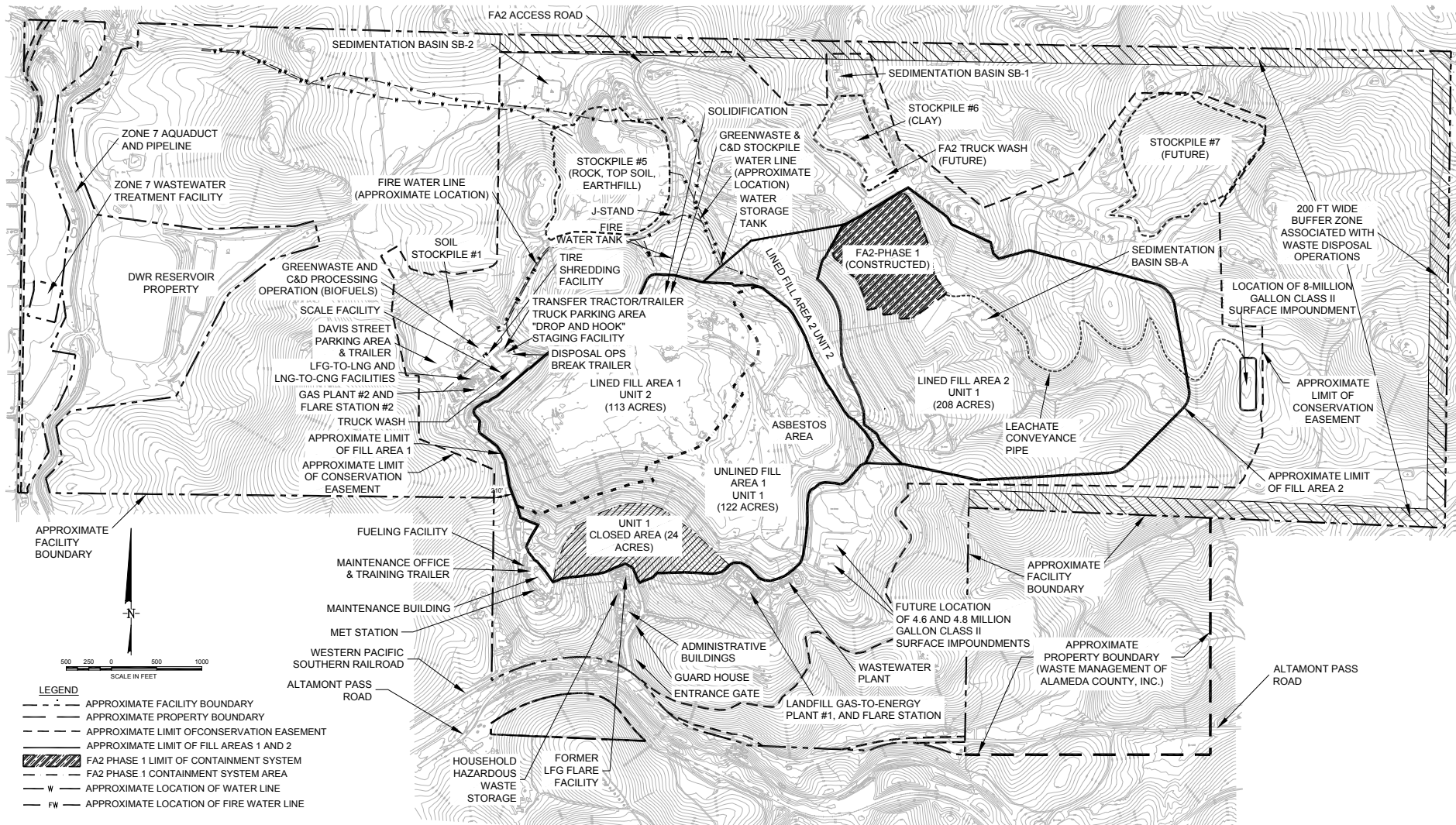


Drawing Reference:
 Geosyntec Consultants
 JTD Figure 4 (30 July 2015)

PREDEVELOPMENT TOPOGRAPHY AND LAND USE MAP
 Waste Management of Alameda County, Inc.
 Altamont Landfill and Resource Recovery Facility
 Alameda County

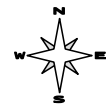


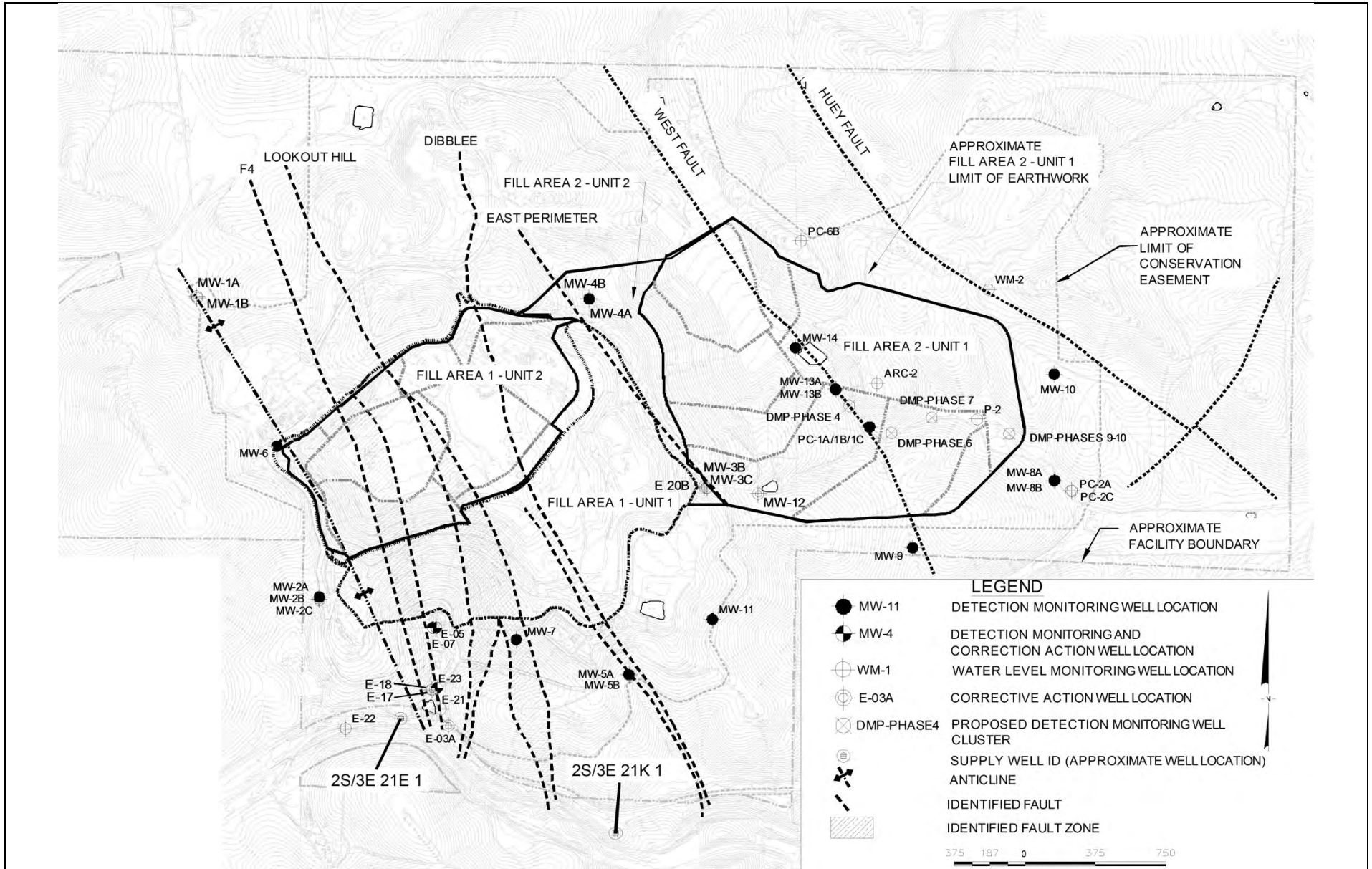
Scale: 1 inch = 3000 feet



Drawing Reference:
 Geosyntec Consultants
 JTD Figure 2 (30 July 2015)

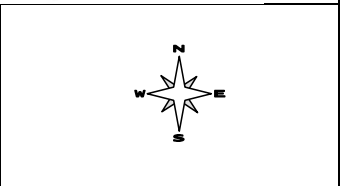
SITE PLAN AND 2014 TOPOGRAPHY
 Waste Management of Alameda County, Inc.
 Altamont Landfill and Resource Recovery Facility, Alameda County

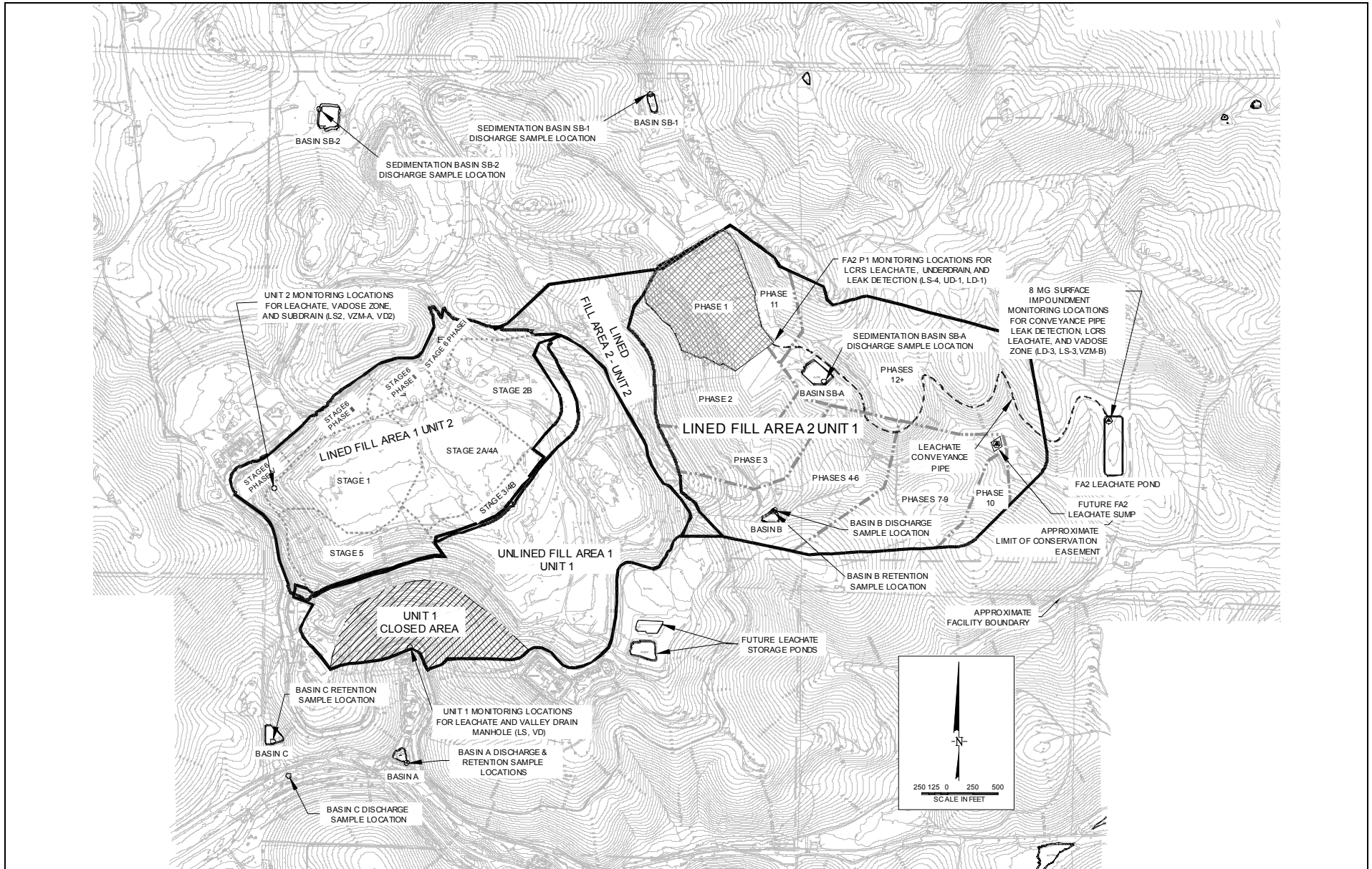




Drawing Reference:
 Geosyntec Consultants
 JTD Figure 13 and JTD Appendix
 B Figure 10(30 July 2015)

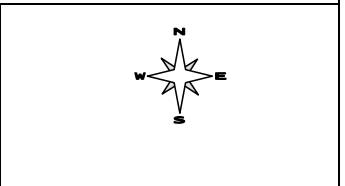
GROUNDWATER SAMPLING LOCATIONS AND FAULT ZONE MAP
 Waste Management of Alameda County, Inc.
 Altamont Landfill and Resource Recovery Facility, Alameda County

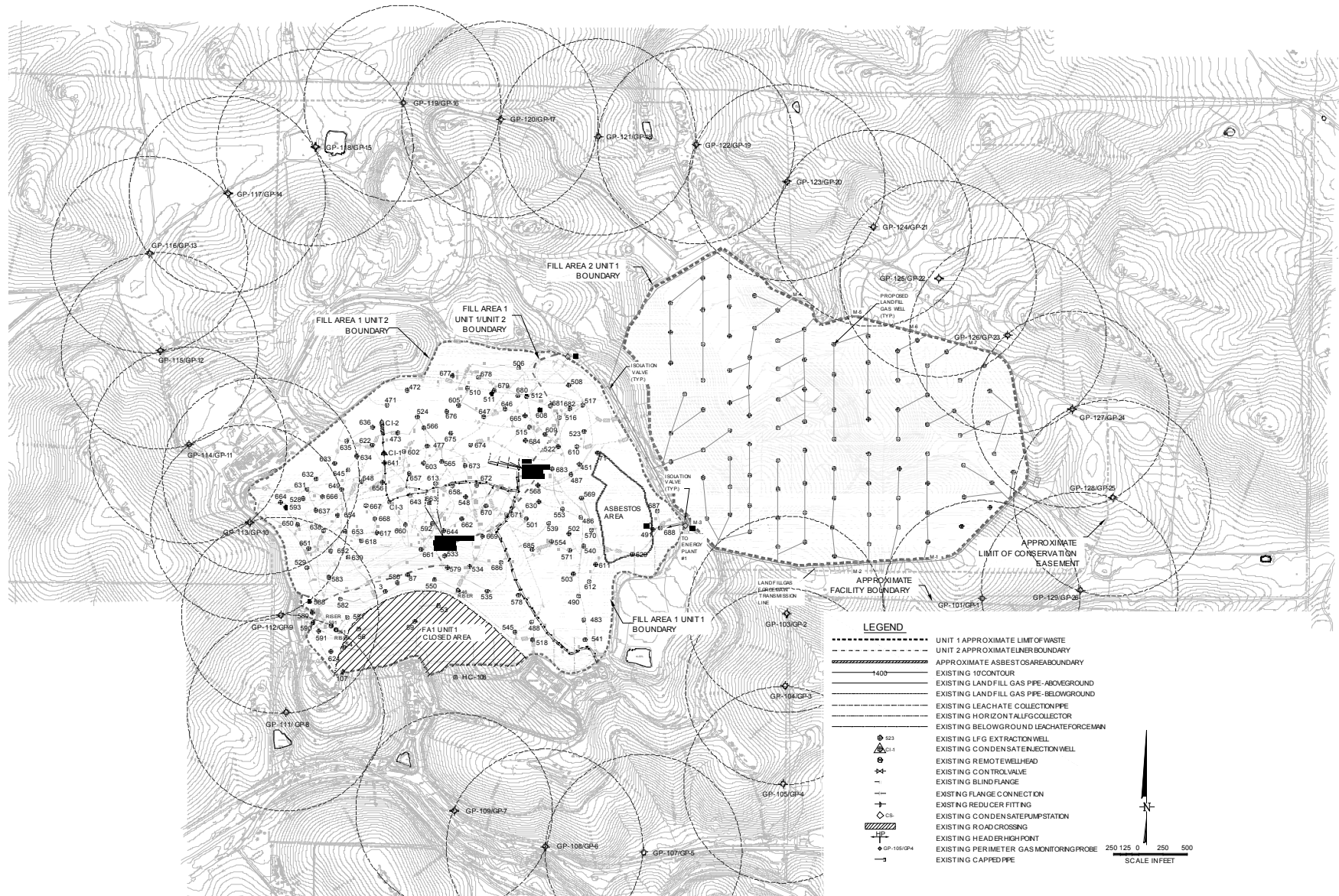




Drawing Reference:
 Geosyntec Consultants
 JTD Figure 12 (30 July 2015)

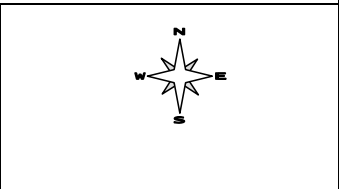
SURFACE WATER AND UNSATURATED ZONE MONITORING LOCATIONS
 Waste Management of Alameda County, Inc.
 Altamont Landfill and Resource Recovery Facility, Alameda County

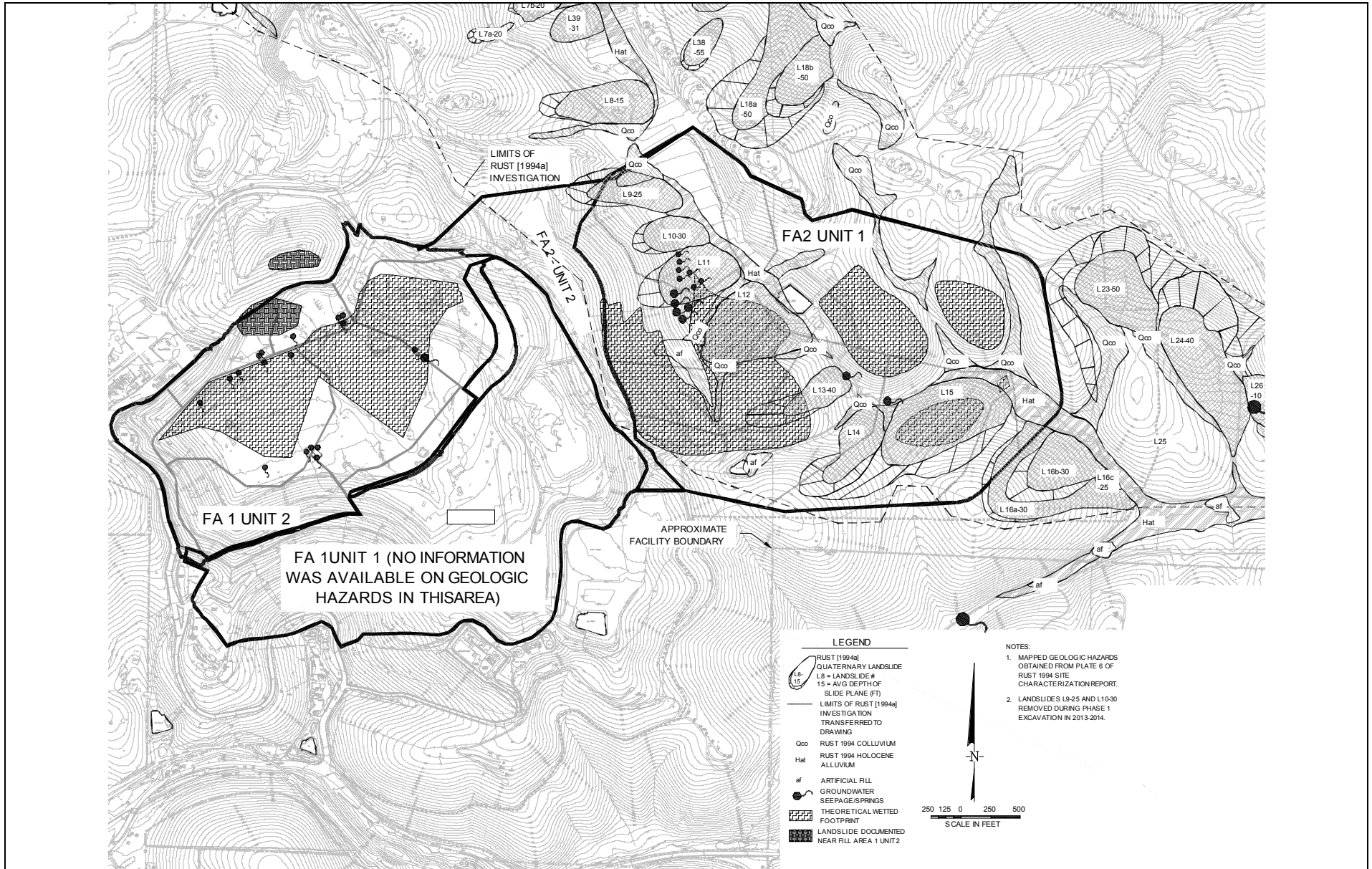




Drawing Reference:
 Geosyntec Consultants
 JTD Figures 32, 33, and 36
 (30 July 2015)

**FILL AREA 1- EXISTING LANDFILL GAS COLLECTION SYSTEM,
 FILL AREA 2- PROPOSED LANDFILL GAS COLLECTION SYSTEM,
 AND PERIMETER LANDFILL GAS PROBES**
 Waste Management of Alameda County, Inc.
 Altamont Landfill and Resource Recovery Facility, Alameda County

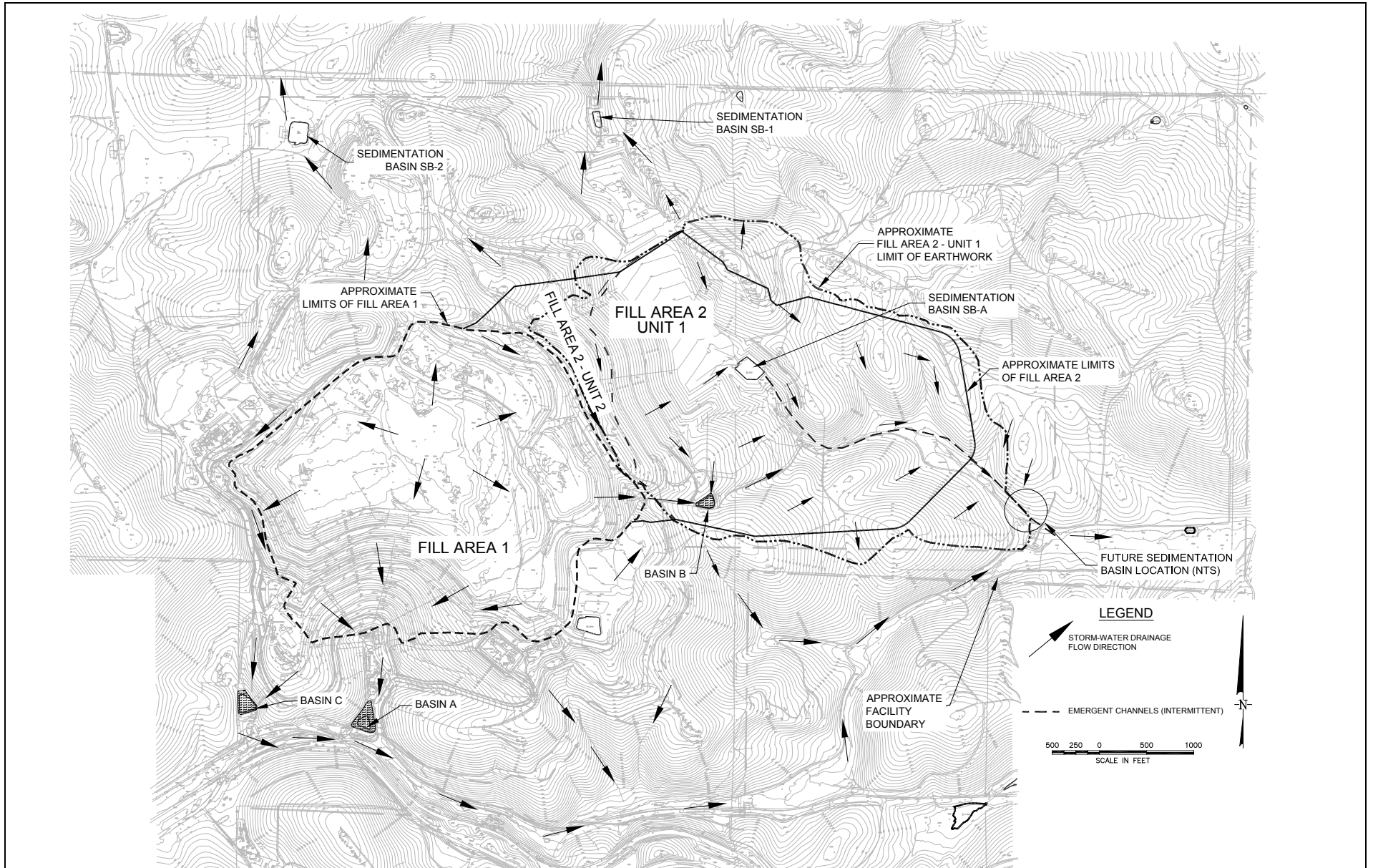




Drawing Reference:
 Geosyntec Consultants
 JTD Figures 11, 12, and 28
 (30 July 2015) and Golder Phase
 A Report (1992)

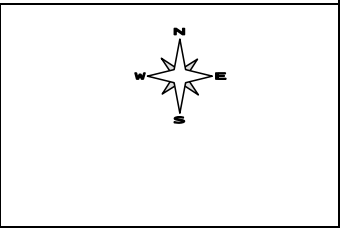
**SITE GEOLOGIC HAZARDS, SHALLOW GROUNDWATER
 LOCATIONS, AND DOCUMENTED SEEPS/SPRINGS**
 Waste Management of Alameda County, Inc.
 Altamont Landfill and Resource Recovery Facility, Alameda County

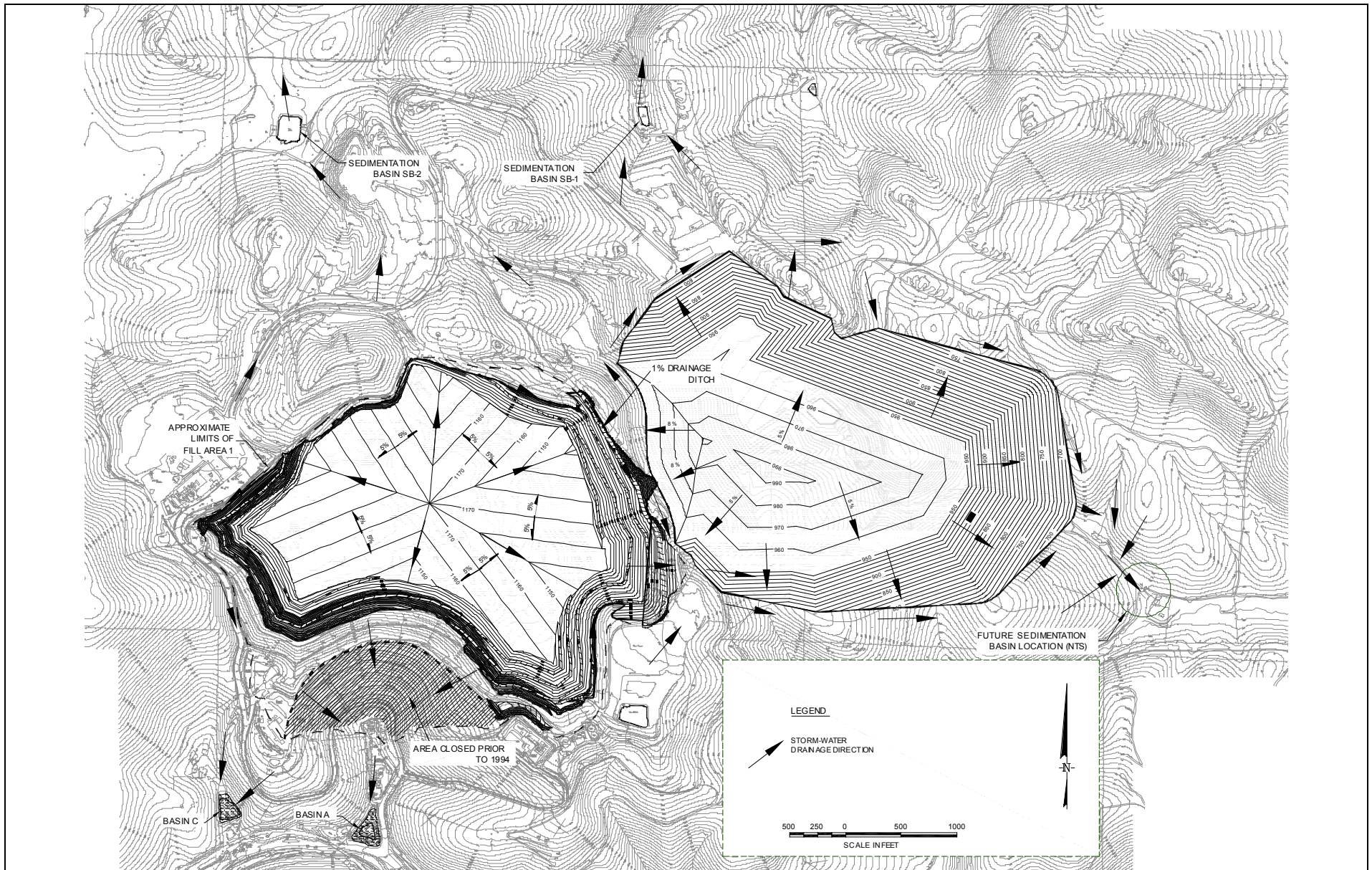




Drawing Reference:
Geosyntec Consultants
JTD Figure 12
(30 July 2015)

EXISTING STORM WATER DRAINAGE PLAN
Waste Management of Alameda County, Inc.
Altamont Landfill and Resource Recovery Facility, Alameda County





Drawing Reference:
Geosyntec Consultants
JTD Figure 25 and 37
(30 July 2015)

CONCEPTUAL FINAL COVERS AND STORM WATER DRAINAGE PLAN
Waste Management of Alameda County, Inc.
Altamont Landfill and Resource Recovery Facility, Alameda County

