

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2018-0048

WASTE DISCHARGE REQUIREMENTS
FOR
EL DORADO COUNTY
UNION MINE LANDFILL
CLASS II LANDFILL, CLOSED CLASS III LANDFILL AND CLASS II SURFACE
IMPOUNDMENT
OPERATION, MAINTENANCE, CLOSURE, AND POST-CLOSURE MAINTENANCE
EL DORADO COUNTY

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

1. El Dorado County (hereinafter Discharger) owns and operates the Union Mine Landfill (Facility) approximately three miles south of the town of El Dorado in El Dorado County, in the northwest quarter of Section 12, T9N, R10E, MDB&M, as shown in Attachment A. The Facility is a non-hazardous solid waste and 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. The Facility was previously regulated by Waste Discharge Requirements (WDRs) Order No. R5-2006-0020, which was continued for another five years on 8 June 2011¹.
2. These WDRs have been prepared to prescribe continued operation of the Class II Expansion landfill waste management unit (WMU), closure requirements for the remaining Class III Old landfill WMU and the Class II Expansion landfill WMU, post-closure maintenance requirements for the closed portion of the Class III Old landfill WMU, and continued operation of the Class II surface impoundment. An underground gold mine, which operated from the 1860s through the 1940s, underlies part of the Facility. Three mine tunnels, one mine adit, one stope and one mine shaft are in the vicinity of the Class II Expansion and Class III Old landfill WMUs. This Order also includes requirements for monitoring of surface discharges from the mine workings and other surface discharges located on the property.
3. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:
 - Attachment A – Site Location Map

¹ "Continuance of Waste Discharge Requirements for Union Mine Landfill, El Dorado County", dated 8 June 2011, issued by Central Valley Regional Water Resources Control Board.

- Attachment B – Site Plan and Monitoring Network
 - Information Sheet
 - December 2015 Standard Provisions and Reporting Requirements: Nonhazardous Solid Waste Discharges Regulated by Subtitle D (Landfill SPRRs)
 - April 2016 Standard Provisions and Reporting Requirements for Industrial Facilities Regulated by Title 27 (Industrial SPRRs)
4. The Facility is on a 321.6-acre property located at 5700 Union Mine Road, El Dorado County, CA. The 41.3-acre landfill is comprised of a 35.3-acre unlined Class III Old landfill WMU and a 6.0-acre lined Class II Expansion landfill WMU. The Class II surface impoundment area is 0.84 acres. The Class II Expansion landfill WMU and Class III Old Landfill WMU of the Facility are designated as WMU-1 and the Class II surface impoundment is designated as WMU-2. The existing permitted WMU-1 and WMU-2 areas are shown in Attachment B. The Facility is comprised of Assessor's Parcel Numbers (APN) 092-011-17, -20 and -21.
5. On 8 January 2018, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. The information in the JTD/ROWD has been used in revising these WDRs. The JTD/ROWD contains the applicable information required in Title 27. The JTD/ROWD and supporting documents contain information related to this revision of the WDRs including:
- Updates/revision to site information and attachment maps,
 - Requirements for the Class II Expansion landfill WMU and the Class II surface impoundment operation and maintenance,
 - Closure requirements for remaining Class III Old landfill WMU and Class II Expansion landfill WMU,
 - Post-closure maintenance requirements for the closed Class III Old landfill WMU,
 - Revisions to the Facility's Detection Monitoring Program (DMP),
 - Monitoring requirement for surface discharges from historic mining related features, and
 - Requirements for financial assurance.
6. On 26 January 2006, the Central Valley Water Board issued Order No. R5-2006-0020 in which the landfill areas of the WMU-1 at the Facility were classified as a Class II and Class III units for the discharge of non-hazardous waste and municipal solid waste. The Class II surface impoundment (WMU-2) continues to receive leachate and landfill gas (LFG) condensate from the WMU-1, and direct rainfall. This Order continues to classify the Old landfill WMU as Class III, the Expansion landfill WMU as Class II and the surface impoundment as Class II units in accordance with Title 27.
7. The existing landfill units authorized by this Order are described as follows:

| <u>Unit</u> | <u>Area</u> | <u>Liner/LCRS¹ Components</u> | <u>Unit Classification & Status</u> |
|---------------------------------|--|--|--|
| Class III Old landfill WMU | 35.3 acres (total) | Unlined, constructed over native materials. | Class III, filled and closed 33.1 acres as of 2006. The remaining 2.2 acre has an interim cover. |
| | 4.9 acre | Final cover top to bottom: a one-foot thick vegetative layer, a one-foot thick low permeability layer and two-foot thick foundation layer. | Closed during October 1997 |
| | 14.6 acres and a 1-acre sloped area | Final cover top to bottom: a one-foot thick vegetative layer, GCL ² , and two-foot thick foundation layer. | Closed during fall 1998 |
| | 13.6 acres including 0.6-acre inactive landfill area | Final cover top to bottom: one-foot thick vegetative soil layer, a drainage layer of double-side geotextile fabric, a 60-mil LLDPE ³ geomembrane, and existing interim cover (two-foot minimum thick clay/foundation layer with maximum hydraulic conductivity of 1×10^{-7} cm/sec ⁴) to provide foundation layer | Closed in November 2007 |
| | 2.2 acres | Interim cover: two-foot minimum thick clay layer with maximum hydraulic conductivity of 1×10^{-7} cm/sec | Interim closure in 1992 |
| Class II Expansion landfill WMU | 6 acres | <p>From top to bottom on base and slope 3:1 horizontal:vertical (H:V) or less: one-foot protective soil cover, 8 oz per square yard geotextile, one-foot drain layer, a 60-mil HDPE⁵ double-sided textured geomembrane, two-foot compacted clay liner, 2-foot and 6-inches compacted fill and six inches subdrain blanket.</p> <p>From top to bottom on side slopes greater than 3:1 H:V: minimum two-foot protective layer, 16 oz per square yard geotextile, 60-mil</p> | Class II, active |

| <u>Unit</u> | <u>Area</u> | <u>Liner/LCRS¹ Components</u> | <u>Unit Classification & Status</u> |
|------------------------------|---|---|---|
| | | HDPE double sided textured geomembrane and GCL. | |
| Class II surface impoundment | 0.84 acres (2 million gallons volume with 2-foot freeboard) | Top to bottom: a 60-mil HDPE geomembrane, two-foot clay liner with 1×10^{-7} cm/sec hydraulic conductivity and two gravel filled LCRS trenches running the length of the Class II surface impoundment. | Class II, active |

¹ LCRS – Leachate collection and removal system
² GCL - Geosynthetic Clay Liner
³ LLDPE - Linear low-density polyethylene
⁴ cm/sec – centimeters per second
⁵ HDPE - High-density polyethylene

8. On-site facilities at the Union Mine Landfill property include: 33.1 acres of the closed Class III Old landfill WMU, 2.2 acres of Class III Old landfill WMU with interim cover and 6 acres of active Class II Expansion landfill WMU; an active Class II surface impoundment; landfill gas(LFG) recovery system, LFG processing facility and flare; a leachate and septage or wastewater treatment facility (WWTF); two spray fields (north and south); mining tunnels, adits and shafts; three sedimentation basins (north, south and west); surface water drainage control facilities; a storage building; El Dorado Rod and Gun Club and El Dorado County Shooting Range. The landfill facilities covered under this Order includes partially closed unlined Class III Old landfill WMU, an active Class II Expansion landfill WMU, and an active Class II surface impoundment; and is known as Union Mine Landfill. The Discharger also operates WWTF and wastewater spray fields adjacent to the landfill facility. Treated septage and landfill leachate are discharged to the spray fields under separate WDRs. The WWTP and the spray fields are known as the Union Mine Disposal Site (hereafter “disposal site”).

9. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated federal MSW regulations under the Resource Conservation and Recovery Act (RCRA), Subtitle D. These regulations are under 40 Code of Federal Regulations section 258, and are hereafter referred to as either “Subtitle D” in reference to the RCRA federal law that required the regulations or “40 C.F.R. section 258.XX”. These regulations apply to all California Class II and Class III landfills that accept MSW. State Water Board Resolution 93-62 requires the Central Valley Water Board to implement in WDRs for MSW landfills the applicable provisions of the federal MSW regulations that are necessary to protect water quality, and in particular the containment provisions and the provisions that are either more stringent or that do not exist in Title 27.

10. 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 Landfill SPRRs and Industrial SPRRs which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) R5-2018-0048 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.
11. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Title 27, section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle’s regulations.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

12. The Union Mine Landfill is not open to the general public. It has a partially closed unlined Old landfill WMU, an active Expansion landfill WMU and an active surface impoundment which are classified as Class III, Class II and Class II, respectively, in accordance with Title 27.
13. The partially closed Class III Old landfill WMUs received non-hazardous solid waste, friable asbestos, septic tank and grease trap pumpings, tire and rubber products, municipal solid waste, construction and demolition debris, green waste, wood waste, scrap metal and other inert wastes in the past.
14. The Class III Old landfill WMU stopped accepting waste in 1996 and the closure activities began in 1997.
15. The Class II Expansion landfill WMU is currently used on an as needed or contingent basis, and since 1997, has only received solid waste from the on-site offices and sludge generated from the on-site Leachate and Septage Treatment Facility.
16. The onsite WWTF receives the following waste streams:
 - Liquid waste and septage generated off-site and hauled to the site by permitted commercial haulers,
 - Liquid from the Class II surface impoundment, and
 - Portable toilet waste

The sludge generated from treating above waste streams is dewatered at the WWTF and discharged at the Class II Expansion landfill WMU active cell. The treated wastewater effluent is land applied in the two spray fields under separate WDRs. When the Discharger suspends waste disposal at the Class II Expansion landfill WMU, sludge from the WWTP can be hauled for off-site disposal.

17. Fall 2017 semiannual monitoring data shows that dewatered sludge solids concentration disposed at the Class II Expansion landfill WMU ranged from 17 to 38 percent.
18. The Discharger proposes to continue to discharge non-hazardous solid waste, including non-hazardous de-watered wastewater treatment plant sludge, solids from the Class II surface impoundment and other general non-hazardous solid waste including municipal solid waste, to the lined Class II Expansion landfill WMU. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
19. The Class II surface impoundment will continue to receive leachate, which is a designated waste, generated from the landfill WMUs. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
20. 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 regional board for containment of the particular kind of waste to be discharged.

21. Leachate from the unlined Class III Old landfill WMU is collected through the toe-drain constructed at the toe of the Class III Old landfill WMU slope. The toe-drain consists of a perforated polyvinyl chloride (PVC) pipe in a gravel filled trench. The perforated pipe transitions to a solid wall PVC pipe at the end of the toe-drain to convey the leachate to the Class II surface impoundment by gravity flow. Leachate from the Class II Expansion landfill WMU is collected through the perforated high density polyethylene (HDPE) LCRS pipes and conveyed through a solid wall HDPE pipe to the Class II surface impoundment by gravity flow. Total leachate flow discharged from the WMU-1 to the Class II surface impoundment is measured monthly and 808,060 gallons of leachate was discharged to

the Class II surface impoundment in 2017, as reported in "*Fall 2017 Semiannual Monitoring Report*". Table in Finding 24 shows the constituents presence in the landfill WMUs leachate.

22. The leak detection and collection layer underlying the clay liner in the Class II surface impoundment liner system functions as a leak detection and collection layer to the liner system and as an underdrain to maintain separation between the waste and the underlying groundwater. Liquid collected through the leak detection and collection layer is discharged to the LCRS sump, from where the liquid is pumped back to the Class II surface impoundment. The total quantity of liquid pumped from the Class II surface impoundment LCRS sump has not been historically measured. Estimated volume of liquid pumped from the Class II surface impoundment LCRS sump is approximately 2,000 gallons in 2017. The Discharger shall install a flow totalizer to the Class II surface impoundment LCRS sump pump discharge pipe as detailed in Provision H.16.J. The flow rates shall be monitored and reported per the MRP requirements.
23. The following liquids are currently approved for discharge to the Class II surface impoundment:
- Leachate collected from the partially closed Class III Old landfill WMU toe drains,
 - Leachate collected from the active Class II Expansion landfill WMU LCRS,
 - LFG condensate collected from the LFG recovery system on the partially closed Class III Old landfill WMU,
 - Liquid collected from the Class II surface impoundment leak detection and collection layer,
 - Runoff from the septage truck washout area, and
 - Direct rainfall.

No liquids generated offsite will be discharged into the Class II surface impoundment.

24. The Discharger provided monitoring parameter analytical data in the "*Fall 2017 Semiannual Monitoring Report*" for liquid stored in the Class II surface impoundment, leachate from the WMU-1 LCRS pipe (combined flow), and liquid from the Class II surface impoundment LCRS sump is summarized in the table below. The table also includes the 5-year Constituents of Concerns (COC) analytical data provided in first semiannual 2016 sampling event, California primary maximum contaminant level (primary MCL), the lowest applicable water quality objective (WQO) for groundwater for protection of drinking water beneficial use for domestic and municipal supply wells, and the background groundwater quality at the site.

| Constituent | Unit | Concentration | | | CA Primary MCL | Lowest Applicable WQO | Background Groundwater Data ^{a, d} |
|---|--------------|------------------------------------|---|--------------------|----------------------|-----------------------------|---|
| | | Class II Surface Impoundment | Class II Surface Impoundment LCRS Sump | WMU-1 LCRS Pipe | | | |
| Monitoring Parameters ^b | | | | | | | |
| Alkalinity | mg/L | 30 | 49 | 200 | | | 316.7 |
| Bicarbonate | mg/L | 30 | 49 | 200 | | | 316.7 |
| Chloride | mg/L | 19 | 44 | 79 | | 250 ^f | 40 |
| Nitrate as Nitrogen | mg/L | 1.3 | 3.2 | 43 | 10 | CA Primary MCL | 1.74 |
| Sulfate | mg/L | 12 | 280 | 83 | | 250 ^f | 198.3 |
| TDS | mg/L | 100 | 530 | 690 | | 500 ^f | 608 |
| VOC ^c | µg/L | 14 | < RL | < RL | | | |
| pH | | 9.65 | 7.44 | 7.33 | | | |
| Electrical Conductivity | µmhos/ cm | 178 | 595 | 914 | | | |
| Inorganics ^e | | | | | | | |
| Arsenic | mg/L | 0.053 | 0.004 | 0.01 | 0.01 | 0.00002 ^g | |
| Barium | µg/L | 37 | 52 | 150 | 1,000 | 700 ^h | 78.3 |
| Calcium | mg/L | 21 | 39 | 110 | | | |
| Copper | µg/L | 10 | 15 | 15 | 1,300 | 1,000 ^f | 10 |
| Iron | µg/L | 8.2 | ND | 32 | | 300 ^f | |
| Magnesium | mg/L | 26 | 26 | 75 | | | |
| Manganese | µg/L | 12 | 2.7 | 710 | | 50 ^f | 2925 |
| Mercury | µg/L | 0.41 | 0.54 | 0.71 | 2 | | 1 |
| Potassium | mg/L | 5.1 | 6.1 | 35 | | | |
| Silver | µg/L | 5.4 | 5.3 | 5.7 | | 100 ^f | 10 |
| Sodium | mg/L | 25 | 53 | 120 | | 20,000 ^h | |
| Vanadium | mg/L | 0.0031 | 0.0032 | 0.0036 | | 50 ⁱ | 3 |
| Zinc | µg/L | ND | 11 | 17 | | | |
| TOC | mg/L | 16 | 9.7 | 9.7 | | | 7.4 |
| VOC | | ND | ND | ND | | | |

Notes:

mg/L milligrams per liter
 µg/L micrograms per liter
 µmhos/cm micromhos per centimeter
 ND non-detect
 RL Reporting limit
 TDS total dissolved solids
 TOC total organic carbon
 VOC volatile organic carbon

a Monitoring parameter concentration limits from *Fall 2017 Semiannual Monitoring Report*

b Semiannual monitoring event analytical data from *Fall 2017 Semiannual Monitoring Report*

- c Acetone was detected in leachate from Class II Expansion and Class III Old landfill WMUs, but below the reporting limit. 2-butanone, 2-hexanone, acetone and chloromethane were detected in liquid stored in the Class II surface impoundment, but acetone concentration was above the reporting limit.
- d Concentration Limits for 5-Year COC from *Sprint 2016 Semiannual Monitoring Report*
- e 5-Year COC analytical data from *Spring 2016 Semiannual Monitoring Report*
- f California Secondary MCL
- g USEPA Integrated Risk Information System (IRIS) – One-in-a-Million Incremental Cancer Risk Estimates for Drinking Water
- h USEPA Health Advisory – Drinking Water for Non-cancer Health Effects
- i California Notification Levels – Drinking Water Standards MCL

25. The analytical data generated from sampling and analysis of leachate from the WMU-1 and liquid from the Class II surface impoundment LCRS sump shows that the concentrations of some of the constituents, including, but not limited to arsenic, nitrate, manganese, sulfate and TDS, exceed the primary MCL or the lowest applicable WQO. Additionally, VOCs were detected in the Class II surface impoundment samples during the second semiannual 2017 monitoring event. The data indicate that some of the discharges to the Class II surface impoundment consist of or contain 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. Therefore, the discharge is a 'designated waste' and as such must be discharged to a Class II WMU as required by Title 27.
26. An on-site soil borrow area provides required quantities of cover materials for daily, intermediate and final covers. Soil excavated during grading operations for the spray fields was stockpiled along the north edge of the concrete lined Storm Water Diversion Channel and is being used for daily cover in the Class II Expansion landfill WMU. Additionally, the Discharger uses soil acquired from CalTrans for daily and intermediate cover. When the Discharger suspends waste disposal at the Class II Expansion landfill WMU, an intermediate cover is applied across the active section of the Class II Expansion landfill WMU. As a result of severe winter storm conditions, excessive erosion was observed across the entire active section of the Class II Expansion landfill WMU and along the eastern downgradient face of the Class II Expansion landfill WMU during inspection by the Central Valley Water Board staff on 21 November 2017. The WMUs and their respective containment structures shall be designed and constructed to comply with requirements in Title 27 §20365 (a). The Discharger shall comply with Construction Specification F.6 of Landfill SPRRs.
27. 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.

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

SITE DESCRIPTION

29. The Union Mine Landfill is located within a steep canyon that lies in the Mother Lode mining district of the Western Sierra Nevada foothills. The site and the area around the site were mined extensively for gold from 1850 to 1940, and the site is underlain by underground workings from the Church and Union Mines. Numerous interconnected slopes, shafts, and tunnels exist beneath the active and inactive portions of the disposal site. Three mine tunnels, one mine adit, one stope and one mine shaft are located in the vicinity of the WMU-1 expansion area. In preparation to WMU-I landfill expansion the Springfield shaft collar and the Minerva Tunnel adit were closed, plugged and capped in 1993.
30. The property was used as an illegal refuse dump as early as the 1940s, and as an open burn dump from 1962 when the Discharger obtained the property until 1969 at which time it was converted to a solid waste sanitary landfill.
31. The landfill is in an area of steep terrain, surrounded by ridges with elevations ranging from 1,180 to 1,475 feet mean sea level (MSL). The ridge immediately west of the site, known as Logtown Ridge, is approximately 1,950 feet MSL.
32. Land uses within one mile of the Facility include rural residential parcels to the north, east, south and west; and agricultural parcels to the northwest of the Facility. Land owned by the Bureau of Land Management borders the Facility to the north, east and south.
33. There are 14 domestic groundwater supply wells within one mile of the Facility.
34. The landfill is underlain by weathered to fresh, thin-bedded slates and phyllite of the Mariposa Formation. The weathered zone ranges from 20 to 30 feet in depth. No

Holocene faults are within 200 feet of the landfill. The potentially active Melones Fault Zone which is part of the Foothills Fault system is 0.6 miles east of the Facility.

35. Based on a site-specific seismic analysis, the controlling maximum probable earthquake (MPE) for the site is a moment of magnitude 5.5 event along the Foothill Fault System at a closest rupture distance of 0.6 miles from the site.
36. Based on a site-specific seismic analysis, the controlling maximum credible earthquake (MCE) for the site is a moment of magnitude 6.5 event along the Foothill Fault System at a closest rupture distance of 0.6 miles from the site.
37. The estimated hydraulic conductivity of the weathered Mariposa Formation in the vicinity of the site is approximately 3×10^{-3} cm/sec. The estimated hydraulic conductivity in faulted and foliated phyllite near the Springfield shaft ranges between 1.24×10^{-2} to 1.11×10^{-5} cm/sec, with a mean value of 1.93×10^{-3} cm/sec.
38. Groundwater beneath the Facility occurs in fractured bedrock, valley alluvium, and the underground mine workings. Groundwater flow direction is towards the east and southeast. Groundwater ranges in depth from less than 10 feet to 120 feet below ground surface.
39. Arsenic and iron are naturally occurring constituents in groundwater throughout the mineralized belt of the Foothills. They are derived from sulfide minerals (primarily Pyrite and Arsenopyrite) that are associated with gold deposits in bedrock. Weathering of the mineralized rock creates acidic conditions and forms soluble metal complexes. Therefore, these constituents are not used for detection monitoring for the landfill units.
40. The Facility receives an average of 38.7 inches of precipitation per year as measured at the Placerville Station. The mean pan evaporation is 67.9 inches per year as measured at the Auburn Weather Station.
41. The 100-year, 24-hour precipitation event for the Facility is estimated to be 6.62 inches, based on National Oceanic and Atmospheric Administration (NOAA), Atlas 14 Point Precipitation Frequency Estimates (with 90 percent confidence intervals) for California, Atlas 14, Volume 6, Version 2.
42. The 1,000-year, 24-hour precipitation event for the Facility is estimated to be 9.05 inches, based on NOAA, Atlas 14 Point Precipitation Frequency Estimates for California, Atlas 14, Volume 6, Version 2.
43. The 100-year wet season precipitation is 73.2 inches. Maximum evaporation is expected in July with an average value of 11.66 inches. Minimum evaporation is expected in December with an adjusted average value of 1.02 inches.

44. The 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 060040-0750-B.
45. A Surface Water Diversion Channel was constructed to control, intercept and divert runoff from the Union Mine Landfill south and southwest areas, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.
46. All storm water runoff from within the footprint of the Facility is diverted to one of the three storm water sedimentation basins: the north, south and west sedimentation basins. The sedimentation basins are located southeast of the landfill as shown on Attachment B. The basins detain storm water run-on and run-off for sedimentation control during the rainy season. The west sedimentation basin overflows to the north sedimentation basin. The south sedimentation basin, which receives flow from the Surface Water Diversion Channel, is normally dry during the summer months. The sedimentation basins discharge to Martinez Creek under the general storm water permit for industrial facilities.
47. The Union Mine Landfill site exhibits springs which flow seasonally or year around as reported by the Discharger. The springs are sampled and monitored per MRP requirements. During the 14 February 2018 site inspection by the Central Valley Water Board staff, springs were observed at monitoring locations SS-1, SS-3 (Lower Spring) and MS-1.

SURFACE WATER AND GROUNDWATER CONDITIONS

48. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* or *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
49. Surface water drainage from the Union Mine Landfill site is to the south/southeast to an unnamed tributary that drains into Martinez Creek, a perennial stream 500 feet east of the Facility and a tributary of the North Fork Cosumnes River which eventually discharges to the Cosumnes River, thence to the Sacramento-San Joaquin Delta.
50. The designated beneficial uses of Cosumnes River, as specified in the Basin Plan, are municipal and domestic supply (MUN); agricultural supply (AGR); water contact recreation (REC-1); non-contact water recreation (REC-2); warm fresh water habitat (WARM); cold freshwater habitat (COLD); migration (MIGR); spawning (SPWN) and wildlife habitat (WILD).
51. The direction of groundwater flow is generally toward the east and southeast. The estimated average groundwater gradient is approximately 0.1 feet per foot based on groundwater contour map provided in semiannual monitoring reports.

52. Groundwater elevations range from about 1115 feet MSL to 1295.8 feet MSL during second semiannual 2017 monitoring event. Groundwater elevation seasonally varies approximately 2 to 14 feet in monitoring wells.
53. Shallow groundwater flow discharging to the west of the Class II Expansion landfill WMU is intercepted by a subdrain under Union Mine Road Underdrain and diverted into the trapezoidal storm water ditch. The discharge flow daylights at sampling location GWD -1.
54. Artesian groundwater flow from the deep, unweathered zone was encountered in the Springfield Shaft during excavation and capping efforts. The artesian conditions encountered are suggestive of confining pressures overlying and separating the deeper groundwater from the weathered zone. Additionally, there are several springs on the property.
55. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

GROUNDWATER, UNSATURATED ZONE AND SURFACE WATER MONITORING

56. The existing groundwater monitoring network for the Union Mine Landfill consists of background monitoring wells MW-5, MW-6, and MW-10 for WMU-1 and MW-C for WMU-2, and detection monitoring wells MW-7, MW-9, UM-3, MW-11, MW-12, and MW-13 for WMU-1, and MW-A for WMU-2. The casing and screen elevations of groundwater monitoring wells are provided in the following table. Attachment B of this Order shows the locations of groundwater monitoring wells.

| <u>Well ID</u> | <u>Top of Casing (TOC) Elevation (MSL)</u> | <u>Well Depth (ft)</u> | <u>Screen Interval from TOC (ft)</u> | <u>Groundwater Zone being Monitored</u> | <u>Well Type</u> | <u>WMUs Being Monitored</u> | <u>Depth to groundwater (ft)^a</u> |
|----------------|--|------------------------|--------------------------------------|---|------------------|-----------------------------|--|
| MW-5 | 1309.15 | 43.0 | 20-40 | Shallow | Background | WMU-1 | 12.81 |
| MW-6 | 1295.96 | 140.0 | 118-138 | Deep | Background | WMU-1 | 12.74 |
| MW-7 | 1169.05 | 154.0 | 130-150 | Deep | Detection | WMU-1 | 16.85 |
| MW-9 | 1179.12 | 220.0 | 197-217 | Deep | Detection | WMU-1 | 27.41 |
| MW-10 | 1361.30 | 142.0 | 120-140 | Deep | Background | WMU-1 | 120.98 |
| MW-11 | 1273.07 | 80.0 | 58-78 | Shallow | Detection | WMU-1 | 45.51 |
| MW-12 | 1160.07 | 27.9 | 13-26 | Shallow | Detection | WMU-1 | 23.97 |
| MW-13 | 1179.50 | 47.6 | 29-47 | Shallow | Detection | WMU-1 | 46.11 |
| UM-3 | 1161.57 | 123.0 | 60-90 | Deep/Artesian | Detection | WMU-1 | 0 |
| MW-A | 1142.68 | 35.0 | 19-34 | Shallow | Detection | WMU-2 | 27.87 |
| MW-C | 1156.71 | 50.0 | 9-50 | Shallow | Background | WMU-2 | 25.95 |

^a Fall 2017 Semiannual Monitoring Report

57. The WMU-1 share a common detection monitoring system and the WMU-2 has a separate detection monitoring system for groundwater.
58. At the time this Order was adopted, the Discharger's detection monitoring program for groundwater at the landfill satisfied the requirements contained in Title 27. However, some monitoring wells may have inadequate screen intervals. This is discussed in Finding 74. Additional downgradient monitoring wells may be required if the analytical data indicate a release in the existing downgradient monitoring wells during the subsequent monitoring events.
59. The landfill WMUs are not monitored for unsaturated zone releases. The surface topography and complex hydrogeologic nature of the underlying geology of the area, primarily of fracture flow in bedrock, makes unsaturated zone monitoring inappropriate and impractical. Additionally, the unlined Class III Old landfill WMU was operated as a pit fill operation prior to being categorized as a solid waste sanitary landfill in 1969 and predates the regulatory requirements for MSW landfills. The Class II surface impoundment unsaturated zone monitoring system consists of two pressure/vacuum lysimeters L2N and L2S installed beneath the clay liner in crush rock fill material.
60. At the time this Order was adopted, the Discharger's detection monitoring program for unsaturated zone at the landfill satisfied the requirements contained in Title 27
61. The discharger's surface water monitoring system complies with the applicable provisions of §20415 and §20420 of Title 27 and consists of five sampling locations which are shown in Attachment B:

| <u>Sampling Point</u> | <u>Location</u> | <u>Type</u> |
|-----------------------|---|-------------|
| S-1 | In the unnamed tributary prior to entering the west sedimentation basin | Detection |
| S-2 | Outfall discharge from the north sedimentation basin prior to entering Martinez Creek | Detection |
| S-6 | In Martinez Creek approximately 600 feet upstream from location S-2 | Background |
| S-7 | In Martinez Creek approximately 450 feet downstream from location S-2 | Detection |
| S-8 | At junction box prior to enter the north sedimentation basin | Detection |

62. The Discharger's surface water monitoring system also consists of spring monitoring at designated location MS-1, along the western side of Church Mine Road, downslope of the Class II surface impoundment.

63. Monitoring programs at the Union Mine Landfill site also includes monitoring of Pendar Tunnel, groundwater drains and springs. The sampling locations are tabulated in following table and shown in Attachment B:

| <u>Sampling Point</u> | <u>Location</u> |
|-----------------------|-----------------------------------|
| GWD-1 | Union Mine Road underdrain |
| GWD-2 | Class II landfill WMU underdrain |
| GWD-3 | Spring west of spray fields |
| Pendar Tunnel | Discharge from Pendar Tunnel |
| SS-1 | Springfield shaft spring |
| SS-2 | Springfield shaft pond |
| SS-3 | Lower spring to Springfield shaft |

64. 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 VOCs 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.
65. 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.
66. 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 landfill and Industrial SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

67. For a naturally occurring constituent of concern, the Title 27 requires concentration limits for each constituent of concern be determined as follows:
- By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
 - By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).
68. The Discharger submitted a *Water Quality Protection Standard (1998 WQPS)* report in 1998 proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The 1998 WQPS report proposed to use interwell data analysis to calculate tolerance interval for the monitored constituents. MRP R5-2006-0020 allowed the Discharger to update the concentration limits at least annually. The Discharger annually updated concentration limits and presented them in second semiannual monitoring reports until 2015. In 2015, proposed concentration limits for chloride, nitrate-N and potassium at the WMU-1 were 60 percent lower than the previous 5 years average. The Discharger again updated concentration limits in Spring 2016 and concentration limits for the WMU-1 were higher than last 5-year average before 2015, by 300 percent for chloride and 550 percent for nitrate-N. On 26 September 2016², the Central Valley Water Board requested the Discharger to submit an updated WQPS report based upon concerns with elevated concentration limits proposed by the Discharger in the *Spring 2016 Semiannual Monitoring Report*. In response to the letter, the Discharger submitted a “*Statistical Analysis of Background Data and Development of Site Concentration Limits*” report in Appendix D of the *Fall 2017 Semiannual Monitoring Report*. These WDRs use concentration limits proposed in *Fall 2017 Semiannual Monitoring Report*, however Title 27 §20400 (b) allows the Central Valley Water Board to approve, modify or disapprove each proposed limit and each proposed statement. The Discharger shall submit an updated WQPS report with the statistical method to be approved by the Central Valley Water Board staff, as described in Provision H.16.E.

GROUNDWATER CONDITIONS

69. Arsenic and iron are naturally occurring constituents in groundwater at the Union Mine Landfill site and are not used for detection monitoring for the landfill WMUs. See Finding 39.
70. During the 2017 second semiannual sampling event, concentration limit exceedances were observed for monitoring parameters in downgradient groundwater monitoring wells. The table below summarizes the monitoring parameter concentrations detected in the groundwater monitoring wells for MWU-1 and their associated concentration limits.

² Letter “Response to Discharger Request to Reconsider Additional Approved Work, Union Mine Landfill, El Dorado County” dated 26 September 2016.

| <u>Monitoring Parameter</u> | <u>MW-5</u> | <u>MW-6</u> | <u>MW-7</u> | <u>MW-9</u> | <u>MW-10</u> | <u>MW-11</u> | <u>MW-12</u> | <u>MW-13</u> | <u>UM-3</u> | <u>CL^a</u> |
|-----------------------------|-------------|-------------|-----------------------|-------------|--------------|--------------|----------------------|------------------------|-----------------------|-----------------------|
| TDS | 290 | 340 | 300 | 290 | 360 | 170 | 510 | 650^b | 290 | 608 |
| Bicarbonate | 210 | 190 | 250 | 250 | 220 | 76 | 210 | 500^b | 220 | 316.7 |
| Alkalinity | 210 | 190 | 250 | 250 | 220 | 76 | 210 | 500^b | 220 | 316.7 |
| Chloride | 2.1 | 3.8 | 1.6 | 1.6 | 3.5 | 12 | < RL | 55^b | 21 | 40 |
| Nitrate-N | ND | ND | ND | ND | ND | ND | ND | < RL | < RL | 1.74 |
| Sulfate | 37 | 110 | 27 | 27 | 70 | 32 | 32 | 72 | 39 | 198.3 |
| Calcium | 70 | 54 | 23 | 29 | 65 | 10 | 61 | 75 | 31 | 168 |
| Magnesium | 11 | 10 | 4.0 | 11 | 8.2 | 11 | 23 | 40^b | 14 | 27.5 |
| Potassium | < RL | < RL | 1.2 | 1.4 | < RL | 0.41 | 7^b | 7.1^b | 1.3 | 4.43 |
| Sodium | 13 | 22 | 62^b | 38 | 17 | 10 | 39 | 36 | 59^b | 55.1 |
| Arsenic | 0.0033 | 0.0025 | 0.0067 | 0.0097 | 0.0067 | 0.0040 | 0.140 | 0.0063 | 0.004 | - |
| Iron | ND | ND | < RL | 0.14 | 0.58 | 4.0 | 0.83 | 0.610 | ND | - |

CL - Concentration Limit
 ND - Non-detect
 RL - Reporting limit

All concentrations are in mg/L

^a Fall 2017 Semiannual Monitoring Report

^b Concentration limit exceedance

71. The following table summarizes the monitoring parameter concentrations in groundwater monitoring wells for MWU-2 and their associated concentration limits.

| <u>Monitoring Parameter</u> | <u>MWA</u> | <u>MWC</u> | <u>Concentration Limit^a</u> |
|-----------------------------|------------------------|------------|--|
| TDS | 200 | 390 | 576 |
| Bicarbonate | 60 | 140 | 202.8 |
| Alkalinity | 60 | 140 | 202.8 |
| Chloride | 13 | 54 | 73.3 |
| Nitrate-N | < RL | < RL | 0.97 |
| Sulfate | 86 | 99 | 156.6 |
| Calcium | 27 | 52 | 96.4 |
| Magnesium | 8.2 | 16 | 28.1 |
| Potassium | 7.7^b | 3.3 | 3.5 |
| Sodium | 10 | 27 | 38.4 |
| Arsenic | < RL | 0.0026 | - |
| Iron | < RL | < RL | - |

ND - Non-detect
 RL - Reporting limit

All concentrations are in mg/L

^a Fall 2017 Semiannual Monitoring Report

^b Concentration limit exceedance

72. VOCs were not detected in groundwater monitoring wells during the second semiannual 2017 sampling event. Acetone, reported as a laboratory contaminant, has been intermittently detected in past sampling events.
73. Based on the groundwater elevation and the monitoring well screen depth provided in Finding 56, background well MW-6 and MW-10, and detection wells MW-7, MW-9 and UM-3 are monitoring the groundwater quality in the deeper groundwater zone. The Discharger installed monitoring wells MW-12 and MW-13 to monitor the shallow groundwater in the vicinity of MW-9 in October 2016. MW-13 is 47.6 feet deep and the screen interval is 29 to 46 ft from the top of the casing. During the last sampling event, this monitoring well had 1.5 feet of water column. The depth and/or screen depth of MW-13 may not be adequate to yield a representative sample of groundwater quality. The Discharger shall monitor the groundwater elevation quarterly, and lower the screen interval as described in Provision H.16.F. Additionally, monitoring well MW-11 is 80 feet deep with a screen interval from 58 to 78 feet from the top of the casing and pump inlet depth located 77.50 feet below the top of the casing. The groundwater level in this monitoring well historically varied between 37 and 51 feet from top of casing. Title 27 §20415 (b)(1)(B) requires the monitoring points to be installed at appropriate location and depths to yield groundwater samples from uppermost aquifer that represent the quality of groundwater passing the Point of Compliance and to allow for the detection of a release from the unit. The Discharger shall analyze historical groundwater depth variation in each of the detection monitoring wells that monitor the groundwater shallow zone, and evaluate the monitoring well's depth, screen interval and pump intake depth in compliance with Title 27 requirements, as described in Provision H.16.F
74. Monitoring parameter concentration limit exceedances in down gradient monitoring wells for WMU-1 may indicate that groundwater has been impacted by a release from the WMUs at the site. The following constituent concentration limit exceedances were observed in monitoring wells during second semiannual 2017 sampling event:
- MW-7 – Sodium
 - MW-12 - Potassium
 - MW-13 – TDS, bicarbonate, alkalinity, chloride, magnesium and potassium
 - UM-3 - Sodium

Concentration limit exceedance for sodium were historically observed in monitoring wells MW-9, MW-7 and UM-3 till 2015. MW-7 shows an increasing trend for sodium concentration based on the data set from 2006 to 2017. MW-9 and UM-3 showed decreasing trends from 2006 to 2014 and show increasing trends after 2014 except the second semiannual 2017 sampling event. Elevated concentrations of chloride, magnesium and potassium were observed in the newly installed monitoring wells MW-12 and MW-13 compared to other detection wells for WMU-1. Although the chloride concentration in MW-12 was below the laboratory reporting limit during the fourth quarter 2017 sampling event, based on the detection history at this location, it may be

an anomalous detection. A timeseries plot of chloride and potassium in monitoring well UM-3 show an increasing trend.

TDS concentration exceeded EPA recommended water quality criteria for taste and odor (250 mg/L) and even the California secondary MCL for taste and odor (500 mg/L) in MW-12 and MW-13 during second semiannual 2017 sampling event. Additionally, cobalt and zinc (5-year inorganic COCs) were observed at elevated concentrations in MW-11 while other detection monitoring wells for WMU-1 show non-detects for cobalt and zinc during three sampling events from 2006 to 2016. These concentration limit exceedances, increasing trends, and elevated concentrations of monitoring parameters and 5-year inorganic COCs may indicate that groundwater has been impacted by a release from the WMUs at the site. The Discharger shall evaluate the source of these groundwater impacts, the lateral and vertical extent of the groundwater impact or release migration, and propose corrective actions as described in Provision H.16.G.

75. Based on the complex hydrogeology of the site, and activities at the site prior to the landfill, developing a conceptual site model will provide a better understanding of the site characteristics, source characteristics, release, transport mechanisms and pathways, actual/potential receptors, and site risks. This Order in Provision H.16.H requires the Discharger to submit a work plan to develop a conceptual site model to determine, but not limited to,
- The nature of shallow zone groundwater flow in the vicinity of the Facility,
 - Effect of groundwater flow, elevation and characteristics in fractured bedrock beneath the Facility,
 - Effect of groundwater flow and characteristics, if any, from historic mine related features at the Facility.
 - The nature of groundwater exhibiting surface expression within the Facility,
 - The effect of spray fields associated with the WWTP on local groundwater flow, and
 - Effect of a release, if any, from the WMU(s) on local groundwater quality, and findings and results of Provision H.16.G.
76. During the second semiannual 2017 sampling event, monitoring well MW-A showed a concentration limit exceedance for potassium. The Discharger suggested that the continuous concentration limit exceedance of potassium at monitoring well MWA is most likely due to the clay liner installed below the Class II surface impoundment. The Class II surface impoundment liner system consists of, top to bottom, a 60-mil HDPE geomembrane, two-foot clay liner and two gravel filled leak detection and collection trenches running the length of the Class II surface impoundment. The leak detection and collection layer collects liquid that may leak through the Class II surface impoundment liner system and acts as an underdrain to collect seasonally rising underlying groundwater. The Class II surface impoundment LCRS sump collects liquid from the leak

detection and collection layer. Estimated volume of liquid pumped from the Class II surface impoundment LCRS sump back to the Class II surface impoundment was 2,000 gal in 2017. The leak detection and collection layer may not be collecting all liquid coming in contact with the clay liner. Liquid not collected in the leak detection and collection layer may be passing the Class II surface impoundment LCRS sump and may cause continuous concentration limit exceedance for potassium in MW-A. Further, it is unclear whether the liquid in the Class II surface impoundment LCRS sump is leachate or groundwater. No liquid was collected in the suction lysimeters installed below the Class II surface impoundment leak detection and collection layer. The Discharger reported that the lysimeters L2N and L2S do not collect sufficient liquid for sampling because a significant capillary zone does not develop in the crushed rock fill beneath the Class II surface impoundment. An action leakage rate cannot be established for the Class II surface impoundment geomembrane (primary liner) because of the way that the Class II surface impoundment was constructed. Since there is no reliable vadose zone monitoring for the Class II surface impoundment, the Discharger shall perform a leak location test as described in Provision H.16.K, to check whether the Class II surface impoundment geomembrane liner is leaking.

77. Groundwater drains and the Pendar Tunnel were monitored per MRP R5-2006-0020; and second semiannual 2017 sampling event sampling analytical data are summarized in following table.

| <u>Parameter</u> | <u>GWD-1</u> | <u>GWD-2</u> | <u>GWD-3</u> | <u>Pendar Tunnel</u> | <u>Concentration Limit (Fall 2017 Semiannual Monitoring Report)</u> |
|-------------------------------------|--------------|--------------|--------------|----------------------|---|
| pH | 6.58 | 6.85 | Dry | Dry | - |
| Specific conductance, μ mhos/cm | 212 | 375 | | | - |
| TDS, mg/L | 180 | 280 | | | 239.3 |
| Arsenic, mg/L | < RL | | | | 0.052 |
| Iron, mg/L | < RL | | | | 0.22 |
| Sulfate, mg/L | 57 | 77 | | | 76.5 |

RL – Reporting limit

78. Concentration limit exceedance was observed for TDS and sulfate at location GWD-2 which is the Class II Expansion landfill WMU underdrain discharge. The Class II Expansion landfill WMU underdrain was constructed to maintain 5 feet separation from base of the waste to highest anticipated elevation of underlying groundwater required by Title 27 §20240 (c). The monitoring well directly downgradient (approximately 500 feet) to the Class II Expansion landfill WMU is UM-3 which shows a concentration limit exceedance for sodium and increasing concentration trends for chloride and potassium. The Class II Expansion landfill WMU underdrain discharge may indicate that the groundwater quality underlying the Class II Expansion landfill WMU may be impacted by

the landfill waste. The GWD-2 will be sampled and analyzed for additional constituents per MRP R5-2018-0048.

79. In 2014, the Discharger was requested to sample and analyze the Springfield shaft spring which was added to Groundwater Drains and Pendar Tunnel monitoring by Central Valley Water Board staff. Second semiannual 2017 sampling event analytical data for Springfield shaft springs is summarized in the table below, with associated surface water concentration limits.

| <u>Monitoring Parameter</u> | <u>SS-1</u> | <u>SS-2</u> | <u>SS-3</u> | <u>Concentration Limit (Fall 2017 Semiannual Monitoring Report)</u> |
|-----------------------------|-------------|-------------------|-------------------|---|
| TDS | 460 | Not Sampled - Dry | Not Sampled - Dry | 251.4 |
| Bicarbonate | 290 | | | 284.7 |
| Alkalinity | 290 | | | 284.7 |
| Chloride | 59 | | | 51.5 |
| Nitrate-N | < RL | | | 2.44 |
| Sulfate | 96 | | | 76.7 |
| Calcium | 93 | | | 42.6 |
| Magnesium | 26 | | | 17 |
| Potassium | 5.2 | | | 13.4 |
| Sodium | 32 | | | 32.7 |
| Arsenic | 1.4 | | | 0.11 |
| Iron | 14 | | | 0.275 |

All concentrations are in mg/L

LINER PERFORMANCE DEMONSTRATION

80. 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.”
81. In a letter dated 17 April 2001, the Executive Officer notified Owners and Operators of Solid Waste Landfills that “the Board will require a demonstration that any proposed landfill liner system to be constructed after 1 January 2002 will comply with Title 27 performance standards. A thorough evaluation of site-specific factors and cost/benefit analysis of single, double, and triple composite liners will likely be necessary.”

82. The Discharger is not proposing any additional expansions of the landfill WMU at this time. If the Discharger proposes any expansion in the future they will need to perform a demonstration that any proposed liner system will comply with Title 27 performance standards.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

Landfill WMUs

83. The existing 35.3-acre Class III Old landfill WMU is unlined and constructed over native materials. The Class III Old landfill WMU was sited above-grade over some of the mine's interconnected stopes, shafts and tunnels. This unit no longer accepts wastes.
84. According to the 2018 ROWD/JTD, 33.1 acres of the Class III Old landfill WMU have received final cover and 2.2 acres remains to be closed. The Class III Old landfill WMU was closed in portions at different time periods and the type of final cover and its components are described in Finding 7.
- 4.9 acres were closed in 1997 in accordance with CCR Title 23
 - 14.6 acres were closed in 1998 in accordance with CCR Title 14
 - 13.6 acres were close in 2007 in accordance with CCR Title 27.
85. The closed Class III Old landfill WMU was operated prior to the adoption of MSW landfill regulations that required groundwater separation from bottom of waste to the highest anticipated elevation of underlying groundwater or the unsaturated zone monitoring.
86. The LCRS of the Class III Old landfill WMU consists of toe drains consisting of a gravel-filled trench that runs the length of north and northeast perimeter of the Class III Old landfill WMU and the junction (southwest of the Class III old landfill WMU) between the Class III Old and Class II Expansion landfill WMUs. The purpose of the drain is to collect leachate generated at the toe of the Class III Old landfill WMU and transfer the leachate to the Class II surface impoundment.
87. The LFG extraction system at the closed portion of the Class III Old landfill WMU consists of 23 vertical landfill gas extraction wells, designated EW-1 through EW-23, and the landfill gas piping system. The extraction landfill gas reports to an enclosed flare and/or to three 70 kilowatt microturbines. The condensate from the landfill gas extraction is discharged to the Class II surface impoundment.
88. The Landfill gas monitoring program at the Facility consists of 7 perimeter LFG probes: GP-1, GP-2, GP-4A (shallow), GP-4B (deep), GP-5, GP-6, GP-7S (shallow), GP-7D (deep) and GP-8.
89. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of municipal solid waste

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

90. 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) or (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27, section 20080(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).
91. 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.
92. The 6.0-acre Class II Expansion landfill WMU constructed in 1996, is lined with a composite liner system as described in Finding 7. The Class II Expansion landfill WMU has a LCRS which consists of perforated HDPE pipes that transition to a solid wall HDPE pipe which discharges leachate collected from the Class II Expansion landfill WMU to the Class II surface impoundment.
93. The depth of fluid on the landfill liner shall not exceed 30 centimeters (cm) [40 CFR §258.40 (a)(2)]. The leachate collected from the Class II Expansion landfill WMU LCRS layer is conveyed to the Class II surface impoundment by gravity flow. The Class II Expansion landfill WMU floor slope and elevation difference between the Class II Expansion landfill WMU LCRS and the discharge point at the Class II surface impoundment allow the leachate from the Class II Expansion landfill WMU to drain by gravity flow without head buildup on the primary liner. Title 27 §20340 (d) requires the LCRS to be designed and operated to function without clogging through the schedule closure of the Unit and during the post closure maintenance period. Due to the way of the Class II Expansion landfill WMU LCRS construction, it cannot be tested for its proper operation. However, the LCRS collection pipes were provided with cleanout connections. The Discharger shall propose testing method to check LCRS collection pipes for clogging, as described in Provision H.16.L.

94. The Discharger constructed a groundwater underdrain and a compacted fill layer to maintain a 5-foot minimum separation between groundwater and wastes at the side slopes of the landfill. The underdrain consists of one foot of gravel on the base and sideslopes, toe drains, and piping.
95. Title 27 section 20370(a) requires Class II units to be designed to withstand the maximum credible earthquake (MCE) without damage to foundation or containment structures. The Class II Expansion landfill WMU was designed and constructed prior to this regulatory requirement.
96. Waste types allowed to discharge to the Class II Expansion landfill WMU are given in Finding 18. The Discharger suspends waste disposal to the Class II Expansion landfill WMU during the rainy season. When the Discharger suspends waste disposal at the Class II Expansion landfill WMU, sludge from the WWTP can be hauled for off-site disposal.
97. The volumetric capacity and site life estimate provided in the JTD/ROWD document indicates that the estimated closure date of the Class II landfill WMU is 2029.

Class II Surface Impoundment

98. The two-million-gallon capacity Class II surface impoundment was constructed in 1992 with a liner system consisting of, from top to bottom: a 60-mil HDPE geomembrane, a two-foot clay liner with 1×10^{-7} cm/sec hydraulic conductivity, and two gravel filled leachate collection trenches running the length of the surface impoundment. The two gravel filled leachate collection trenches function as a leak detection and collection layer to the Class II surface impoundment liner system and discharge collected liquid to the Class II surface impoundment LCRS sump.
99. The Class II surface impoundment shall receive the liquid wastes listed in Finding 23.
100. The liquid stored in the Class II surface impoundment is pumped and treated at the onsite WWTP which was constructed to primarily treat liquid stored in the Class II surface impoundment. The liquid waste stored in the Class II surface impoundment is currently managed through solar evaporation; and is only pumped to the WWTP for treatment when necessary to maintain the freeboard requirements, as provided in the ROWD/JTD document. The monthly volume of leachate inflow, rainfall, and liquid pumped from the Class II surface impoundment to the WWTP; and the freeboard level at the Class II surface impoundment are being monitored by the Discharger. The monthly records in the monitoring reports show that the Class II surface impoundment's capacity and freeboard requirements are adequately managed.
101. Inflow volumes: LFG condensate, liquid from septage truck washout area discharged to the Class II surface impoundment, and liquid pumped from the Class II surface impoundment LCRS sump back to the Class II surface impoundment have not been

monitored by the Discharger. The discharger shall measure and record the LFG condensate and liquid pumped from the Class II surface impoundment LCRS sump to the Class II surface impoundment as described in Facility Specification C.11.

102. The Class II surface impoundment is emptied and cleaned annually before the winter season. The solids removed from the Class II surface impoundment are disposed in Class II Expansion landfill WMU.
103. The Class II surface impoundment was not designed, constructed, or is being operated to meet the minimum of 5-foot separation from base of the waste to highest anticipated elevation of the underlying groundwater in accordance with Title 27 §20240 (c) [also CCR Title 23 Chapter 15 §2530 (c)]. However, the Class II surface impoundment was constructed with a leak detection and collection layer that functions as an engineered alternative to maintain groundwater separation. Therefore, the Discharger shall continue to remove liquid from the Class II surface impoundment LCRS sump to maintain liquid level below the leak detection and collection layer discharge pipe elevation in the Class II surface impoundment LCRS sump (Facility Specification C.18).
104. Based on information provided by the Discharger in the JTD/ROWD (2018) and site records, the Class II surface impoundment was not constructed with a LCRS that meets Title 27 §20340 requirements. Title 27 requires the LCRS to be installed between the liners for surface impoundments. Site records do not indicate that there is a secondary liner underlying the two-gravel filled leachate collection trenches that underlay the clay liner. The leachate collection trenches function as a leak detection and collection layer to the Class II surface impoundment liner system and as an underdrain to maintain the separation from the waste to the underlying groundwater.
105. Title 27 section 20370(a) requires Class II units to be designed to withstand the maximum credible earthquake (MCE) without damage to the foundation or containment structures. The Class II surface impoundment was designed and constructed prior to this regulatory requirement.
106. Title 27 section 20375(a) requires Class II surface impoundments to have capacity for seasonal precipitation, a 1,000-year 24-hour design storm event, and to maintain at least two feet of freeboard at all times. The 1,000-year, 24-hour storm event for the site is 9.05 inches, and is referred to hereafter as the "design storm". To ensure compliance with this requirement, the Discharger is required to maintain at least 33 inches (2-feet plus the amount needed to hold the design storm) of freeboard at all times, except in the event of a storm equal to or exceeding the 1,000-year 24-hour design storm event in which case at least two (2.0) feet of freeboard must be maintained. The Class II surface impoundment capacity at the 2-foot freeboard level is two million gallons.
107. As described in Finding 100, the Class II surface impoundment is adequately managed to meet the freeboard requirements. If the Discharger makes any operational changes to

the Class II surface impoundment, the Discharger shall submit a detailed water balance as described in Provision H.16.M.

LANDFILL CLOSURE

108. According to the 2018 JTD/ROWD, the Discharger installed a prescriptive final cover on 4.9 acres of the northern and southeastern sideslopes of the Class III landfill WMU during October of 1997 in accordance with Title 23. The final cover is described in the table to Finding 7.
109. In the fall of 1998, the Discharger installed an engineered alternative final cover on 14.6 acres of the top and eastern sideslopes of the Class III Old landfill WMU in accordance with Title 14. The engineered alternative final cover uses a GCL in place of the prescriptive one-foot thick low permeability barrier layer. The final cover is described in the table to Finding 7. The engineered alternative final cover was approved by the Regional Board in previous WDRs Order No. 98-238.
110. According to the 2018 RWD, the Discharger installed an interim cover on the 15.2 acres of the remaining 15.8-acre unclosed area of the Class III Old landfill WMU in 1992. The interim cover consisted of a one-foot foundation layer and a one-foot compacted clay with a hydraulic conductivity no greater than 1×10^{-7} cm/sec. The other 0.6-acre "inactive" area has received only one foot of cover soil.
111. The Discharger submitted a 14 November 2005 technical memorandum proposing an engineered alternative final cover on the unclosed portion of the Class III Old landfill WMU. The engineered alternative final cover consisted of (from bottom to top) the existing one-foot foundation layer and one-foot compacted clay layer in the interim cover, a 60-mil linear low-density polyethylene (LLDPE) geomembrane, and a one-foot thick vegetative soil layer capable of sustaining plant growth. Section 20190(a) of Title 27 allows the Regional Board to approve any alternative final cover design that it finds will continue to isolate the waste at least as well as would a prescriptive final cover design. The Discharger's proposal provided technical justification indicating that the proposed alternative cover met this requirement, including, but not limited to, the following:
- Compacted clay layers are prone to desiccation and cracking that can greatly increase permeability.
 - Compacted clay layers are vulnerable to large increases in permeability from freeze/thaw cycles.
 - The hydraulic conductivity of an LLDPE geomembrane is 1×10^{-13} cm/s, which is substantially less than a compacted clay layer.
 - Compacted clay layers must be carefully moisture conditioned during construction, and many factors influence their effectiveness such as clod size, particle size, uniformity, and compaction coverage.

- Compacted clay layers are more susceptible to differential settlement than an LLDPE geomembrane.
- The cost of a compacted clay layer is much greater, especially since there is no on-site source of clay.

Based on these factors, and since the proposed final cover already included a compacted clay layer as would be required under the prescriptive final cover, the Regional Board approved the use of the proposed engineered alternative final cover for the Class III Old landfill WMU at the Union Mine Landfill.

112. In November 2007, 13.6 acres of the remaining Class III Old landfill WMU was closed in accordance with Title 27 and received the approved engineered alternative cover in Finding 111. This includes the 0.6-acre “inactive” area. The final cover is described in the table to Finding 7. The remaining 2.2 acres of the Class III Old landfill WMU will be eventually covered by waste as part of the development of the Class II Expansion landfill WMU active disposal area. The estimated date of closure of the Class II Expansion landfill WMU is 2029.
113. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:
- Two-foot soil foundation layer.
 - One-foot soil low flow-hydraulic conductivity layer, less than 1×10^{-6} cm/s or equal to the hydraulic conductivity of any bottom liner system.
 - Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
 - One-foot soil erosion resistant/vegetative layer.
114. 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.
115. The February 2016 *Final Closure Plan* provided the proposed preliminary closure design for the Class II Expansion landfill WMU and the remaining 2.2 acres of Class III Old landfill WMU with the interim cover. The proposed final cover is the same engineered alternative design as described in Finding 111. The proposed preliminary closure plan does not clearly describe the final cover for the Class II Expansion landfill WMU which is an active unit and does not have an interim cover. Further, given that the estimated life of the 6.0-acre Class II Expansion landfill WMU was over 11 years in 2018, closure of this unit may be many years away. Therefore, this order requires the Discharger to submit updated preliminary closure plan as described in Provision H.16.C. This Order continues to require a prescriptive final cover for the Class II Expansion landfill that includes a geomembrane layer in addition to the components in the proposed alternative cover.

LANDFILL POST-CLOSURE MAINTENANCE

116. The Discharger submitted a 2007 *Postclosure Maintenance Plan* for the closed portion of the Class III Old landfill WMU and February 2016 *Final Postclosure Maintenance Plan* for closure and post-closure maintenance of remaining Class III Old landfill WMU and the Class II Expansion landfill WMU. 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, 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.
117. The condition and performance of the landfill WMU cover is one of the primary factors contributing to leachate generation from the waste pile in the landfills. Portions of the Class III Old landfill WMU were closed in different time periods and per the regulatory requirements at the time of closure. Portions of the Class III Old landfill WMU closed in 1997 and 1998, predate the cover stability analysis required by the Title 27. The portion of Class III Old landfill WMU closed in 2007 was in accordance with Title 27 requirements. Further, the Class III Old landfill WMU predated the regulatory requirements for minimum separation to bottom of waste from highest anticipated elevation of underlying groundwater and the unsaturated zone monitoring. It is unknown whether the groundwater is in contact with the waste pile at any portion of the Class III Old landfill WMU. During the 21 November 2017 site inspection by Central Valley Water Board staff, slumps or slides, settlement, tire ruts and clusters of animal burrows were observed on the Class III Old landfill WMU cover. The Discharger shall evaluate the final cover condition and performance as described in Provision H.16.I and shall perform cover repair work in accordance with Title 27 §21090 (a)(4)(C).
118. 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.
119. The completed final cover will be periodically tested for damage or defects by monitoring surface emissions pursuant to California Code of Regulations, title 17, section 95471(c) and Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Plan.

FINANCIAL ASSURANCES

120. 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 February 2016 *Final Closure Plan* includes a cost estimate for remaining Class III Old landfill WMU and the Class II landfill WMU closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2015 dollars is \$2.4 million. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate. The Discharger maintains a Pledge of Revenue Agreement as the financial assurance mechanism for post-closure maintenance.

121. The Class II surface impoundment is currently in service. The Discharger did not propose a closure plan and cost estimate for the Class II surface impoundment closure in the JTD/ROWD report. Title 27 sections 21820 and 22207 require a cost estimate for the surface impoundment closure. This order requires the Discharger to submit a cost estimate for the Class II surface impoundment closure to the Central Valley Water Board for review and approval, and establish an irrevocable closure fund as detailed in Financial Assurance Specification F.2
122. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's February 2016 *Post Closure Maintenance Plan* includes a cost estimate for closed Class III Old landfill WMU, remaining Class III Old landfill WMU and the Class II Expansion landfill WMU post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2015 dollars is \$ 14.88 million. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation. Discharger maintains a Pledge of Revenue Agreement as the financial assurance mechanism for post-closure maintenance.
123. Title 27 section 22100(b) requires owners and operators of disposal facilities that are required to be permitted as solid waste landfills to provide cost estimates for initiating and completing corrective action for known or reasonably foreseeable releases of waste. Title 27 section 22101 requires submittal of a *Water Release Corrective Action Estimate* and a *Non-Water Release Corrective Action Cost Estimate*. The *Water Release Corrective Action Estimate* is for scenarios where there is statistically significant evidence of a release of waste to ground or surface water when comparing point-of-compliance analyte concentrations to background concentrations. The *Non-Water Release Corrective Action Cost Estimate* is for complete replacement of the landfill final cover system, however a site-specific corrective action plan pursuant to Title 27 section 22101(b)(2) may be provided in lieu of the final cover replacement cost estimate. Title 27 section 22221 requires establishment of financial assurances in the amount of an approved *Water Release Corrective Action Estimate* or an approved *Non-Water Release Corrective Action Cost Estimate*, whichever is greater.

124. The Discharger did not submit a cost estimate for corrective action of all known or reasonably foreseeable releases and corrective action of Non-water release for the partially closed Class III Old landfill WMU. This Order requires that the Discharger to submit a cost estimate for corrective action and maintain financial assurance with the CalRecycle in at least the approved amount, adjusted annually for inflation as described in Provision H.16.N
125. The Discharger submitted a 2015 cost estimate of \$288,800 for corrective action of all known or reasonably foreseeable releases and a 2015 cost estimate of \$143,000 for Non-water release corrective action for Class II Expansion landfill WMU. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of \$288,800 (2015 dollars) adjusted annually for inflation. Discharger maintains a Pledge of Revenue Agreement as the financial assurance mechanism for water release corrective actions.
126. Title 27, section 22222 requires a cost estimate for corrective action of all known or reasonably foreseeable releases from units which the CalRecycle does not require financial assurances for. The Discharger did not submit a cost estimate for corrective action of all known or reasonably foreseeable releases and corrective action of Non-water release for the Class II surface impoundment. This Order requires that the Discharger to submit a cost estimate for corrective action and maintain financial assurance with the RWQCB in at least the approved amount (greater of all known or reasonably foreseeable releases or Non-water release), adjusted annually for inflation as described in Provision H.16.O.

CEQA AND OTHER CONSIDERATIONS

127. On 10 May 1994, the El Dorado County Board of Supervisors certified an April 1994 addendum to the January 1992 final environmental impact report for the Facility. Both the January 1992 final EIR and the April 1994 addendum were for expansion and closure of the Facility. A Notice of Determination was filed on 27 April 1992 in accordance with the California Environmental Quality Act (Public Resources Code section 21000 et seq.) and CEQA guidelines (Title 14, section 15000 et seq.). EIR concluded that “the proposed project would result in long-term and cumulative impacts to hydrologic resources due to the existing landfill activities, presence of mine shafts, alteration of natural drainage patterns, erosion control, and water quality contamination.” The EIR also stated that “the effects can be reduced to below levels of significance through a number of proposed design, monitoring, control, and mitigation measures. The Central Valley Water Board considered the environmental impact report and incorporated mitigation measures from the EIR into these waste discharge requirements designed to prevent potentially significant impacts to design facilities and to water quality, including, but not limited to:
- Monitoring of groundwater, surface water, and mining features as required in monitoring and reporting as required in MRP No. R5-2006-0020.

- A requirement that the Discharger maintain assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management units.
- Requirements for composite liner systems and leachate collection for the Class II landfill and surface impoundment.
- Requirements for final cover systems for all closed landfill units.
- Requirements for precipitation and drainage control systems that are designed and constructed to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 1,000-year, 24-hour precipitation conditions for Class II WMUs and 100-year, 24-hour precipitation conditions for Class III WMUs.

128. 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.

129. This order implements:

- The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;
- The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
- 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.
- The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.

130. Based on the threat and complexity of the discharge, the Facility is determined to be classified 2-B as defined below:

- Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."
- Category B complexity, defined as, "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units."

131. 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.)

132. 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.
133. Anti-Degradation Policy does not apply to the discharge of waste to Union Mine Landfill. 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.
134. 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 proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
135. The technical reports required by this Order and the attached "Monitoring and Reporting Program R5-2018-0048" 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

136. 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.
137. 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.

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

139. 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 R5-2006-0020 is rescinded except for purposes of enforcement, and that El Dorado County and 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 waste to the closed portion of Class III Old landfill WMU is prohibited.
2. The discharge of 'hazardous waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq.
3. The discharge of wastes outside of a WMU or portions of WMU specifically designed for their containment is prohibited. For the purposes of this Order, designated waste is as defined in Title 27.
4. The discharge of waste within 50 feet of surface waters is prohibited.
5. The direct discharge of wastes to surface waters, surface water drainage courses or groundwater is prohibited.
6. The unauthorized discharge of liquid from the Class II surface impoundment is prohibited.

7. 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 unit, could produce violent reactions, 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;
 - b. Are restricted "hazardous wastes"; or
 - c. Impair the integrity of containment structures is prohibited.
8. Operation of any equipment on the closed landfill WMUs that will likely damage the landfill cover is prohibited.
9. Any damage to the exposed geomembrane liner is prohibited.
10. The cessation of any corrective action measure, if any, is prohibited without written Executive Officer approval. If routine maintenance or a breakdown results in cessation of corrective action for greater than 24 hours, the Discharger shall notify Board staff.
11. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.

B. DISCHARGE SPECIFICATIONS

1. The discharge to landfill units of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids), except dewatered sewage or water treatment sludge as provided in this order, is prohibited.
2. The discharge of solid waste containing free liquid or moisture in excess of the waste's moisture holding capacity to landfill units is prohibited.
3. The wastes allowed to be discharged to the Class II Expansion landfill unit are:
 - a. Non-hazardous, treated and dewatered sludge from the onsite septage and leachate treatment plant,
 - b. Non-hazardous municipal solid waste generated from onsite facilities, and
 - c. Solids from the Class II surface impoundment.
4. Only the nonhazardous liquid wastes shall be discharged to the Class II surface impoundment. A discharge shall not cause a condition of pollution or nuisance as defined by the Water Code section 13050. The nonhazardous liquid wastes allowed to be discharged to the Class II surface impoundment are:
 - a. Leachate collected from the Class III Old landfill WMU toe drains,
 - b. Leachate collected from the active Class II Expansion landfill WMU LCRS,

- c. LFG condensate collected from the LFG recovery system on the Class III Old landfill WMU,
 - d. Liquid collected from the Class II surface impoundment LCRS,
 - e. Runoff from the septage truck washout area, and
 - f. Direct rainfall
5. The waste discharges shall remain within the designated disposal areas at all times.
 6. The Discharger may not use any material as alternative daily cover (ADC) until the Discharger has demonstrated that it meets the requirements in Title 27, section 20705.
 7. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the contiguous landfill units unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved in writing. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
 8. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this Facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
 9. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. Annually, prior to the anticipated rainy season, no later than October 31, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the Facility and to prevent surface drainage from contacting or percolating through wastes; and reported in compliance with MRP R5-2018-0048.
2. The Discharger shall immediately notify the Central Valley Water Board of any flooding, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
3. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the Landfill SPRRs and Industrial SPRRs which are part of this Order.

Landfill WMUs

4. Public contact with wastes and leachate shall be precluded through such means as fences, signs, and other acceptable alternatives.
5. Dewatered sewage or water treatment sludge may be accepted for disposal in the Class II landfill if the sludge contains at least 20 percent solids (primary sludge) or 15 percent solids (secondary sludge), is mixed with refuse or soil at a minimum solids-to-liquid ratio of 5:1 by weight, and does not exceed the initial moisture holding capacity of the solid waste.
6. LCRSs shall be maintained to collect twice the anticipated daily volume of leachate generated by each landfill WMU and to prevent the buildup of hydraulic head on the underlying liner at any time. The depth of the fluid on any portion of the Class II Expansion landfill WMU shall not exceed 30 centimeters. The Discharger shall comply with Facility Specification E.13 of Landfill SPRRs.
7. The Class II Expansion landfill WMU LCRS pipe shall be operated without clogging, to prevent leachate head buildup on the primary liner due to capacity loss of the LCRS pipes.
8. Any proposed change in sludge use or disposal practice shall be reported to the Executive Officer at least 90 days in advance of the change

Class II Surface Impoundment

9. The Class II surface impoundment shall have sufficient storage capacity for wastewater flows to the impoundment from the sources in Discharge Specification B.4, precipitation from a 100-year wet season of 73.2 inches distributed at least monthly, a 1,000-year 24-hour storm event (design storm) of 9.05 inches, and shall maintain at least two (2.0) feet of freeboard at all times. To ensure compliance with this requirement, the Discharger shall maintain at least 33 inches of freeboard at all times except in the event of a storm equal to or exceeding the 1,000-year 24-hour design storm event in which case at least two (2.0) feet of freeboard must be maintained.
10. In the event of freeboard level is less than 2-feet, the Discharger shall immediately notify Central Valley Water Board staff by telephone and email. The notification shall include a description of the proposed contingency plan to reduce the water levels in the Class II surface impoundment and the plan for alternate disposal of the liquids generated on-site. The Discharger shall **immediately** take measures to regain surface impoundment capacity in the event that freeboard levels are equal to or less than 33 inches (2.0 feet plus the amount needed to hold the design storm).
11. The Discharger shall measure, monitor and record all inflows, except septage truck washout liquid, to the Class II surface impoundment. Historically, LFG condensate, liquid from the septage truck washout area and the liquid from the Class II surface

impoundment LCRS sump were not measured. The Discharger shall install a means to measure the inflow, separately, to the Class II surface impoundment as described in Provision H.16.J and report monthly inflows in the semiannual monitoring report.

12. By 1 November each year, available capacity in the Class II surface impoundment shall at least equal the volume necessary to comply with Discharge Specifications B.4.
13. The Class II surface impoundment shall be managed to prevent breeding of mosquitoes.
14. The dissolved oxygen content of the Class II surface impoundment and the storm water holding and settling basins shall not be less than 1.0 mg/l.
15. The Discharger shall record onsite rainfall to track the magnitude of storm events and shall record surface impoundment freeboard levels in accordance with the attached MRP R5-2018-0048.
16. Any direct-line discharge to a surface impoundment shall have fail-safe equipment or operating procedures to prevent overfilling.
17. The surface impoundment(s) shall be designed, constructed and maintained to prevent scouring and/or erosion of the liners and other containment features at points of discharge to the impoundments and by wave action at the water line.
18. Leachate removed from a surface impoundment's leak detection and collection system shall be discharged to the impoundment from which it originated.
19. Liquid level in the Class II surface impoundment LCRS sump shall be maintained at or below the leak detection and collection layer discharge pipe elevation in the Class II surface impoundment LCRS sump.
20. If liquid is detected in the suction lysimeter of a Class II surface impoundment may be indicating a leak in the containment structures, the Discharger shall:
 - a. **Immediately** notify Central Valley Water Board staff by telephone and email that the containment structures have failed.
 - b. **Immediately** sample and test the liquid in accordance with the unsaturated zone monitoring requirements in MRP R5-2018-0048.
 - c. Submit written notification of the release to Central Valley Water Board staff within **seven days** including a time schedule to repair the containment structures.
 - d. Complete repairs of the containment structures in accordance with the approved time schedule.

21. The Discharger shall submit a Surface Impoundment Operations and Maintenance Plan to the Central Valley Water Board if any changes to the operations and/or maintenance of the surface impoundment occur.
22. The Discharger shall update the water balance model if additional inflows are discharged to the Class II surface impoundment, such as groundwater drains, springs, or the model assumptions no longer represent site conditions
23. Solids that accumulate in the Class II surface impoundment shall be periodically removed to maintain minimum freeboard requirements and to maintain sufficient capacity for surface impoundment leachate and for the discharge of wastes. The removed solids from the Class II surface impoundment shall be disposed in Class II Expansion landfill WMU.
24. Following sediment/solids removal from the Class II surface impoundment, the liner system shall be inspected for damage within 30 days and any damage shall be repaired within 60 days prior to the discharge of additional wastewater. A report shall be submitted to the Central Valley Water Board within 30 days of completion of the liner inspection or repair.

D. CONSTRUCTION SPECIFICATIONS

1. Municipal solid waste shall be discharged to an area equipped with a containment system which meets the minimum requirements of Title 27 for liners, covers, and leachate collection systems.
2. The Discharger shall obtain revised WDRs prior to construct any new landfill WMU or an expansion to an existing landfill WMU.
3. Each landfill unit phase constructed after the effective date of this Order shall be designed and constructed in accordance with Title 27 and this Order and approved by Regional Board staff prior to operation. Ninety days prior to the beginning of construction for each new construction phase, a Final Design Report shall be submitted to Regional Board staff for review and approval and shall include, but not be limited to, the engineered design plans, the contract specifications, a construction quality assurance (CQA) plan to verify that construction specifications will be met, and a revised water quality monitoring plan. Approval of the final design report shall be obtained from Regional Board staff prior to the construction of the landfill liner or cover. A final construction report shall be submitted for approval by Regional Board staff after each phase of construction and prior to the discharge of waste into the constructed phase. For cover construction, the final construction report shall be submitted within ninety days of completion of construction for approval by Regional Board staff. The final construction report shall include, but not be limited to, as-built plans, a CQA report with a written summary of the CQA program and all test results,

analyses, and copies of the inspector's original field notes, and a certification as described in the Standard Provisions and Reporting Requirements.

4. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.
5. The Discharger shall comply with all Storm Water Provisions listed in Section L of the Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.

E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall submit a final or partial final closure and post-closure maintenance plan at least two years prior to proposed closure of any portion of the landfill in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the Landfill SPRRs.
2. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order, except when modifications are necessary for problematic areas of the final cover needing repair so long as the barrier layer (e.g., geomembrane, GCL, and/or compacted clay layer) remains intact, and the modifications are approved by Central Valley Water Board staff.
3. The Discharger shall close the landfill with side slopes at steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
4. The Discharger shall install an active landfill gas extraction system for the closed landfill unit during landfill closure, and landfill gas shall be extracted from closed landfill units until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.
5. The Discharger shall seal the edges of the final cover by connecting the cover geomembrane to the liner geomembrane.
6. 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.
7. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation to comply with Title 27 Section 21090 (a) (3). 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.

8. The Discharger shall extract landfill gas from closed Class III Old landfill WMU 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.
9. During the closure and post-closure maintenance period, the Discharger shall conduct routine maintenance of the final cover, areas with interim cover, the precipitation and drainage control facilities, the groundwater, unsaturated zone and landfill gas monitoring systems, the landfill gas extraction system, and any facilities associated with corrective action.
10. The Discharger shall, in a timely manner, repair any areas of the final cover that have been damaged by erosion, cracking, differential settlement, subsidence or any other causes that could allow ponding of surface water or percolation of surface water into the wastes.
11. The Discharger shall conduct an annual test of all LCRS's to ensure they are functioning as designed.
12. The Discharger shall perform all post-closure maintenance activities specified in the Facility's Final Closure and Post-Closure Maintenance Plan that are not specifically referred to in this Order.
13. At closure of the Class II surface impoundment (or) waste pile, the Discharger shall clean-close the unit(s) pursuant to Title 27 section 21400(b)(1) (or) 21410(a)(1). All waste materials and any components of the containment system shall be completely removed and discharged to an appropriately permitted landfill Facility. If after reasonable attempts to remove contaminated natural geologic materials, the Discharger demonstrates that removal of all remaining contamination is infeasible, the impoundment and/or overflow basins shall be closed as a landfill pursuant to Title 27 section 21400(b)(2)(A) (or) 21410(b)(2)(A). In this event, the Discharger shall backfill and grade the area and submit a revised Final Closure and Post-Closure Maintenance Plan proposing a final cover meeting the requirements of Title 27 section 21090 and shall perform all post-closure maintenance in the approved Post-Closure Maintenance Plan. The Discharger shall submit the Closure Documents at least 90 days prior to proposed closure of the Class II surface impoundment as detailed in Provision H.16.D.
14. Prior to closure, the Discharger shall submit a Final Closure and Post-Closure Maintenance Plan prepared by a California-registered civil engineer or certified engineering geologist, and that contains all applicable information required in Title 27 section 21769.
15. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.

F. FINANCIAL ASSURANCE SPECIFICATIONS`

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill WMUs in at least the amounts of \$17.2 million (\$2.4 million closure cost plus 14.88 million post-closure maintenance cost in 2015 dollars) 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 submit closure cost estimate for the Class II surface impoundment to conduct closure activities pursuant to Title 27 sections 21820 and 22207 to Central Valley Water Board for review and approval by 31 December 2018. The Discharger shall obtain and maintain assurance of financial responsibility with Central Valley Water Board named as beneficiary, for the Class II surface impoundment closure in at least the approved amount of the current closure cost estimate, adjusted for inflation annually, as detailed in Provision H.16.O.
3. 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.
4. This Order requires the Discharger to submit a cost estimate for corrective action of all known or reasonably foreseeable releases and corrective action of Non-water release for the partially closed Class III Old landfill WMU, and maintain financial assurance with the CalRecycle in at least the approved amount, adjusted annually for inflation as described in Provision H.16.N.
5. 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 of \$288,800 in 2015 dollars. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the

mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

6. The Discharger shall submit corrective action cost estimate for the Class II surface impoundment to conduct corrective activities pursuant to Title 27 sections 22222 to Central Valley Water Board for review and approval by 31 December 2018. The Discharger shall obtain and maintain assurance of financial responsibility with Central Valley Water Board named as beneficiary, for the Class II surface impoundment corrective action in at least the approved amount of the current closure cost estimate, adjusted for inflation annually, as detailed in Provision H.16.O.
7. By **1 June** of each year, the Discharger shall submit a report to the Central Valley Water Board that reports the amounts of the Guarantees and the adjustments to account for inflation in accordance with Title 27 section 22236.
8. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the Landfill SPRRs and Industrial SPRRs 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) R5-2018-0048, and the Standard Monitoring Specifications listed in Section I of the SPRRs which are attached hereto and made part of this Order by reference.
2. The Discharger shall, for any landfill WMU in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP R5-2018-0048, and the Standard Monitoring Specifications listed in Section I of Landfill SPRRs 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 R5-2018-0048, and the Landfill SPRRs and Industrial SPRRs 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 R5-2018-0048.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP R5-2018-0048 and the Standard Monitoring Specifications in Section I of the

Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.

6. As specified in MRP R5-2018-0048, the Discharger shall enter all reports and monitoring data into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23.
7. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the Landfill SPRRs and Industrial SPRRs which are attached hereto and made part of this Order by reference.

H. PROVISIONS

1. The Discharger shall comply with the Standard Provisions and Reporting Requirements, dated November 2013, which are attached hereto and made part of this Order by reference. The Standard Provisions and Reporting Requirements contain important provisions and requirements with which the Discharger must comply. A violation of any of the Standard Provisions and Reporting Requirements is a violation of these waste discharge requirements.
2. Pursuant to Water Code section 13267, the Discharger shall comply with Monitoring and Reporting Program No. R5-2018-0048, which is attached to and made part of this Order. This compliance includes, but is not limited to, maintenance of waste containment facilities and precipitation and drainage controls and monitoring groundwater, the unsaturated zone, and surface waters throughout the active life of the waste management units and any applicable post-closure maintenance period. A violation of Monitoring and Reporting Program No. R5-2018-0048 is a violation of these waste discharge requirements.
3. The Discharger shall maintain a copy of this Order at the Facility, including the MRP R5-2018-0048 and the Landfill SPRRs and Industrial SPRRs 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.
4. The Discharger shall maintain legible records of the volume and type of each waste discharged at each WMU and the manner and location of the discharge. Such records shall be maintained at the Facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Central Valley Water Board and of the State Water Resources Control Board, copies of these records shall be sent to the Central Valley Water Board upon request.
5. In the event of any change in control or ownership of the Facility or disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume

operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. 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 paragraph of General Provision K.2.e in the Standard Provisions and Reporting Requirements 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 California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

6. The Discharger shall provide proof to the Central Valley Water Board **within sixty days after completing final closure** that the deed to the Facility property, or some other instrument that is normally examined during title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
 - a. The parcel has been used for disposal of wastes.
 - b. Land use options for the parcel are restricted in accordance with post-closure land uses set forth in any post-closure plan (if applicable).
 - c. In the event that the Discharger defaults on carrying out either any corrective action needed to address a release, groundwater monitoring, or any post-closure maintenance (if applicable), then the responsibility for carrying out such work falls to the property owner
7. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
8. The Discharger shall comply with MRP R5-2018-0048, which is incorporated into and made part of this Order by reference.
9. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated December 2015, which are attached hereto and made part of this Order by reference.
10. 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.
11. All reports required by this Order shall be submitted pursuant to Water Code section 13267, and to the extent applicable, shall be prepared by the appropriately licensed professional as described in the Standard Provisions and Reporting Requirements.

12. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
13. In the event of any change in ownership of this 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.
14. The Central Valley Water Board will review this Order periodically and may revise requirements when necessary.
15. This Order shall take effect upon the date of adoption.
16. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

| <u>Task</u> | <u>Compliance Date</u> |
|---|--|
| <p>A. Construction Plans</p> <p>Submit construction and design plans for review and approval. (see all Construction Specifications in Section D, above and Section F of the SPRRs.)</p> | <p>90 days prior to proposed construction</p> |
| <p>B. Construction Report</p> <p>Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans (see Standard Construction Specification F.27 in the SPRRs).</p> | <p>60 days prior to proposed discharge</p> |
| <p>C. Final Closure Plans for Class II Expansion Landfill WMU and Remaining Class II Old Landfill WMU</p> <p>Submit a final or partial final closure and post-closure maintenance plan, design plans, and CQA plan for review and approval (see all Closure and Post-Closure Specifications in Section E, above and Section G of the SPRRs).</p> | <p>Two years prior to closure</p> |

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| <p>D. Final Closure Plans for Class II Surface Impoundment</p> <p>Submit a final or partial final closure and post-closure maintenance plan, design plans, and CQA plan for review and approval (see all Closure and Post-Closure Specifications in Section E, above and Section G of the SPRRs).</p> | <p>90 days prior to proposed closure</p> |
| <p>E. Updated WQPS Report</p> <p>The Discharger shall submit an updated WQPS report upon approval of proposed statistical method and concentration limits provided in Appendix D of <i>Fall 2017 Semiannual Monitoring Report</i>. The updated WQSP report shall include, but not limited to:</p> <ol style="list-style-type: none"> 1. Monitoring programs 2. Monitoring points for each monitoring medium and point of compliance 3. Constituents of concern 4. Sampling collection and analysis plan. 5. Concentration limit 6. Statistical procedure including approach to data analysis, data management and statistical method 7. Verification retesting procedures to confirm measurably significant evidence of a release | <p><i>Semiannual Monitoring Report</i> following the approval of statistical method by the Central Valley Water Board staff</p> |
| <p>F. Evaluation of Groundwater Monitoring Wells</p> <p>Title 27 §20415 (b)(1)(B) requires the monitoring points to be installed at appropriate location and depths to yield groundwater samples from uppermost aquifer that represent the quality of groundwater passing the Point of Compliance and to allow for the detection of a release from the unit. Detection monitoring wells MW-11, MW-12 and MW-13 monitor the water quality in groundwater shallow zone. The Discharger shall submit a report that includes, but not limited to:</p> <ol style="list-style-type: none"> 1. An analysis of historical groundwater depth variation in each of the detection monitoring wells, | <p>1 February 2019</p> |

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| <p>2. An evaluation of the monitoring well's depth, screen interval and pump intake depth for compliance with Title 27 requirements</p> <p>If applicable, a work plan to correct the screen and pump intake depth of detection monitoring wells to meet Title 27 requirements.</p> | |
| <p>G. Groundwater Quality Impact Evaluation</p> <p>The monitoring parameter concentration limit exceedances and elevated concentrations in downgradient groundwater monitoring wells may be an indication of a release from the WMUs at the site. The Discharger shall evaluate the groundwater quality and submit a report which includes, but not limited to, the following:</p> <ol style="list-style-type: none"> 1. An evaluation of potential sources and a description of the source determined to be the cause of the observed constituent's concentration limit exceedance and elevated concentrations. 2. An investigation work plan to characterize the lateral and vertical extent of contamination if the evaluation indicates a release from the Union Mine Landfill site. 3. A corrective action(s) plan to control migration of the release and reduce concentrations to below water quality objectives. | <p>1 February 2019</p> |
| <p>H. Conceptual Site Model Work Plan</p> <p>Based on the complex hydrogeology of the site and the activities at the site prior to the landfill, the Discharger shall submit a work plan to develop a Conceptual Site Model to determine, but not limited to:</p> <ol style="list-style-type: none"> 1. The nature of shallow zone groundwater flow in the vicinity of the Facility. 2. Effect of groundwater flow, elevation and characteristics in fractured bedrock beneath the Facility. 3. Effect of groundwater flow and characteristics, if any, from historic mine related features at the Facility. 4. The nature of groundwater exhibiting surface expression within the Facility. | <p>31 December 2018</p> |

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| <p>flow returned to the Class II surface impoundment from the LCRS sump.</p> | |
| <p>K. Class II Surface Impoundment Leak Location Test</p> <p>The liquid collected in the Class II surface impoundment LCRS sump indicates that the Class II surface impoundment liner system is leaking. The Discharger shall submit a Work Plan to conduct a leak location detection test on the primary liner to locate any defects in the primary liner that may have developed over the years from ultraviolet degradation, normal wear and tear, or other activities.</p> <p>The Discharger shall conduct the leak location test and submit a report summarizing the leak location test results, analysis and evaluation of the results, and recommendations to stop leak(s) (upon detection) through the primary liner.</p> <p>The Discharger shall perform necessary work to stop leak(s) through the primary liner at the Class II surface impoundment and submit a construction report within one month of leak repair work completion.</p> | <p>31 October 2018</p> <p>Within 4 months from work plan approval by the Central Valley Water Board staff</p> <p>Within 6 months from leak location test.</p> |
| <p>L. Class II Expansion Landfill WMU LCRS Testing</p> <p>Title 27 §20340 (d) requires LCRSs shall be designed and operated to function without clogging through the scheduled closure of the Unit and during the post closure maintenance period. Due to the way of Class II Expansion landfill WMU LCRS construction, annual LCRS testing cannot be performed. However, the LCRS collection pipes were constructed with cleanouts. The Discharger shall propose testing method(s) and testing frequency for clogging of the LCRS collection pipes, for Central Valley Water Board staff's review and approval. Upon approval of the testing method, the Discharger shall perform LCRS collection pipe testing at specified frequency.</p> | <p>31 December 2018.</p> |
| <p>M. Class II Surface Impoundment Water Balance</p> | |

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| <p>The Discharger shall submit a detailed water balance that takes the following factors into account:</p> <ol style="list-style-type: none"> 1. The average daily base wastewater flows from all sources to the Class II surface impoundment. 2. Evaporation losses from the Class II surface impoundment, and are distributed monthly. 3. The 100-year wet season (73.2 inches) distributed monthly in accordance with average monthly rainfall patterns. 4. The total surface area of the impoundment, acres. 5. Additional capacity required to contain the design storm event and translated to an additional inches/foot of freeboard that needs to be maintained to accommodate the design storm event. 6. The capacity of the lined impoundment at the two-foot freeboard level. 7. Loss of capacity due to solids accumulation in the Class II surface impoundment. | <p>60 days prior to operational changes.</p> |
| <p>N. Class III Old Landfill WMU Corrective Action Financial Assurance</p> <p>Title 27 sections 22100(b) 22101 and 22221 require corrective action cost estimates and assurance of financial responsibility to initiate and complete corrective action for known or reasonably foreseeable releases of waste, or Non-water release. The Discharger shall submit corrective action cost estimate for the Class III Old landfill WMU to initiate and complete corrective actions to CalRecycle for review and approval. Upon approval, the Discharger shall obtain and maintain assurance of financial responsibility with CalRecycle named as beneficiary, for the Class III Old landfill WMU corrective action in at least the approved amount of the current closure cost estimate, adjusted for inflation annually.</p> | <p>1 February 2019</p> |
| <p>O. Class II Surface Impoundment Financial Assurance</p> <p>Title 27 section 21820 and 22207 require closure cost estimate and assurance of financial responsibility for surface impoundments to ensure closure of surface</p> | <p>Cost estimate by 31 December 2018 and establish financial</p> |

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| <p>impoundment meets all applicable requirements of Title 27. The Discharger shall submit closure cost estimate for the Class II surface impoundment to conduct closure activities to Central Valley Water Board for review and approval. Upon approval, the Discharger shall obtain and maintain assurance of financial responsibility with Central Valley Water Board named as beneficiary, for the Class II surface impoundment closure in at least the approved amount of the current closure cost estimate, adjusted for inflation annually.</p> <p>Title 27, section 22222 requires a cost estimate for corrective action of all known or reasonably foreseeable releases from units which the CalRecycle does not require financial assurances for. The Discharger shall submit a corrective action cost estimate for the Class II surface impoundment to conduct corrective action activities to Central Valley Water Board for review and approval. Upon approval, the Discharger shall obtain and maintain assurance of financial responsibility with Central Valley Water Board named as beneficiary, for the Class II surface impoundment corrective action in at least the approved amount of the current corrective action cost estimate, adjusted for inflation annually.</p> | <p>assurance within two months from approval of cost estimate by Central Valley Water Board staff.</p> |
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17. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs which are part of this Order.

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

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

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

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

| | |
|----------------------|---|
| Attention: | Title 27 Compliance & Enforcement Unit Or Title 27 Permitting Unit |
| Report Title | |
| Geotracker Upload ID | |
| Discharger name: | El Dorado County |
| Facility name: | Union Mine Landfill |
| County: | El Dorado County |
| CIWQS place ID: | 269028 |

I, PATRICK PULUPA, 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 31 May 2018.

ORIGINAL SIGNED BY

PATRICK PULUPA, Executive Officer

MP

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2018-0048
FOR
EL DORADO COUNTY
UNION MINE LANDFILL
CLASS II LANDFILL, CLOSED CLASS III LANDFILL AND CLASS II SURFACE
IMPOUNDMENT
OPERATION, MAINTENANCE, CLOSURE, AND
POST-CLOSURE MAINTENANCE
EL DORADO COUNTY

This monitoring and reporting program (MRP) is issued to El Dorado County (Discharger) pursuant to Water Code section 13267 and incorporates requirements for groundwater, surface water, and unsaturated zone monitoring and reporting; facility monitoring, maintenance, 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 R5-2018-0048, December 2015 Standard Provisions and Reporting Requirements (SPRRs): Nonhazardous Solid Waste Discharges Regulated by Subtitle D a. (Landfill SPRRs) and April 2016 Standard Provisions and Reporting Requirements for Industrial Facilities Regulated by Title 27 (Industrial SPRRs). Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer. Failure to comply with this MRP, or with the SPRRs, constitutes noncompliance with the WDRs and with Water Code Section 13267, which can result in the imposition of civil monetary liability.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, 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*, which includes quality assurance/quality control standards.

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 monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through VI.

The Discharger may use alternative analytical test methods, including new United States Environmental Protection Agency (USEPA) approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this MRP, and are identified in the approved *Sample Collection and Analysis Plan*.

The monitoring program of this MRP includes:

| <u>Section</u> | <u>Monitoring Program</u> |
|----------------|---|
| A.1 | Groundwater Monitoring |
| A.2 | Unsaturated Zone Monitoring |
| A.3 | Leachate Monitoring, Seep Monitoring, and LCRS Collection Pipes Testing |
| A.4 | Waste Discharge Monitoring |
| A.5 | Surface Water Monitoring |
| A.6 | Groundwater Drains, Springs and Pendar Tunnel Monitoring |
| A.7 | Facility Monitoring |

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, Subchapter 3 “Water Monitoring”. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27. The current groundwater detection monitoring system meets the applicable requirements of Title 27. Prior to abandonment of monitoring wells due to construction or expansion activities at the site, the Discharger shall install replacement monitoring wells. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell or module is constructed. See Attachment B for location of Groundwater monitoring wells.

The current groundwater monitoring network shall consist of the following:

| <u>Well ID</u> | <u>Well Type</u> | <u>Groundwater Zone being Monitored</u> | <u>WMUs Being Monitored</u> | <u>Top of Casing (TOC) Elevation (MSL)</u> | <u>Top of Screen Elevation (MSL)</u> | <u>Well Depth (ft)</u> | <u>Screen Interval from TOC (ft)</u> |
|----------------|------------------|---|-----------------------------|--|--------------------------------------|------------------------|--------------------------------------|
| MW-5 | Background | Shallow | WMU-1 | 1309.15 | 1289.15 | 43.0 | 20-40 |
| MW-6 | Background | Deep | WMU-1 | 1295.96 | 1177.96 | 140.0 | 118-138 |
| MW-7 | Detection | Deep | WMU-1 | 1169.05 | 1039.05 | 154.0 | 130-150 |
| MW-9 | Detection | Deep | WMU-1 | 1179.12 | 982.12 | 220.0 | 197-217 |
| MW-10 | Background | Deep | WMU-1 | 1361.30 | 1241.3 | 142.0 | 120-140 |
| MW-11 | Detection | Shallow | WMU-1 | 1273.07 | 1215.07 | 80.0 | 58-78 |
| MW-12 | Detection | Shallow | WMU-1 | 1160.07 | 1147.07 | 27.9 | 13-26 |
| MW-13 | Detection | Shallow | WMU-1 | 1179.50 | 1150.50 | 47.6 | 29-47 |

| <u>Well ID</u> | <u>Well Type</u> | <u>Groundwater Zone being Monitored</u> | <u>WMUs Being Monitored</u> | <u>Top of Casing (TOC) Elevation (MSL)</u> | <u>Top of Screen Elevation (MSL)</u> | <u>Well Depth (ft)</u> | <u>Screen Interval from TOC (ft)</u> |
|----------------|------------------|---|-----------------------------|--|--------------------------------------|------------------------|--------------------------------------|
| UM-3 | Detection | Deep/Artesian | WMU-1 | 1161.57 | 1101.57 | 123.0 | 60-90 |
| MW-A | Detection | Shallow | WMU-2 | 1142.68 | 1123.68 | 35.0 | 19-34 |
| MW-C | Background | Shallow | WMU-2 | 1156.71 | 1147.71 | 50.0 | 9-50 |

MW – Monitoring Well
 MWU – Waste Management Unit

Groundwater samples shall be collected from the background wells, detection 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. 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. Additionally, the Discharger shall include hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly. 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).

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 2016 and shall be monitored again in **2021**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring

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 unsaturated zone monitoring at the Facility includes soil pore liquid monitoring which is accomplished by monitoring two suction lysimeters installed below the Class II surface impoundment. The Class II Expansion landfill WMU and the partially closed Class III Old landfill WMU are not currently monitored for unsaturated zone. The current unsaturated zone detection monitoring system meets the applicable requirements of Title 27. The Discharger shall install unsaturated zone monitoring devices (after review and approval by Central Valley Water Board staff) each time the landfill constructs a new cell or module.

The current unsaturated zone monitoring network shall consist of:

| <u>Mon Pt.</u> | <u>Program</u> | <u>Units Being Monitored</u> |
|----------------|----------------|------------------------------|
| L2N | Detection | WMU-2 |
| L2S | Detection | WMU-2 |

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies. 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 **2021** (does not include soil-pore gas).

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

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

3. Leachate Monitoring, Seep Monitoring, and LCRS Collection Pipes Testing

a. Leachate Monitoring

The LCRS of the Class III Old landfill WMU consists of toe drains consisting of a gravel-filled trench that runs the length of the north and northeast perimeter of the Class III Old landfill WMU and the junction (southwest of the Class III Old landfill WMU) between the Class III Old and Class II Expansion landfill WMUs. The Class II Expansion landfill WMU was constructed with a LCRS which did not have a testing point to test it for its proper operation. However, the LCRS collection pipes were provided with cleanout connections. The Discharger shall monitor for clogging

of the LCRS collection pipe and operate the LCRS pipes without clogging to prevent leachate head buildup on the primary liner due to capacity loss of the LCRS pipes. The leachate collected from the Class II Expansion landfill WMU and Class III Old landfill WMU is combined prior to discharge to the Class II surface impoundment. The Class II surface impoundment has a geonet leak detection and collection layer which collects liquid leaking through the liner system and groundwater to maintain the separation from the waste to underlying groundwater, and discharges to the Class II surface impoundment LCRS sump.

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

The current LCRS leachate sump monitoring points are:

| <u>Mon Pt.</u> | <u>Unit Where Sump is Located</u> |
|--|---|
| WMU-1 Leachate Pipe | Pipe at East of Class III Old landfill WMU prior to discharge to the Class II surface impoundment |
| Class II surface impoundment LCRS sump | East of Class II surface impoundment |

All LCRS sumps and leachate conveyance systems shall be inspected weekly for the presence of leachate, and flow shall be recorded in accordance with Table III. If leachate is detected in a previously dry sump or leachate conveyance system, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the leachate for Field and Monitoring Parameters listed in Table III. Leachate in the LCRS sump shall then be sampled for all parameters and constituents in accordance with the frequencies listed in Table III whenever liquid is present. All LCRS sump samples shall be analyzed for the 5-year COCs specified in Table III every five years, beginning again in **2021**.

b. Seep Monitoring

Leachate that seeps to the surface from a landfill WMU shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

c. LCRS Collection Pipes Testing

The Class II Expansion landfill WMU LCRS cannot be tested for its proper operation because of the way it was constructed. The Discharger shall propose a testing method for clogging of the LCRS collection pipes as described in Provision

H.16.L of WDR R5-2018-0048. Upon approval of the testing method and testing frequency by the Central Valley Water Board staff, the Discharger shall perform LCRS collection pipes testing for clogging at specified frequency. The results of these tests shall be reported to the Central Valley Water Board in the Annual Monitoring Report following the most recent test and shall include comparisons with earlier tests made under comparable conditions.

4. Waste Discharge Monitoring

a. Solid Waste Monitoring

The Discharger shall monitor all wastes discharged to the Class II Expansion landfill WMU on a monthly basis and submit the results with the corresponding semi-annual report:

| <u>Parameters</u> | <u>Units</u> | <u>Frequency</u> |
|-------------------------------|---------------------|------------------|
| Quantity Discharged | cubic yards or tons | Monthly |
| Remaining Capacity | percent | Yearly |
| Sludge Average Solids Content | percent | Monthly |

b. Liquid Waste/Surface Impoundment Monitoring

The quantity of all liquid waste discharged into the Class II surface impoundment shall be monitored monthly and reported to the Board in the semiannual monitoring report required in Section B.1 of this MRP.

| <u>Parameters</u> | <u>Units</u> | <u>Frequency</u> |
|-----------------------------|-----------------|---------------------|
| Discharge Flow ¹ | gallons | Monthly |
| Type of Material Discharged | - | Monthly |
| Minimum Freeboard | feet and tenths | Weekly ² |
| Remaining Capacity | gallons | Monthly |
| Remaining Capacity | percent | Weekly |
| pH | - | semiannual |
| Electrical Conductivity | umhos/cm | semiannual |

¹ Flow of wastewater into Class II surface impoundment as measured and recorded at totalizing meter.

² Freeboard shall be measured weekly and within 24 hours after onsite rainfall of greater than two inches in a 24 hour period. Freeboard shall be measured from the top of the surface impoundment down to the water level in the impoundment and can be measured using markings on the primary geomembrane liner or a free-standing gauge.

In addition, the Discharger shall collect grab samples of the Class II surface impoundment contents and analyze the samples for the parameters and constituents listed in Leachate Monitoring A.3.a in accordance with the methods and frequencies indicated thereunder.

5. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Union Mine Landfill, runoff from landfill areas flows to three sedimentation basins: north, south and west, that periodically discharge to Martinez Creek. The current surface water detection monitoring system meets the applicable requirements of Title 27.

The surface water monitoring points for the landfill are:

| <u>Sampling Point</u> | <u>Location</u> | <u>Type</u> |
|-----------------------|--|-------------|
| S-1 | In the unnamed tributary prior to enter the west sedimentation basin | Detection |
| S-2 | Outfall discharge from the north sedimentation basin prior to enter Martinez Creek | Detection |
| S-6 | In Martinez Creek approximately 600 feet upstream from location S-2 | Background |
| S-7 | In Martinez Creek approximately 450 feet downstream from location S-2 | Detection |
| S-8 | At junction box prior to enter the north sedimentation basin | Detection |

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. The Discharger shall include an evaluation of surface water quality impacts and compliance with the Water Quality Protection Standard. 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 **2021**.

In addition, the Discharger shall sample one seep (designated MS-1) from along the western side of Church Mine Road, downslope of the Class II surface impoundment. The Discharger shall analyze the seep quarterly for TDS, pH, chloride, arsenic, and iron. The Discharger shall report the data in the semi-annual monitoring reports.

6. Groundwater Drains, Springs and Pendar Tunnel Monitoring

The Discharger shall monitor discharges from the Pendar Tunnel, the groundwater drains, and the springs shown on Attachment B. These locations shall be inspected monthly.

| <u>Sampling Point</u> | <u>Location</u> | <u>Type</u> | <u>Monitoring Frequency</u> |
|-----------------------|--|-------------------|-----------------------------|
| GWD-1 | Union Mine Road underdrain | Groundwater drain | Semiannual |
| GWD-2 | Class II Expansion landfill WMU underdrain | Groundwater drain | Quarterly |
| GWD-3 | Groundwater drain west of spray fields | Groundwater drain | Quarterly |
| Pendar Tunnel | Discharge from Pendar Tunnel | Adit discharge | Quarterly |
| SS-1 | Springfield shaft spring | Spring | Semiannual |
| SS-2 | Springfield shaft pond | Spring | Semiannual |
| SS-3 | Lower spring to Springfield shaft | Spring | Semiannual |

For each discharge point the Discharger shall collect water samples within one month after flows begin and at the frequency given in the table above, thereafter when water is present. The Discharger shall analyze the samples of GWD-2, GWD-3 and Pendar Tunnel for pH (field), specific conductance (field), total dissolved solids (TDS), dissolved arsenic, dissolved iron, and sulfate. The Discharger shall analyze the samples of GWD-1, SS-1, SS-2 and SS-3 (UM-3 Spring) for field and monitoring parameters and constituents listed in Table I in accordance with the specified methods and frequencies.

The Discharger shall submit the groundwater drains, springs and Pendar Tunnel monitoring and sampling results with the corresponding semi-annual monitoring report and shall include an evaluation of potential impacts of these discharges on Martinez Creek.

7. Facility Monitoring

a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess the need for repair and maintenance of drainage control

systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in 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. 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 iso-settlement survey shall be conducted for the closed portion of the Class III Old landfill WMU in 2019. The five-year iso-settlement survey shall be conducted upon full closure of the Class III Old landfill WMU.

d. Standard Observations

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

| <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 of the landfill units:
- a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
- a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 - b) Discoloration and turbidity - description of color, source, and size of affected area.

Results of Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 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 | Financial Assurances Report | 31 December | 1 June |

The Discharger shall enter all monitoring data and reports into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23. Notification of the Geotracker upload shall be emailed to the Central Valley Water Board at: centralvalleysacramento@waterboards.ca.gov. To ensure that the submittal is routed to the appropriate staff as quickly as possible, the following information shall be included in the body of the email:

| | |
|----------------------|---|
| Attention: | Title 27 Compliance & Enforcement Unit Or Title 27 Permitting Unit |
| Report Title | |
| Geotracker Upload ID | |
| Discharger name: | El Dorado County |
| Facility name: | Union Mine Landfill |
| County: | El Dorado County |
| CIWQS place ID: | 269028 |

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 R5-2018-0048 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 or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

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

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

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

- a) Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
- b) Date, time, and manner of sampling;
- c) Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
- d) Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
- e) Calculation of results; and
- f) Results of analyses, and the MDL and PQL for each analysis. All peaks shall be reported.

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:
 - a) For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
 - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
 - b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
 - d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the

pump intake. The hydrographs shall be prepared quarterly and reported semiannually.

- e) Cross sections showing the profiles of groundwater elevation, approximate location of the waste bottom elevation and the liner system shall be prepared in the north-south direction and east-west direction for the WMU-1. The monitoring wells locations and depth, screen depth and interval, and pump intake shall also be projected in the cross-sections.
 - f) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, waste discharge, leachate, surface water, and groundwater drains, springs and the Pendar Tunnel. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - g) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - h) 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 Section J: Response to a Release for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
 - i) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.
 - j) A summary of all Standard Observations for the reporting period required in Section A.7.d of this MRP.
 - k) 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) 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.
 - e) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the year in which each discrete landfill module will be filled.
 - f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g) The results of the testing of leachate collection and removal systems required under Sections A.3.a and c.
 - h) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
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.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.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.c of this MRP, above. The next report is due by 31 October 2019.
 7. **Financial Assurances Report:** By **1 June** of each year, the Discharger shall submit a copy of the annual financial assurances report due to CalRecycle that updates the financial assurances for closure, post-closure maintenance, and corrective action. Refer to Financial Assurances Specifications F.1 through F.7 of the WDRs.

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 biannual 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 groundwater** that could be affected in the event of a release from a waste management unit or portion of a unit. This list

shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D) or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The Water Quality Protection Standard 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 the Appendix D "*Statistical Analysis of Background Data and Development of Site Concentration Limits*" of *Fall 2017 Semiannual Monitoring Report*.

The 2017 concentration limits were calculated using Interwell nonparametric 95 percent upper prediction limits with 95 percent coverage based on background data from background monitoring wells MW-5, MW-6 and MW-10 for WMU-1, and parametric 95 percent upper tolerance limit with 95 percent coverage based on background data from background monitoring well MW-C for WMU-2.

The Water Quality Protection Standard shall be updated once every two 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 *Spring 2016 Semiannual Monitoring Report*, and 5-year COCs are due to be monitored again in *Fall 2021 Semiannual Monitoring Report*.

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 1998 *Water Quality Protection Standard Report*. The approved method uses Interwell tolerance limits at 95% confidence and 95% coverage based on background data from background monitoring wells MW-5, MW-6 and MW-10 for WMU-1, and MW-C for WMU-2. As noted above, the Discharger proposed an update to method of calculating concentration limits and concentration limits for naturally occurring constituents in the *Fall 2017 Semiannual Monitoring Report*.

The concentration limits for select parameters as reported in the *Fall 2017 Semiannual Monitoring Report* were as follows:

| <u>Monitoring Parameter</u> | <u>Concentration Limit for MWU-1</u> | <u>Concentration Limit for MWU-2</u> |
|---------------------------------|--|--|
| TDS | 608 | 576 |
| Bicarbonate | 316.7 | 202.8 |
| Alkalinity | 316.7 | 202.8 |
| Chloride | 40 | 73.3 |
| Nitrate-N | 1.74 | 0.97 |
| Sulfate | 198.3 | 156.6 |
| Calcium | 168 | 96.4 |
| Magnesium | 27.5 | 28.1 |
| Potassium | 4.43 | 3.5 |
| Sodium | 55.1 | 38.4 |

All concentrations are in mg/L

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.

6. Point of Compliance

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

| <u>Cell or Module</u> | <u>Point of Compliance Monitoring Wells</u> |
|-----------------------|---|
| WMU-1 | WM-11, MW-12 and MW-13 |
| WMU-2 | MWA |

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, 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.

I, PATRICK PULUPA, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of a Monitoring and Reporting Program issued by the California Regional Water Quality Control Board, Central Valley Region, on 31 May 2018.

ORIGINAL SIGNED BY

PATRICK PULUPA, Executive Officer

MP

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

(Note to permit writer: Frequencies listed in Tables I through IV can be changed based on site-specific circumstances)

| <u>Parameter</u> | <u>Geotracker Code</u> | <u>Units</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|------------------------|----------------------|---------------------------|----------------------------|
| Field Parameters | | | | |
| Groundwater Elevation | GWELEV | Ft. & 100ths, M.S.L. | Quarterly | Semiannual |
| Temperature | TEMP | °F | Semiannual | Semiannual |
| Electrical Conductivity | SC | umhos/cm | Semiannual | Semiannual |
| pH | PH | pH units | Semiannual | Semiannual |
| Turbidity | TURB | Turbidity units | Semiannual | Semiannual |
| Monitoring Parameters | | | | |
| Total Dissolved Solids (TDS) | TDS | mg/L ¹ | Semiannual | Semiannual |
| Chloride | CL | mg/L | Semiannual | Semiannual |
| Carbonate | CACO3 | mg/L | Semiannual | Semiannual |
| Bicarbonate | BICACO3 | mg/L | Semiannual | Semiannual |
| Nitrate - Nitrogen | NO3N | mg/L | Semiannual | Semiannual |
| Sulfate | SO4 | mg/L | Semiannual | Semiannual |
| Calcium | CA | mg/L | Semiannual | Semiannual |
| Magnesium | MG | mg/L | Semiannual | Semiannual |
| Potassium | K | mg/L | Semiannual | Semiannual |
| Sodium | NA | mg/L | Semiannual | Semiannual |
| Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V) | | ug/L ² | Semiannual | Semiannual |
| 5-Year Constituents of Concern (see Table VI) | | | | |
| Total Organic Carbon | TOC | mg/L | 5 years | 2021 |
| Inorganics (dissolved) | | ug/L | 5 years | and every 5 years |
| Volatile Organic Compounds (USEPA Method 8260B, extended list) | | ug/L | 5 years | thereafter |
| Semi-Volatile Organic Compounds (USEPA Method 8270C or D) | | ug/L | 5 years | " " |
| Chlorophenoxy Herbicides (USEPA Method 8151A) | | ug/L | 5 years | " " |
| Organophosphorus Compounds (USEPA Method 8141B) | | ug/L | 5 years | " " |

¹ Milligrams per liter
² Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

LYSIMETERS¹ (or other vadose zone monitoring device)

| <u>Parameter</u> | | <u>Units</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|---------|--------------|---------------------------|----------------------------|
| Field Parameters | | | | |
| Electrical Conductivity | SC | umhos/cm | Semiannual | Semiannual |
| pH | PH | pH units | Semiannual | Semiannual |
| Volume of liquid removed | | gallons | Monthly | Semiannual |
| Monitoring Parameters | | | | |
| Total Dissolved Solids (TDS) | TDS | mg/L | Semiannual | Semiannual |
| Chloride | CL | mg/L | Semiannual | Semiannual |
| Carbonate | CACO3 | mg/L | Semiannual | Semiannual |
| Bicarbonate | BICACO3 | mg/L | Semiannual | Semiannual |
| Nitrate - Nitrogen | NO3N | mg/L | Semiannual | Semiannual |
| Sulfate | SO4 | mg/L | Semiannual | Semiannual |
| Calcium | CA | mg/L | Semiannual | Semiannual |
| Magnesium | MG | mg/L | Semiannual | Semiannual |
| Potassium | K | mg/L | Semiannual | Semiannual |
| Sodium | NA | mg/L | Semiannual | Semiannual |
| Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V) | | ug/L | Semiannual | Semiannual |
| 5-Year Constituents of Concern (see Table VI) | | | | |
| Total Organic Carbon | TOC | mg/L | 5 years | 2021 |
| Inorganics (dissolved) | | ug/L | 5 years | and every 5 years |
| Volatile Organic Compounds (USEPA Method 8260B, extended list) | | ug/L | 5 years | thereafter |
| Semi-Volatile Organic Compounds (USEPA Method 8270C or D) | | ug/L | 5 years | " " |
| Chlorophenoxy Herbicides (USEPA Method 8151A) | | ug/L | 5 years | " " |
| Organophosphorus Compounds (USEPA Method 8141B) | | ug/L | 5 years | " " |

¹. Lysimeters shall be inspected for the presence of liquid **monthly**. If liquid is detected in a previously dry lysimeter, the Discharger shall verbally notify Central Valley Water Board staff within **seven days** and shall immediately sample and test the liquid for Field and Monitoring Parameters listed in Table II.

TABLE III
LEACHATE MONITORING ¹, SEEP MONITORING ², AND LCRS TESTING ³

| <u>Parameter</u> | <u>Geotracker Code</u> | <u>Units</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|------------------------|--------------|-----------------------------|----------------------------|
| Field Parameters | | | | |
| Total Flow | | Gallons | Monthly | Semiannual |
| Flow Rate | FLOW | Gallons/Day | Monthly | Semiannual |
| Electrical Conductivity | SC | umhos/cm | Quarterly | Semiannual |
| pH | PH | pH units | Quarterly | Semiannual |
| Monitoring Parameters | | | | |
| Total Dissolved Solids (TDS) | TDS | mg/L | Annually | Annually |
| Chloride | CL | mg/L | Annually | Annually |
| Carbonate | CACO3 | mg/L | Annually | Annually |
| Bicarbonate | BICACO3 | mg/L | Annually | Annually |
| Nitrate - Nitrogen | NO3N | mg/L | Annually | Annually |
| Sulfate | SO4 | mg/L | Annually | Annually |
| Calcium | CA | mg/L | Annually | Annually |
| Magnesium | MG | mg/L | Annually | Annually |
| Potassium | K | mg/L | Annually | Annually |
| Sodium | NA | mg/L | Annually | Annually |
| Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V) | | ug/L | Annually | Annually |
| 5-Year Constituents of Concern (see Table VI) | | | | |
| Total Organic Carbon | TOC | mg/L | 5 years | 2021 |
| Inorganics (dissolved) | | ug/L | 5 years | and every 5 years |
| Volatile Organic Compounds (USEPA Method 8260B, extended list) | | ug/L | 5 years | thereafter |
| Semi-Volatile Organic Compounds (USEPA Method 8270C or D) | | ug/L | 5 years | " " |
| Chlorophenoxy Herbicides (USEPA Method 8151A) | | ug/L | 5 years | " " |
| Organophosphorus Compounds (USEPA Method 8141B) | | ug/L | 5 years | " " |
| LCRS Testing ³ | | --- | at frequency to be approved | |

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

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

3. The Discharger shall test the Class II Expansion landfill WMU LCRS collection pipes for clogging. The results of the tests shall be reported in Annual Monitoring Report following the recent test and compared with earlier tests made under comparable conditions.

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

| <u>Parameter</u> | <u>Geotracker Code</u> | <u>Units</u> | <u>Sampling Frequency</u> ¹ | <u>Reporting Frequency</u> |
|---|------------------------|-----------------|--|----------------------------|
| Field Parameters | | | | |
| Electrical Conductivity | SC | umhos/cm | Semiannual | Semiannual |
| pH | PH | pH units | Semiannual | Semiannual |
| Turbidity | TURB | Turbidity units | Semiannual | Semiannual |
| Flow to Waters of U.S. | | Yes or No | Semiannual | Semiannual |
| Monitoring Parameters | | | | |
| Total Dissolved Solids (TDS) | TDS | mg/L | Semiannual | Semiannual |
| Carbonate | CACO3 | mg/L | Semiannual | Semiannual |
| Bicarbonate | BICACO3 | mg/L | Semiannual | Semiannual |
| Chloride | CL | mg/L | Semiannual | Semiannual |
| Nitrate - Nitrogen | NO3N | mg/L | Semiannual | Semiannual |
| Sulfate | SO4 | mg/L | Semiannual | Semiannual |
| Calcium | CA | mg/L | Semiannual | Semiannual |
| Magnesium | MG | mg/L | Semiannual | Semiannual |
| Potassium | K | mg/L | Semiannual | Semiannual |
| Sodium | NA | mg/L | Semiannual | Semiannual |
| Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V) | | ug/L | Semiannual | Semiannual |
| 5-Year Constituents of Concern (see Table VI) | | | | |
| Total Organic Carbon | TOC | mg/L | 5 years | 2021 |
| Inorganics (dissolved) | | ug/L | 5 years | and every 5 years |
| Volatile Organic Compounds (USEPA Method 8260B, extended list) | | ug/L | 5 years | thereafter |
| Semi-Volatile Organic Compounds (USEPA Method 8270C or D) | | ug/L | 5 years | " " |
| Chlorophenoxy Herbicides (USEPA Method 8151A) | | ug/L | 5 years | " " |
| Organophosphorus Compounds (USEPA Method 8141B) | | ug/L | 5 years | " " |

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

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

| <u>COC Description</u> | <u>Geotracker Code</u> |
|-------------------------------|-------------------------------|
| pH | PH |
| Total Dissolved Solids | TDS |
| Electrical Conductivity | SC |
| Chloride | CL |
| Sulfate | SO4 |
| Nitrate nitrogen | NO3N |

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

| | |
|--|---------|
| Acetone | ACE |
| Acrylonitrile | ACRAMD |
| Benzene | BZ |
| Bromochloromethane | BRCLME |
| Bromodichloromethane | BDCME |
| Bromoform (Tribromomethane) | TBME |
| Carbon disulfide | CDS |
| Carbon tetrachloride | CTCL |
| Chlorobenzene | CLBZ |
| Chloroethane (Ethyl chloride) | CLEA |
| Chloroform (Trichloromethane) | TCLME |
| Dibromochloromethane (Chlorodibromomethane) | DBCME |
| 1,2-Dibromo-3-chloropropane (DBCP) | DBCP |
| 1,2-Dibromoethane (Ethylene dibromide; EDB) | EDB |
| o-Dichlorobenzene (1,2-Dichlorobenzene) | DCBZ12 |
| m-Dichlorobenzene (1,3-Dichlorobenzene) | DCBZ13 |
| p-Dichlorobenzene (1,4-Dichlorobenzene) | DCBZ14 |
| trans-1,4-Dichloro-2-butene | DCBE14T |
| Dichlorodifluoromethane (CFC-12) | FC12 |
| 1,1-Dichloroethane (Ethylidene chloride) | DCA11 |
| 1,2-Dichloroethane (Ethylene dichloride) | DCA12 |
| 1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride) | DCE11 |
| cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene) | DCE12C |
| trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene) | DCE12T |
| 1,2-Dichloropropane (Propylene dichloride) | DCPA12 |
| cis- 1,3-Dichloropropene | DCP13C |
| trans- 1,3-Dichloropropene | DCP13T |
| Di-isopropylether (DIPE) | DIPE |
| Ethanol | ETHANOL |
| Ethyltertiary butyl ether | ETBE |
| Ethylbenzene | EBZ |
| 2-Hexanone (Methyl butyl ketone) | HXO2 |
| Hexachlorobutadiene | HCBU |
| Methyl bromide (Bromomethene) | BRME |
| Methyl chloride (Chloromethane) | CLME |

TABLE V
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

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

TABLE VI
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

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

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

| <u>COC Description</u> | <u>Geotracker Code</u> |
|---|-------------------------------|
| Acetone | ACE |
| Acetonitrile (Methyl cyanide) | ACCN |
| Acrolein | ACRL |
| Acrylonitrile | ACRAMD |
| Allyl chloride (3-Chloropropene) | CLPE3 |
| Benzene | BZ |
| Bromochloromethane (Chlorobromomethane) | BRCLME |
| Bromodichloromethane (Dibromochloromethane) | DBCME |
| Bromoform (Tribromomethane) | TBME |
| Carbon disulfide | CDS |
| Carbon tetrachloride | CTCL |
| Chlorobenzene | CLBZ |
| Chloroethane (Ethyl chloride) | CLEA |
| Chloroform (Trichloromethane) | TCLME |
| Chloroprene | CHLOROPRENE |
| Dibromochloromethane (Chlorodibromomethane) | DBCME |
| 1,2-Dibromo-3-chloropropane (DBCP) | DBCP |
| 1,2-Dibromoethane (Ethylene dibromide; EDB) | EDB |
| o-Dichlorobenzene (1,2-Dichlorobenzene) | DCBZ12 |

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

| | |
|--|-----------|
| m-Dichlorobenzene (1,3-Dichlorobenzene) | DCBZ13 |
| p-Dichlorobenzene (1,4-Dichlorobenzene) | DCBZ14 |
| trans- 1,4-Dichloro-2-butene | DCBE14T |
| Dichlorodifluoromethane (CFC 12) | FC12 |
| 1,1 -Dichloroethane (Ethylidene chloride) | DCA11 |
| 1,2-Dichloroethane (Ethylene dichloride) | DCA12 |
| 1,1 -Dichloroethylene (1, I-Dichloroethene; Vinylidene chloride) | DCE11 |
| cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene) | DCE12C |
| trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene) | DCE12T |
| 1,2-Dichloropropane (Propylene dichloride) | DCPA12 |
| 1,3-Dichloropropane (Trimethylene dichloride) | DCPA13 |
| 2,2-Dichloropropane (Isopropylidene chloride) | DCPA22 |
| 1,1 -Dichloropropene | DCP11 |
| cis- 1,3-Dichloropropene | DCP13C |
| trans- 1,3-Dichloropropene | DCP13T |
| Di-isopropylether (DIPE) | DIPE |
| Ethanol | ETHANOL |
| Ethyltertiary butyl ether | ETBE |
| Ethylbenzene | EBZ |
| Ethyl methacrylate | EMETHACRY |
| Hexachlorobutadiene | HCBU |
| 2-Hexanone (Methyl butyl ketone) | HXO2 |
| Isobutyl alcohol | ISOBTOH |
| Methacrylonitrile | METHACRN |
| Methyl bromide (Bromomethane) | BRME |
| Methyl chloride (Chloromethane) | CLME |
| Methyl ethyl ketone (MEK; 2-Butanone) | MEK |
| Methyl iodide (Iodomethane) | IME |
| Methyl t-butyl ether | MTBE |
| Methyl methacrylate | MMTHACRY |
| 4-Methyl-2-pentanone (Methyl isobutyl ketone) | MIBK |
| Methylene bromide (Dibromomethane) | DBMA |
| Methylene chloride (Dichloromethane) | DCMA |
| Naphthalene | NAPH |
| Propionitrile (Ethyl cyanide) | PACN |
| Styrene | STY |
| Tertiary amyl methyl ether | TAME |
| Tertiary butyl alcohol | TBA |
| 1,1,1,2-Tetrachloroethane | TC1112 |
| 1,1,2,2-Tetrachloroethane | PCA |
| Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE) | PCE |
| Toluene | BZME |
| 1,2,4-Trichlorobenzene | TCB124 |
| 1,1,1 -Trichloroethane (Methylchloroform) | TCA111 |

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

| | |
|--|---------|
| 1,1,2-Trichloroethane | TCA112 |
| Trichloroethylene (Trichloroethene; TCE) | TCE |
| Trichlorofluoromethane (CFC- 11) | FC11 |
| 1,2,3-Trichloropropane | TCPR123 |
| Vinyl acetate | VA |
| Vinyl chloride (Chloroethene) | VC |
| Xylene (total) | XYLENES |

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

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

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

| | |
|---|-------------|
| 4,4'-DDE | DDE44 |
| 4,4'-DDT | DDT44 |
| Diallate | DIALLATE |
| Dibenz[a,h]anthracene | DBAHA |
| Dibenzofuran | DBF |
| Di-n-butyl phthalate | DNBP |
| 3,3'-Dichlorobenzidine | DBZD33 |
| 2,4-Dichlorophenol | DCP24 |
| 2,6-Dichlorophenol | DCP26 |
| Dieldrin | DIELDRIN |
| Diethyl phthalate | DEPH |
| p-(Dimethylamino)azobenzene | PDMAABZ |
| 7,12-Dimethylbenz[a]anthracene | DMBZA712 |
| 3,3'-Dimethylbenzidine | DMBZD33 |
| 2,4-Dimethylphenol (m-Xylenol) | DMP24 |
| Dimethyl phthalate | DMPH |
| m-Dinitrobenzene | DNB13 |
| 4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol) | DN46M |
| 2,4-Dinitrophenol | DNP24 |
| 2,4-Dinitrotoluene | DNT24 |
| 2,6-Dinitrotoluene | DNT26 |
| Di-n-octyl phthalate | DNOP |
| Diphenylamine | DPA |
| Endosulfan I | ENDOSULFANA |
| Endosulfan II | ENDOSULFANB |
| Endosulfan sulfate | ENDOSULFANS |
| Endrin | ENDRIN |
| Endrin aldehyde | ENDRINALD |
| Ethyl methanesulfonate | EMSULFN |
| Famphur | FAMPHUR |
| Fluoranthene | FLA |
| Fluorene | FL |
| Heptachlor | HEPTACHLOR |
| Heptachlor epoxide | HEPT-EPOX |
| Hexachlorobenzene | HCLBZ |
| Hexachlorocyclopentadiene | HCCP |
| Hexachloroethane | HCLEA |
| Hexachloropropene | HCPR |
| Indeno(1,2,3-c,d)pyrene | INP123 |
| Isodrin | ISODRIN |
| Isophorone | ISOP |
| Isosafrole | ISOSAFR |
| Kepone | KEP |
| Methapyrilene | MTPYRLN |
| Methoxychlor | MTXYCL |
| 3-Methylcholanthrene | MECHLAN3 |
| Methyl methanesulfonate | MMSULFN |

TABLE VI

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

| | |
|--|------------|
| 2-Methylnaphthalene | MTNPH2 |
| 1,4-Naphthoquinone | NAPHQ14 |
| 1-Naphthylamine | AMINONAPH1 |
| 2-Naphthylamine | AMINONAPH2 |
| o-Nitroaniline (2-Nitroaniline) | NO2ANIL2 |
| m-Nitroaniline (3-Nitroaniline) | NO2ANIL3 |
| p-Nitroaniline (4-Nitroaniline) | NO2ANIL4 |
| Nitrobenzene | NO2BZ |
| o-Nitrophenol (2-Nitrophenol) | NTPH2 |
| p-Nitrophenol (4-Nitrophenol) | NTPH4 |
| N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine) | NNSBU |
| N-Nitrosodiethylamine (Diethylnitrosamine) | NNSE |
| N-Nitrosodimethylamine (Dimethylnitrosamine) | NNSM |
| N-Nitrosodiphenylamine (Diphenylnitrosamine) | NNSPH |
| N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine) | NNSPR |
| N-Nitrosomethylethylamine (Methylethylnitrosamine) | NNSME |
| N-Nitrosopiperidine | NNSPPRD |
| N-Nitrosopyrrolidine | NNSPYRL |
| 5-Nitro-o-toluidine | TLDNONT5 |
| Pentachlorobenzene | PECLBZ |
| Pentachloronitrobenzene (PCNB) | PECLNO2BZ |
| Pentachlorophenol | PCP |
| Phenacetin | PHNACTN |
| Phenanthrene | PHAN |
| Phenol | PHENOL |
| p-Phenylenediamine | ANLNAM4 |
| Polychlorinated biphenyls (PCBs; Aroclors) | PCBS |
| Pronamide | PRONAMD |
| Pyrene | PYR |
| Safrole | SAFROLE |
| 1,2,4,5-Tetrachlorobenzene | C4BZ1245 |
| 2,3,4,6-Tetrachlorophenol | TCP2346 |
| o-Toluidine | TLDNO |
| Toxaphene | TOXAP |
| 2,4,5-Trichlorophenol | TCP245 |
| 0,0,0-Triethyl phosphorothioate | TEPTH |
| sym-Trinitrobenzene | TNB135 |

TABLE VI
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

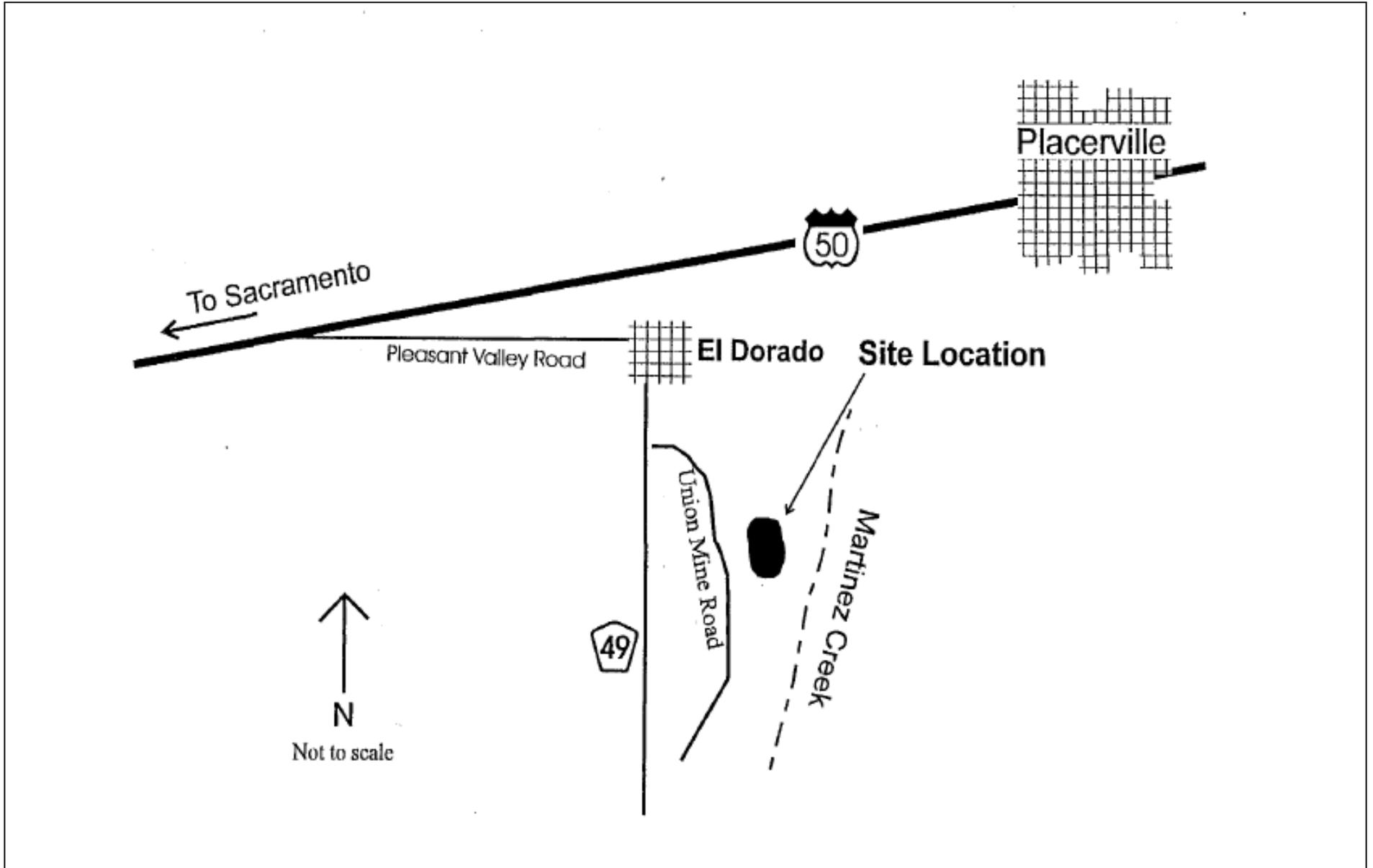
Continued

Chlorophenoxy Herbicides (USEPA Method 8151A):

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

Organophosphorus Compounds (USEPA Method 8141B):

| | |
|--|-----------|
| Atrazine | ATRAZINE |
| Chlorpyrifos | CLPYRIFOS |
| 0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin) | ZINOPHOS |
| Diazinon | DIAZ |
| Dimethoate | DIMETHAT |
| Disulfoton | DISUL |
| Methyl parathion (Parathion methyl) | PARAM |
| Parathion | PARAE |
| Phorate | PHORATE |
| Simazine | SIMAZINE |



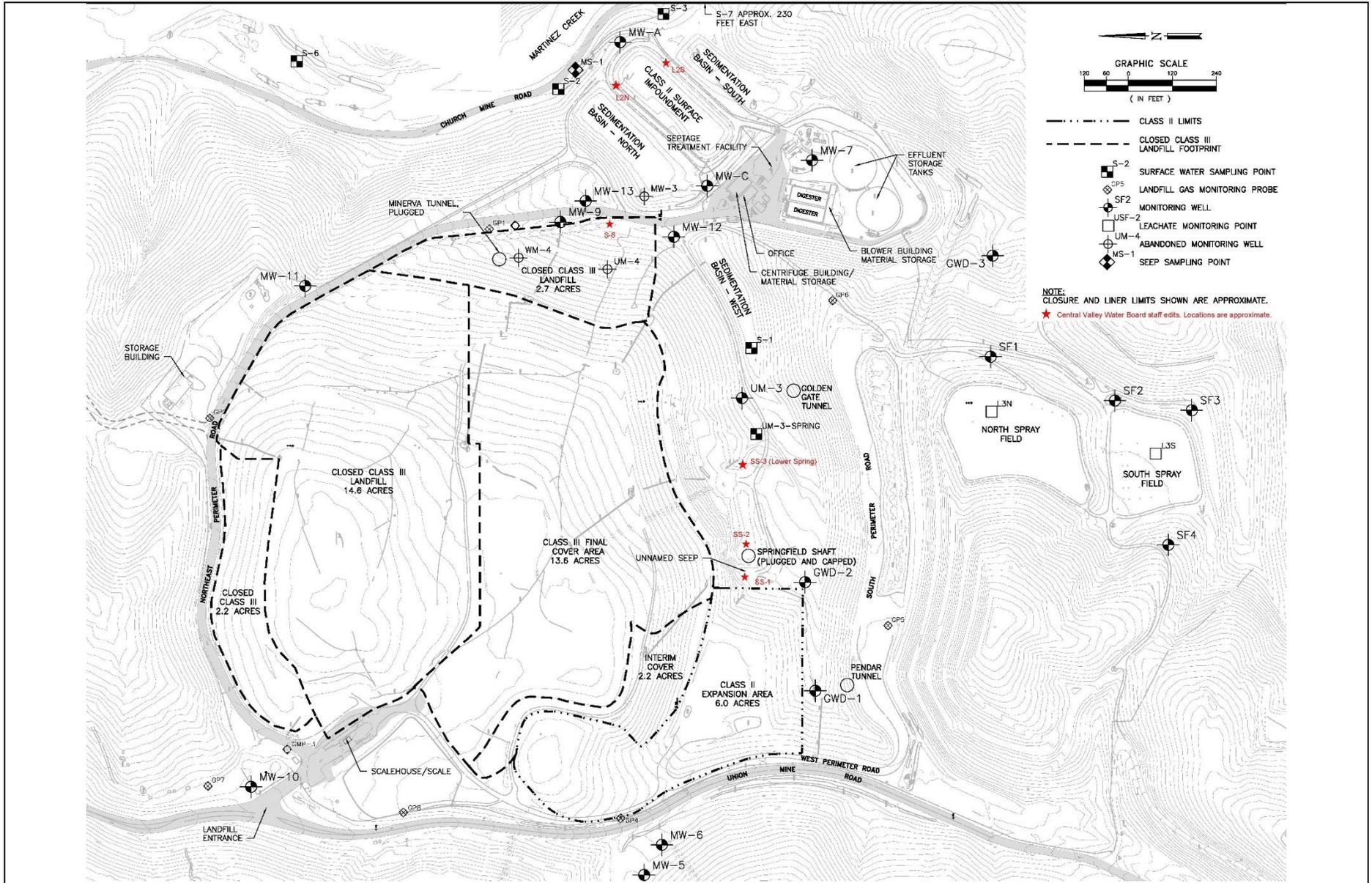
Approximate Scale



Drawing Reference:

SITE LOCATION MAP

El Dorado County
Union Mine Landfill
El Dorado County



Scale: As Shown



Drawing Reference:
 Final-Union Mine Site Plan 3-14-18

SITE PLAN AND MONITORING NETWORK
 El Dorado County
 Union Mine Landfill
 El Dorado County

ORDER R5-2018-0048
EL DORADO COUNTY
UNION MINE LANDFILL
CLASS II LANDFILL, CLOSED CLASS III LANDFILL AND CLASS II SURFACE IMPOUNDMENT
OPERATION, MAINTENANCE, CLOSURE, AND POST-CLOSURE MAINTENANCE
EL DORADO COUNTY

INFORMATION SHEET

In Order No. R5-2018-0048 and its associated Monitoring and Reporting Program (MRP), the Central Valley Regional Water Quality Control Board prescribes updated waste discharge requirements (WDRs) for the Union Mine Landfill (Facility) in El Dorado County, situated approximately 3 miles south of the town of El Dorado. The Facility is owned and operated by El Dorado County (Discharger) and is not open to the general public.

The Facility is comprised of three Waste Management Units (WMUs) in all—two separate units for municipal solid waste (MSW Units), 6 and 35 acres in size, and a single 0.8-acre Surface Impoundment with a capacity of 2 million gallons. The Facility was assessed with an overall Threat to Water Quality (TTWQ) and Complexity (CPLX) rating of 2B. At the same Facility site, the Discharger owns and operates a septage/leachate wastewater treatment plant (WWTP) and spray fields, which are regulated under separate WDRs, to primarily treat the liquid stored in the Surface Impoundment.

The MSW Units have been designated by the Discharger as “Old landfill” for the partially closed landfill WMU and “Expansion area” for the active landfill WMU. Pursuant to Title 27 of the California Code of Regulations (Title 27), the Old landfill has been classified as a “Class III” unit, whereas Expansion area has been classified as “Class II” unit. The surface impoundment has been classified as “Class II”. The instant order incorporates this designation and calls out the landfill WMUs as “Class III Old” and “Class II Expansion”.

The 35.3-acre Class III Old landfill WMU is unlined, constructed over native materials and sited above-grade over some of the mine’s interconnected stopes, shafts and tunnels. This unit no longer accepts wastes and was partially closed in portions since 1997 in accordance with the regulatory requirements at the time of closure. 33.1-acres of this unit was previously closed and 2.2-acres has an interim cover and has not been closed.

- 4.9 acres were closed in 1997 in accordance with CCR Title 23
- 14.6 acres were closed in 1998 in accordance with CCR Title 14
- 13.6 acres were close in 2007 in accordance with CCR Title 27.

The leachate collection and removal system (LCRS) of the Class III Old landfill WMU consists of toe drains consisting of a gravel- filled trench that runs the length of north and northeast perimeter of the Class III Old landfill WMU and the junction (southwest of the Class III old landfill WMU) between the Class III Old and Class II Expansion landfill WMUs. The purpose of the drain is to collect leachate generated at the toe of the Class III landfill and transfer the leachate to the Class II surface impoundment. The LFG extraction system at the closed portion of the Class III Old landfill WMU consists of 23 vertical landfill gas extraction wells, designated EW-1 through EW-23, and the landfill gas piping system. The

extraction landfill gas reports to an enclosed flare and/or to three 70 kilowatt microturbines. The condensate from the landfill gas extraction is discharged to the Class II surface impoundment.

The 6.0-acre Class II Expansion landfill WMU constructed in 1996, is lined with a composite liner system. The Class II Expansion landfill WMU has a LCRS which consists of HDPE pipes that transition to a solid wall HDPE pipe which discharges leachate collected from the Class II surface impoundment. This unit was constructed with an underdrain system to maintain the minimum 5 feet separation from waste to the highest anticipated elevation to underlying groundwater and the underdrain discharges to the unnamed tributary at the site. The Class II landfill Expansion WMU accepts the following wastes: non-hazardous, treated and dewatered sludge from the WWTP and municipal solid waste from onsite facilities.

The two million gallon capacity Class II surface impoundment was constructed in 1992 with a liner system consisting of, top to bottom, geomembrane, two-foot clay liner and two gravel filled leachate collection trenches running the length of the Class II surface impoundment. The leachate collection trenches in the geonet leak detection and collection layer function as leak detection to the Class II surface impoundment liner system. This WMU accepts liquid wastes from following sources:

- Leachate collected from the partially closed Class III Old landfill WMU toe drains,
- Leachate collected from the active Class II Expansion landfill WMU LCRS,
- LFG condensate collected from the LFG recovery system on the partially closed Class III Old landfill WMU,
- Liquid collected from the Class II surface impoundment leak detection and collection layer,
- Runoff from the septage truck washout area, and
- Direct rainfall.

The liquid stored in the Class II surface impoundment is pumped to the onsite WWTP treated along with septic waste, pumped to holding tanks, and then either chlorinated and discharged to the spray fields or not chlorinated and discharged to the El Dorado Irrigation District under separate permit..

Surface water drainage is to Martinez Creek. Martinez Creek is tributary to the North Fork Cosumnes River, which is tributary to the Cosumnes River, thence to the Sacramento-San Joaquin Delta.

This Order implements operation and maintenance requirements for the Class II Expansion landfill WMU and the Class II surface impoundment, closure requirements for the Class II Expansion landfill WMU and remaining Class III Old landfill WMU, and post-closure maintenance requirements for partially closed Class III landfill WMU. Notable revisions to the Facility's WDRs include:

- a) Updated requirements for operation and maintenance of the Class II Expansion Landfill WMU and Class II surface impoundment;
- b) Updated closure requirements for the remaining Class III Old landfill WMU and Class II Expansion landfill WMU,

- c) Updated post-closure maintenance requirements for the partially closed Class III Old landfill WMU,
- d) Revisions to the Facility's Detection Monitoring Program (DMP),
- e) Monitoring requirements for surface discharges from historic mining related features, and
- f) Updates to financial assurances reporting.

MP

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)].

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
FOR
INDUSTRIAL FACILITIES REGULATED BY TITLE 27
(Title 27, § 20005 et seq.)

April 2016

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A. APPLICABILITY

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to Class II surface impoundments, waste piles, and land treatment units that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

B. TERMS AND CONDITIONS

1. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or Standard Provisions and Reporting Requirement, or other order or prohibition issued, reissued, or amended by the Central Valley Water Board or the State Water Board, or intentionally or negligently discharging waste, or causing or permitting waste to be deposited where it is discharged into the waters of the state and creates a condition of pollution or nuisance, is a violation of this Order and the Water Code, which can result in the imposition of civil monetary liability [Wat. Code, § 13350(a)]
2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:

- a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
- a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
 - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
 - c. A change in the type of waste being accepted for disposal; or
 - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].
5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is

made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].

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

C. STANDARD PROHIBITIONS

1. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
 - a. require a higher level of containment than provided by the unit; or
 - b. are 'restricted wastes'; or
 - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].
2. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
3. The discharge of waste to a closed waste management unit is prohibited.
4. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited, except within the treatment zone at a land treatment unit.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

D. STANDARD DISCHARGE SPECIFICATIONS

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].

3. Wastes shall be discharged only into waste management units specifically designed for their containment and/or treatment, as described in this Order.
4. The discharge shall remain within the designated disposal area at all times.
5. The discharge of waste shall not cause a nuisance condition [Wat. Code, § 13050(m)].

E. STANDARD FACILITY SPECIFICATIONS

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
4. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
5. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
6. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
7. The Discharger shall maintain the depth of the fluid in the sump of each waste management unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).

8. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
9. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 2014-0057-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.

F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new Class II waste management units that include the following:
 - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, and access to the LCRS for required annual testing.
 - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
 - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
 - d. Information about the seismic design of the proposed new waste management unit (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
 - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
 - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, sections 21760(b) and 20375(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have

been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].

4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].
5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the waste management unit foundation, final slopes, and containment systems under both static and dynamic conditions throughout the life of the unit [Title 27, § 21750(f)(5)].
10. New Class II Units, other than LTUs and expansions of existing Class II units, shall have a 200 foot setback from any known Holocene fault. [Title 27, § 20250(d)].
11. Liners shall be designed and constructed to contain the fluid, including waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].

13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].
14. A test pad for each barrier layer and any final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
16. The Discharger shall propose an electronic leak location survey of the top liner for any new waste management unit in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
17. Leachate collection and removal systems are required for Class II surface impoundments [Title 27, § 20340(a)].
18. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
19. Leachate collection and removal systems shall be designed and operated to function without clogging through the life of the waste management unit.
20. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].
21. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
22. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
23. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.

24. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new Class II waste management unit, construction of a final cover (for units closed as a landfill), or any other construction that requires Central Valley Water Board staff approval under this Order.
25. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new Class II waste management unit. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
26. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.

G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS

1. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, future land use, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
2. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
3. The final cover of waste management units closed as a landfill shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
4. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
5. All final cover designs shall include a minimum 1-foot thick erosion resistant vegetative layer or a mechanically erosion-resistant layer [Title 27, § 21090(a)(3)(A)(1 & 2)].

6. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
7. The Discharger shall design storm water conveyance systems for Class II units that are closed as a landfill for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. Construction or repair of a final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
9. Within **30 days** of completion of 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 units that are closed as a landfill shall be maintained in accordance with an approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
10. The post-closure maintenance period for units closed as a landfill shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].
11. The Discharger shall periodically inspect and identify problems with the final cover including areas that require replanting, erosion, areas lacking free drainage, and any areas damaged by equipment operations [Title 27, § 21090(a)(4)(B)].
12. The Discharger shall repair any cover promptly in accordance with a cover repair plan to be included in the final post-closure maintenance plan [Title 27, § 21090(a)(4)(C)].

H. STANDARD FINANCIAL ASSURANCE PROVISIONS

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

I. STANDARD MONITORING SPECIFICATIONS

1. The water quality monitoring program shall include appropriate and consistent sampling and analytical procedures and methods designed to ensure that

monitoring results provide a reliable indication of water quality at all monitoring points and background monitoring points [Title 27, § 20415(e)(4)].

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

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

8. For any given monitored medium, the samples taken from all monitoring points and background monitoring points to satisfy the data analysis requirements for a given reporting period shall all be taken **within a span not to exceed 30 days**, unless a longer time period is approved, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. Specific methods of collection and analysis must be identified. Sample collection, storage, and analysis shall be performed according to the most recent version of USEPA Methods, such as the latest editions, as applicable, of: (1) Methods for the Analysis of Organics in Water and Wastewater (USEPA 600 Series), (2) Test Methods for Evaluating Solid Waste (SW-846, latest edition), and (3) Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020), and in accordance with the approved Sample Collection and Analysis Plan. Appropriate sample preparation techniques shall be used to minimize matrix interferences.
9. If methods other than USEPA-approved methods or Standard Methods are used, or there is a proposed alternant USEPA method than the one listed in the MRP, the proposed methodology shall be submitted for review and approval prior to use, including information showing its equivalence to the required method.
10. The **methods of analysis and the detection limits** used must be appropriate for the expected concentrations. For the monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., "trace" or "ND") in data from background monitoring points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
11. The laboratory reporting limit (RL) for all reported monitoring data shall be set no greater than the practical quantitation limit (PQL).
12. **"Trace" results** - results falling between the MDL and the PQL - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. Laboratory data shall not be altered or revised by the Discharger. If the Discharger observes potential lab errors, it shall identify the issue in the monitoring report and shall describe steps that will be taken to prevent similar errors in the future.
14. **MDLs and PQLs** shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively

interference-free water, laboratory-derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs. MDLs and PQLs shall be reported.

15. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived MDL/PQL values, the results shall be flagged in the laboratory report accordingly, along with estimates of the detection limit and quantitation limit actually achieved. **The MDL shall always be calculated such that it represents the lowest achievable concentration associated with a 99% reliability of a nonzero result.** The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.
16. All **QA/QC data** shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, an explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and signature of a responsible person from the laboratory. **Sample results shall be reported unadjusted for blank results or spike recoveries.** In cases where contaminants are detected in QA/QC samples (i.e., field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged, but the analytical results shall not be adjusted.
17. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
18. The sampling interval of each monitoring well shall be appropriately screened and fitted with an appropriate filter pack to enable collection of representative groundwater samples [Title 27, § 20415(b)(4)(B)].
19. All borings are to be logged during drilling under the direct supervision of a registered geologist or registered civil engineer with expertise in stratigraphic well logging [Title 27, § 20415(e)(2)].
20. Soils are to be described according to the Unified Soil Classification System [Title 27, § 20415(e)(2)(A)]. Rock is to be described in a manner appropriate for the purpose of the investigation [Title 27, § 20415(e)(2)(B)].

21. The Discharger shall submit a work plan for review and approval at least **60 days** prior to installation or abandonment of groundwater monitoring wells.
22. The Discharger shall provide Central Valley Water Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation or abandonment of monitoring devices.
23. The water quality protection standard shall consist of the constituents of concern (COC), concentration limits, and the point of compliance. The water quality protection standard shall apply during the active life of the waste management unit, closure period, post-closure maintenance period, and any compliance period under Title 27, section 20410 [Title 27, § 20390].
24. The point of compliance at which the water quality protection standard applies is a vertical surface located at the hydraulically downgradient limit of the waste management unit that extends through the uppermost aquifer underlying the unit [Title 27, § 20405).
25. The compliance period is the minimum period of time during which the Discharger shall conduct a water quality monitoring program and is the number of years equal to the active life of the waste management unit plus the closure period [Title 27, § 20410(a)].
26. The groundwater monitoring system shall include a sufficient number of monitoring points, installed at appropriate locations, to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the waste management unit [Title 27, § 20415(b)(1)(A)].
27. The Detection Monitoring Program shall include a sufficient number of monitoring points, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater passing the point of compliance to allow the detection of a release from the waste management unit [Title 27, § 20415(b)(1)(B)1.].
28. Additional monitoring points shall be added as necessary to provide the best assurance of the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)2.].
29. The Detection Monitoring Program shall also include a sufficient number of monitoring points installed at appropriate depths and locations to yield groundwater samples from other aquifers or perched zones not already monitored to provide the **earliest possible detection** of a release from the waste management unit [Title 27, § 20415(b)(1)(B)3. and 4., and §20420(b)].

30. A surface water monitoring system shall be established to monitor each surface water body that could be affected by a release from the waste management unit [Title 27, § 20415(c)].
31. An unsaturated zone monitoring system shall be established for each waste management unit [Title 27, § 20415(d)].
32. The Discharger shall notify Central Valley Water Board staff within **seven days** if fluid is detected in a previously dry LCRS, unsaturated zone monitoring system, or if a progressive increase is detected in the volume of fluid in a LCRS [Title 27, § 21710(c)(3)].
33. Driller's logs for all monitoring wells shall to be submitted to the Central Valley Water Board and the Department of Water Resources [Wat. Code, § 13751 and Title 27, § 20415(b)(3)].
34. Groundwater elevation, temperature, electrical conductivity, turbidity, and pH are to be accurately measured at each well each time groundwater is sampled [Title 27, § 20415(e)(13)].
35. The groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation being monitored shall be determined at least quarterly [Title 27, § 20415(e)(15)].
36. The Discharger shall graph all analytical data from each monitoring point and background monitoring point and shall submit the graphs to the Central Valley Water Board annually [Title 27, § 20415(e)(14)].
37. For each waste management unit, the Discharger shall collect all data necessary for selecting appropriate data analysis methods for establishing background values for each constituent of concern and for each monitoring parameter [Title 27, § 20420(c)]. The Discharger shall propose a data analysis method that includes a detailed description of the criteria to be used for determining "measurably significant" (as defined in Title 27, section 20164) evidence of a release from the waste management unit and determining compliance with the water quality protection standard [Title 27, § 20415(e)(6) and (7)].
38. For statistical analysis of data, the Discharger shall use one of the methods described in Title 27, section 20415(e)(8)(A)-(E). A non-statistical data analysis method can be used if the method can achieve the goal of the particular monitoring program at least as well as the most appropriate statistical method [Title 27, § 20415(e)(8)]. The Discharger shall use a statistical or nonstatistical data analysis method that complies with Title 27, section 20415(e)(7, 8, 9, and 10), to compare the concentration of each constituent of concern or monitoring parameter with its respective background concentration to determine whether

there has been a measurably significant evidence of a release from the waste management unit. For any given monitoring point at which a given constituent has already exhibited a measurably significant indication of a release at that monitoring point, the Discharger may propose to monitor the constituent, at that well, using a concentration-versus-time plot.

39. The Discharger may propose an alternate statistical method [to the methods listed under Title 27, section 20415(e)(8)(A-D)] in accordance with Title 27, section 20415(e)(8)(E), for review and approval.
40. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27, section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs or an approved Sample Collection and Analysis Plan for routine laboratory operating conditions that are available to the facility. The Discharger's technical report (Sample Collection and Analysis Plan and/or Water Quality Protection Standard Report), pursuant to Title 27, section 20415(e)(7), shall consider the PQLs listed in Appendix IX, Article 19 to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or downgradient monitoring point, an indication that falls between the MDL and the PQL for that constituent (hereinafter called a "trace" detection) shall be identified and used in appropriate statistical or non-statistical tests. Nevertheless, for a statistical method that is compatible with the proportion of censored data (trace and ND indications) in the data set, the Discharger can use the laboratory's concentration estimates in the trace range (if available) for statistical analysis, in order to increase the statistical power by decreasing the number of "ties".
41. The water quality protection standard for organic compounds which are not naturally occurring and not detected in background groundwater samples shall be taken as the detection limit of the analytical method used (e.g., USEPA methods 8260 and 8270).
42. Alternate statistical procedures may be used for determining the significance of analytical results for common laboratory contaminants (i.e., methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) if part of an approved water quality protection standard. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Central Valley Water Board staff.
43. **Confirmation of Measurably Significant Evidence of a Release.** Whenever a constituent is detected at a detection monitoring point at a concentration that exceeds the concentration limit from the water quality protection standard, the

Discharger shall conduct verification sampling to confirm if the exceedance is due to a release or if it is a false-positive (unless previous monitoring has already confirmed a release for that constituent at that monitoring point). An exceedance of the concentration limit from the water quality protection standard is considered measurably significant evidence of a release that must be either confirmed or denied. There are two separate verification testing procedures:

- a. Standard Monitoring Specification I.44 provides the procedure for analytes that are detected in less than 10% of the background samples such as non-naturally occurring constituents like volatile organic compounds; and
- b. Standard Monitoring Specification I.45 provides the procedure for analytes that are detected in 10% or greater of the background samples such as naturally occurring constituents like chloride.

44. Verification Procedure for Analytes Detected in Less than 10% of

Background Samples. The Discharger shall use the following non-statistical method for all analytes that are detected in less than 10% of the background samples. The non-statistical method shall be implemented as follows:

- a. **Initial Determination of Measurably Significant Evidence of a Release.** Identify each analyte in the **current** detection monitoring point sample that exceeds either its respective MDL or PQL, and for which a release has not been previously confirmed. The Discharger shall conclude that the exceedance provides a preliminary indication of a release or a change in the nature or extent of the release, at that monitoring point, if **either**:
 - 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
 - 2) The data contains one or more analyte that equals or exceeds its PQL.
- b. **Discrete Retest** [Title 27, § 20415(e)(8)(E) and § 20420(j)(1-3)]:
 - 1) In the event that the Discharger or Central Valley Water Board staff concludes (pursuant to paragraph I.44.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the monitoring point where the release is preliminarily indicated and analyze them for the constituents that caused the need for the retest.
 - 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall conclude that measurably significant evidence of a release is confirmed if (not including the original sample) two or more

analytes equal or exceed their respective MDLs or if one or more analyte equals or exceeds its PQL. The Discharger shall then:

- a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
- b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
- c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

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

- a. **Initial Determination of Measurably Significant Evidence of a Release.**
The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds the concentration limit for that constituent, the Discharger shall conclude that there 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.45.a., above) that there is a preliminary indication of a release, then the Discharger shall **immediately** notify Central Valley Water Board staff by phone or e-mail and, within **30 days** [Title 27, § 20415(e)(8)(E)(3)] of such indication, the Discharger shall implement a verification procedure/retest option, in accordance with Title 27, sections 20415(e)(8)(E) and 20420(j)(2). The verification procedure shall include either a single “composite” retest (i.e., a statistical analysis that augments and reanalyzes the data from the monitoring point that indicated a release) or shall consist of at least two “discrete” retests

(i.e., statistical analyses each of which analyzes only newly-acquired data from the monitoring point that indicated a release) [Title 27, § 20415(e)(8)(E)]. The Discharger may use an alternate method previously approved by the Central Valley Water Board and included in the Monitoring and Reporting Program. The verification procedure shall comply with the requirements of Title 27, section 20415(e)(8)(E) in addition to the performance standards of Title 27, section 20415(e)(9). The retest samples shall be collected from the monitoring point where the release is preliminarily indicated and shall be analyzed for the constituents that caused the need for the retest. For any indicated monitoring parameter or constituent of concern, if the retest results of one or more of the retest data suites confirm the original indication, the Discharger shall conclude that measurably significant evidence of a release has been confirmed.

- 2) **Confirmation of a Release.** As soon as the retest data are available, the Discharger shall evaluate the results pursuant to paragraph I.45.b.1, above and shall:
 - a) **Immediately** verbally notify the Central Valley Water Board whether or not the retest confirmed measurably significant evidence of a release for the analyte at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of the verbal notification; and
 - b) Carry out the requirements of Section J, **RESPONSE TO A RELEASE** if a release has been confirmed.
 - c) Add any five-year analyte that is confirmed per this method to the monitoring parameter list such that it is monitored during each regular monitoring event.

46. **Physical Evidence of a Release.** If the Discharger determines that there is a significant **physical** evidence of a release, the Discharger shall immediately verbally notify Central Valley Water Board staff and provide written notification **by certified mail within 7 days** of such determination, and within **90 days** shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program [Title 27, § 20385(a)(3) and § 20420(l)(1) & (2)].

J. RESPONSE TO A RELEASE

1. **Measurably Significant Evidence of a Release Has Been Confirmed.** If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.44 or I.45, then the Discharger shall:
 - a. **Immediately** sample all monitoring points in the affected medium at that waste management unit and determine the concentration of all monitoring parameters and constituents of concern for comparison with established concentration limits. Because this constituent of concern scan does not involve statistical testing, the Discharger will need to collect and analyze only a single water sample from each monitoring point in the affected medium [Title 27, § 20420(k)(1)].
 - b. **Within 90 days** of confirming measurably significant evidence of a release, the Discharger shall submit an amended report of waste discharge to establish an Evaluation Monitoring Program meeting the requirements of Title 27, sections 20420(k)(5)(A-D), including but not limited to the results of sampling pursuant to paragraph J.1.a, above. The Evaluation Monitoring Program shall be designed for the collection and analysis of all data necessary to assess the nature and extent of the release and to determine the spatial distribution and concentration of each constituent throughout the zone affected by the release [Title 27, § 20420(k)(5) and § 20425(b)].
 - c. **Within 180 days** of confirming measurably significant evidence of a release, the Discharger shall submit to the Central Valley Water Board an 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)].
 - d. If the Discharger confirms that there is measurably significant evidence of a release from the waste management unit at any monitoring point, the Discharger may attempt to demonstrate that a source other than the waste management unit caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in groundwater, surface water, or the unsaturated zone. The Discharger may make a demonstration pursuant to Title 27, section 20420(k)(7) in addition to or in lieu of submitting both an amended report of waste discharge or an engineering feasibility study; however, the Discharger is not relieved of the requirements and due dates of Title 27, sections 20420(k)(6) & (7) unless Central Valley Water Board staff agree that the demonstration successfully shows that a source other than the

waste management unit caused the evidence of a release or that the evidence resulted from error in sampling, analysis, or statistical evaluation or from natural variation in groundwater, surface water, or the unsaturated zone. In order to make this demonstration, the Discharger shall notify the Central Valley Water Board by certified mail of the intent to make the demonstration **within seven days** of determining measurably significant evidence of a release, and shall submit a report **within 90 days** of determining measurably significant evidence of a release [Title 27, § 20420(k)(7)].

- e. **Within 90 days** of the date that the Evaluation Monitoring Program from paragraph J.1.b is approved (the date is it established), the Discharger shall complete and submit the following:
 - i) **Results and Assessment for the Evaluation Monitoring Program.** A report with the results and assessment based on the approved Evaluation Monitoring Program [Title 27, § 20425(b)].
 - ii) **Updated Engineering Feasibility Study.** An 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)].

K. GENERAL PROVISIONS

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the appropriate Central Valley Water Board office by telephone **as soon as** it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing **within two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall describe the measures being taken to prevent recurrences and shall include a timetable for corrective actions.
2. All reports and transmittal letters shall be signed by persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president.
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor.

- c. For a municipality, state, federal or other public agency: by either a principal executive officer or ranking elected or appointed official.
 - d. A duly authorized representative of a person designated in a, b or c above if:
 - 1) The authorization is made in writing by a person described in a, b, or c of this provision;
 - 2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a Unit, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - 3) The written authorization is submitted to the Central Valley Water Board.
 - e. Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”
3. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the State resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature, extent, and impact of the noncompliance.
 4. The owner of the waste management facility shall have the continuing responsibility to assure protection of waters of the state from discharged wastes and leachate generated by discharged waste during the active life, closure, and any post-closure maintenance period of the waste management units and during subsequent use of the property for other purposes.
 5. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be regarded as a defense for the Discharger’s violations of this Order.
 6. The Discharger shall notify the Central Valley Water Board of a material change in; the types, quantity, or concentrations of wastes discharged; site operations and features; or proposed closure procedures, including changes in cost

estimates. This notification shall be given a reasonable time before the changes are made or become effective. No changes shall be made without Central Valley Water Board approval following authorization for closure pursuant to the site Notification of Closure [Title 27, § 21710(a)(4)].

7. The Discharger shall maintain legible records of the volume and type of each waste discharged at each waste management unit or portion of a unit, and the manner and location of discharge. Such records shall be maintained by the Discharger until the beginning of the post-closure maintenance period. These records shall be on forms approved by the State Water Board or Central Valley Water Board and shall be maintained at the waste management facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the State Water Board or Central Valley Water Board at any time during normal business hours. At the beginning of the post-closure maintenance period, copies of these records shall be sent to the Central Valley Water Board [Title 27, § 21720(f)].
8. In the event of any change in landowner or the operator of the waste management facility, the Discharger shall notify the succeeding owner or operator in writing of the existence of this Order. A copy of that notification shall be sent to the Central Valley Water Board.
9. In the event of any change of ownership or responsibility for construction, operation, closure, or post-closure maintenance of the waste discharge facilities described in this Order, the Discharger shall notify the Central Valley Water Board prior to the effective date of the change and shall include a statement by the new Discharger that construction, operation, closure, or post-closure maintenance will be in compliance with this Order and any revisions thereof [Title 27, § 21710(c)(1)].
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Central Valley Water Board requesting transfer of the Order within **14 days** of assuming ownership or operation of this facility. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory requirements contained in General Provision K.2 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer of this Order shall be approved or disapproved by the Central Valley Water Board.

L. STORM WATER PROVISIONS

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

2. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping under the precipitation conditions for the unit [Title 27, § 20365(a)].
3. Precipitation on Class II waste piles which is not diverted by covers or drainage control systems shall be collected and managed through the LCRS, which shall be designed and constructed to accommodate the precipitation conditions for each class unit [Title 27, § 20365(b)].
4. Diversion and drainage facilities shall be designed, constructed, and maintained to [Title 27, § 20365(c)]:
 - a. Accommodate the anticipated volume of precipitation and peak flows from surface runoff and under the precipitation conditions for the waste management unit.
 - b. Effectively divert sheet flow runoff laterally, via the shortest distance, into the drainage and collection facilities.
 - c. Prevent surface erosion through the use of energy dissipators where required to decrease the velocity of runoff, slope protection, and other erosion control measures where needed to prevent erosion.
 - d. Control and intercept run-on, in order to isolate uncontaminated surface waters from water that might have come into contact with waste.
 - e. Take into account:
 - i) For closed waste management units and for closed portions of units, the expected final contours of the closed unit, including its planned drainage pattern.
 - ii) For operating portions of waste management units other than surface impoundments, the unit's drainage pattern at any given time.
 - iii) The possible effects of the waste management unit's drainage pattern on and by the regional watershed.
 - iv) The design capacity of drainage systems of downstream and adjacent properties by providing for the gradual release of retained water downstream in a manner which does not exceed the expected peak flow rate at the point of discharge if there were no waste management facility.
 - f. Preserve the system's function. The Discharger shall periodically remove accumulated sediment from the sedimentation or detention basins as needed to preserve the design capacity of the system.

5. Collection and holding facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm or otherwise managed to maintain the design capacity of the system [Title 27, § 20365(d)].
6. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
7. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation [Title 27, § 20365(f)].
8. Any drainage layer in a final cover shall be designed and constructed to intersect with the final drainage system for the waste management unit in a manner promoting free drainage from all portions of the drainage layer [Title 27, §20365(f)].