

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2013-0013

WASTE DISCHARGE REQUIREMENTS  
FOR  
SAN JOAQUIN COUNTY DEPARTMENT OF PUBLIC WORKS  
CORRAL HOLLOW SANITARY LANDFILL  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
POST-CLOSURE MAINTENANCE,  
AND CORRECTIVE ACTION  
SAN JOAQUIN COUNTY

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

1. The San Joaquin County Department of Public Works (hereinafter Discharger) owns and operates the closed Class III Corral Hollow Sanitary Landfill (the "Facility"), which is approximately 5 miles south of the city of Tracy, in Section 18, T3S, R5E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The landfill was operated by the City of Tracy from 1946 until 1991. The Discharger has operated the landfill after that time. In 2007, municipal solid waste from the Facility was determined to exist on approximately 0.3 acres of California Department of Transportation (Caltrans) property. The Facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (hereafter referred to as "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
2. The closed facility is on a 58-acre property at 31130 Corral Hollow Road, south of the city of Tracy. The landfill was closed in 1996. The closed landfill area at that time consisted of one unlined waste management unit covering approximately 43 acres. In 2005, the Discharger discovered additional municipal waste outside of the original landfill area. In 2007, the Discharger determined that an additional 1.6 acres of municipal solid waste existed outside of the original closed landfill area. Therefore, this Order addresses closure and postclosure maintenance of approximately 44.6 acres of municipal solid waste. The amended landfill area is shown in Attachment B, which is incorporated herein and made part of this Order by reference. The Facility is comprised of Assessor's Parcel Numbers (APN) 253-030-005, 253-030-006, and 253-030-007.
3. On 6 October 2011, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. This document was revised on 26 October 2012. The information in the revised ROWD/JTD has been used in revising these waste discharge requirements (WDRs). The ROWD contains the

applicable information required in Title 27. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including:

- a. Addendum to the closure and postclosure maintenance plan to include extension of closure cover over approximately 1.6 acres of landfill waste discovered outside of previously covered refuse area. The total closed area will increase from 43 acres to approximately 44.6 acres;
  - b. Expansions of landfill gas collection well network into the closure cover extension project area. The landfill gas collection well network will be expanded from 44 gas extraction wells to 46 gas extraction wells by installing two new extraction wells in the adjacent Caltrans owned property;
  - c. Evaluation and delineation of the extent of groundwater contamination plume originating from landfill. The time schedule for completion of this action will be required under a separate Order; and
  - d. Implementation of corrective action to remediate discharge of waste constituents to receiving waters. The time schedule for completion of this action will be required under a separate Order.
4. On 26 September 1994, the Central Valley Water Board issued Order No. 94-259 classifying the unlined landfill waste management unit at the Facility as a Class III unit for the discharge of municipal solid waste. This Order continues to classify the landfill units as Class III units in accordance with Title 27.
5. The existing landfill unit authorized by this Order is described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner/LCRS<sup>1</sup></u>	<u>Components<sup>2</sup></u>	<u>Unit Classification &amp; Status</u>
#1	43 acres	unlined		Class III, closed
Extension of Unit# 1 <sup>3</sup>	1.6 acres	unlined		Class III, closed

<sup>1</sup> LCRS – Leachate collection and removal system

<sup>2</sup> All liner systems are composite liner systems unless otherwise noted

<sup>3</sup> The existing landfill Unit#1 is extended 1.6 acres to address waste discovered outside of original landfill footprint. See Finding# 2 for more information.

6. On-site facilities at the Corral Hollow Sanitary Landfill currently include: a landfill closure cover, shallow and deep aquifer groundwater monitoring networks, an unsaturated

(vadose) zone soil gas sampling network, an active landfill gas extraction system, and a landfill gas flare.

7. 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.
8. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) R5-2013-0013 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.
9. 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**

10. The Facility began operations as a solid waste disposal site in the 1950's. The landfill was operated by the City of Tracy from 1946 until 1991. The Discharger began operating the landfill in 1991 as a Class III landfill. The Discharger ceased accepting waste in 1995 and formal closure was completed in 1996.
11. On 26 September 1994, the Central Valley Water Board issued Order No. 94-259 classifying the landfill waste management unit at the Facility as a Class III unit for the discharge of municipal solid waste. The additional 1.6 acre refuse area that was

identified in 2007 was determined to contain municipal solid waste and is considered an extension of the unlined WMU. This Order continues to classify extended landfill unit as a Class III unit in accordance with Title 27.

## SITE DESCRIPTION

12. The Corral Hollow Sanitary Landfill is a closed, Class III, municipal solid waste landfill in San Joaquin County. The landfill was operated by the City of Tracy from 1946 until 1991. Since 1991 it has been operated and maintained by San Joaquin County Department of Public Works. Municipal solid waste at the Facility resides on San Joaquin County and Caltrans property. The landfill is on the alluvial fan at the mouth of Corral Hollow Creek at the base of the eastern side of the Coast Range. The nearest surface water is Corral Hollow Creek, which is adjacent to the southeastern boundary of the landfill.
13. Land uses within one mile of the Facility include transportation (interstate freeway) to the north, grazing to the south, agriculture and low density housing, and transportation (interstate freeway) to the east, and grazing to the west. A recent groundwater well survey conducted by the County indicated that there is one active public (Well# 21), two active industrial (Well# 22 and #25), and one active irrigation (Well# 12) supply wells within one mile of the Facility as shown in Attachment C.
14. Past drilling and geologic investigations at the site suggest that the landfill is underlain by recent alluvium, Quaternary stream terrace deposits, and relatively unconsolidated sedimentary rock of the Plio-Pleistocene age Turlock Formation. Lithologies within these three units are similar, and include assemblages of clays, silts, sands, and gravels. The Corcoran Clay member of the Corcoran Formation (also referred to as the Turlock Formation) has been identified in exploratory boreholes drilled around the northern third of the landfill. The Corcoran Formation is characterized as moderately to high plastic clays, and mixtures of clays with silts, sands, and gravels.
15. Based on a site-specific seismic analysis, the controlling maximum probable earthquake (MPE) for the site is a moment of magnitude 6.9 event along the Coast Range Central Valley fault, segment 7 (GV7) at a closest rupture distance of 1.2 kilometers from the site. It is estimated that a MPE event would produce a peak ground acceleration of 0.56 g at the site with a return period of 100 years.
16. The Facility receives an average of 12.03 inches of precipitation per year and the mean pan evaporation is 97.48 inches per year as measured at the Tracy Pumping Plant Station.
17. The 100-year, 24-hour precipitation event for the Facility is estimated to be 3.53 inches, based on the National Oceanic and Atmospheric Administration (NOAA 2012) Atlas 14, Volume 6, Version 2 for nearby Tracy Airport.

18. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM), Community-Panel Number 06077C0740F effective 16 October 2009. The Discharger submitted a letter dated 2 November 2012 certifying that the Facility complies with Subtitle D requirements.
19. Storm water sedimentation basins are located northwest and southeast of the landfill as shown on Attachment B. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months. The southeast sedimentation basin during overflow conditions can discharge to Corral Hollow Creek. The Facility is permitted (WDID# 5S391005575) to discharge storm water to surface waters under a separate WDRs 97-03-DWQ Order, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* (NPDES General Permit CAS000001).

### **SURFACE WATER AND GROUNDWATER CONDITIONS**

20. The *Water Quality Control Plan for Sacramento and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the basin.
21. Surface water drainage from the site is to a retention pond or to other lower elevation features on site. Overflow from these features, if it were to occur, discharges to Corral Hollow Creek, a tributary of the San Joaquin River. Corral Hollow Creek is an intermittent stream that flows toward the San Joaquin River. However, the flow ceases during summer months into the alluvium south of Tracy.
22. The designated beneficial uses of the San Joaquin River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; and water contact recreation.
23. The first encountered groundwater ranges from about 12 feet to 65 feet below the native ground surface. This shallow perched aquifer is found beneath the northeast and east side of the landfill property. This aquifer is not found west of the landfill. Groundwater elevations range from about 228 feet MSL to 237 feet MSL.
24. Monitoring data indicate upgradient groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 360 and 1730 micromhos/cm, with total dissolved solids (TDS) ranging between 64 and 811 milligrams per liter (mg/L).
25. The direction of shallow perched groundwater flow varies due to groundwater mounding at groundwater monitoring well SB-1. However, there are indications of shallow groundwater flowing northeasterly from the Facility due to groundwater elevation monitoring in wells MW-9A through MW-11A located offsite. The estimated average

groundwater gradient is approximately 0.04 feet per foot. The estimated average groundwater velocity is 11.16 feet per year.

26. A deep aquifer exists from about 300 feet to 350 feet below the native ground surface. Groundwater elevations range from about -39 feet MSL to -57 feet MSL.
27. Monitoring data indicate upgradient groundwater quality in the deep aquifer groundwater has EC ranging between 316 and 1624 micromhos/cm, with TDS ranging between 951 and 1100 mg/L.
28. The direction of deep aquifer groundwater flow is generally toward the northeast. The estimated average groundwater gradient is approximately 0.005 feet per foot. The estimated average groundwater velocity is 1.39 feet per year.
29. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, and industrial supply.

#### **GROUNDWATER AND UNSATURATED ZONE MONITORING**

30. The existing groundwater monitoring system includes seven wells screened in the shallow, perched aquifer on the eastern side of the landfill. These wells are identified as SB-1, MW-4, MW-5, MW-8, MW-9A, MW-10A, and MW-11A. MW-9A through MW-11A were installed in 2012 as evaluation monitoring wells to determine the extent of off-property shallow groundwater impacts. Three deep aquifer wells were also screened below 250 feet bgs, MW-1, MW-2, and MW-3. However, groundwater has not been present in these wells since 1990. In 2003 two replacement deep aquifer wells MW-6 and MW-7 were installed at 385 and 330 feet bgs respectively. Currently, the Discharger's detection monitoring program for shallow and deep groundwater monitoring at the landfill meets the requirements contained in Title 27. However, the monitoring system may require additional wells as more groundwater evidence of impacts is developed. Attachment B shows the locations of the groundwater monitoring wells.
31. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, sections 20415(b)(1)(B)2-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
32. 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.

33. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of waste from a Unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.
34. For a naturally occurring constituent of concern, the Title 27 requires concentration limits for each constituent of concern be determined as follows:
  - a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
  - b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).
35. The Discharger submitted a Water Quality Protection Standard (WQPS) report on 29 December 1993 proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed to use intrawell data analysis to calculate tolerance limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP R5-2013-0013.
36. The existing unsaturated zone monitoring consists of seven landfill gas monitoring wells GW-1 through GW-7, located along the perimeter of the landfill. Each gas monitoring well is monitored through one of three probes installed at shallow, middle, and deep elevations for fixed gases quarterly. Gas samples are collected from one probe at each well and analyzed for volatile organic compounds (VOCs) semiannually. VOCs are regularly detected in landfill gas (LFG) samples collected and are partitioning into groundwater beneath the site. All shallow groundwater wells have been affected by LFG emanating from the WMU.

## **GROUNDWATER CONDITIONS (OR DEGRADATION AND CORRECTIVE ACTION)**

37. In the fourth quarter of 1991, VOCs (Trichlorofluoromethane and Tetrachloroethene) were first detected in groundwater samples collected from MW-5 (shallow aquifer), and were confirmed in February 1992. In 1995, a corrective action plan (CAP) was implemented which included the closure and final cover construction for the landfill.
38. In 1996, closure was complete, including the installation of LFG monitoring wells. Monitoring of these wells indicated combustible gas above the regulatory limit of 5%.
39. The fourth quarter 2000 monitoring results showed the concentration of PCE was 5.56 µg/l, while the concentration of vinyl chloride was 0.576 µg/l. Other VOCs detected in the fourth quarter of 2000 include trichlorofluoromethane, dichlorodifluoromethane, acetone, benzene, chloroform, 1,1-dichloroethane, cis-1,2-dichloroethylene, 1,2-dichloropropane, methylene chloride, trichloroethylene, methyl tert-butyl ether (MTBE), and o-xylene. Other constituents noted to have an increasing trend at monitoring well MW-5 were electrical conductivity, total dissolved solids, and chloride.
40. An evaluation of concentrations of VOC compounds in landfill gas at the Corral Hollow Sanitary Landfill indicated that the impact to groundwater may be the result of diffusion of VOCs from the gaseous phase to shallow groundwater (The IT Group, July 2000).
41. In 2001, a LFG collection system was installed as a corrective action (source removal) to prevent further VOC impacts, as well as to prevent offsite migration of LFG. Effectiveness of a LFG system is indicated by the absence of landfill gas at the perimeter monitoring wells and prevention of further VOC impacts.
42. In 2003 deep-aquifer monitoring wells MW-6 and MW-7 were installed to replace MW-1, MW-2, and MW-3 since deep groundwater levels dropped and these three wells went dry. Also, an investigation of off-site contamination and the effect on water quality parameters in MW-4 was initiated due to an increasing trend in Nitrate as Nitrogen and a decreasing trend in pH.
43. In late 2003 the drainage ditch adjacent to the eastern access road was improved to reduce ponding and minimize infiltration along the ditch.
44. In September 2005, the County investigated to determine if refuse was present below the drainage ditch, the access road, and east of the road at the eastern edge of the landfill. Refuse was found below the ditch and the final closure cover was found not to extend to the ditch.
45. In early 2006, improving trends in water quality at MW-4 were noted, apparently beginning in late 2004. The County believes that this is the result of improvements completed in late 2003 to the drainage ditch along the east side of the landfill that eliminated ponding.

46. In February 2006, CalRecycle (previously named the CIWMB) required additional investigation of the closure cap and refuse on the eastern edge of the landfill footprint.
47. In March 2006, the County formally submitted the results of the investigation and a proposed plan to upgrade and extend the closure cap adjacent to the access road to the Local Enforcement Agency (LEA) and CalRecycle.
48. In October 2006, the County proposed a Phase 2 investigation of the extent of closure cap, incorporating comments from the LEA and CalRecycle.
49. In December 2006, Central Valley Water Board staff sent a Notice of Violation for VOCs in groundwater at monitoring well MW-5 (present since 1991), and directed the County to perform evaluation monitoring.
50. In mid-January 2007, the County submitted a revised Phase 2 plan to further define the edge of closure cap and the extent of refuse along the eastern edge of the landfill, addressing the comments from CalRecycle and Central Valley Water Board staff.
51. In late January 2007, the County submitted a proposal to do remedial action along the eastern edge of the landfill footprint in response to the Notice of Violation received in December 2006. On 9 March 2007, Central Valley Water Board staff issued a second violation letter for the VOCs present in groundwater since 1991 at monitoring well MW-5.
52. In March 2007, the County submitted an Evaluation Monitoring Program (EMP) work plan in response to the directive by Central Valley Water Board staff to further assess the nature and extent of potential offsite migration of landfill gas in the vadose zone, and VOCs and chloride in the shallow aquifer. The EMP included the installation of two permanent groundwater monitoring wells, and groundwater and vadose zone soil gas sampling at nine temporary borings in the shallow aquifer outside County property.
53. In a letter dated 11 April 2007 Board staff approved the EMP. However, the County requested a stay to the EMP in lieu of additional corrective action. The County stated that LFG was the cause of the continued groundwater impacts and that additional extraction wells installed adjacent to the northeastern property boundary would likely remediate the impacts. Central Valley Water Board staff approved the stay to the EMP.
54. On 16 August 2007, in conjunction with Caltrans, the County performed a cursory investigation of the Caltrans property adjacent to the landfill. Refuse was found that was consistent with normal household refuse placed during normal landfill operations.
55. On 17 August 2007, the County fully delineated the extent of refuse within County and Caltrans property. The County estimated the area of uncovered refuse at approximately 1.3 acres of County property and 0.3 acres of Caltrans property.

56. In a letter dated 27 August 2007, CalRecycle staff directed the County and Caltrans to cover the refuse in both the Caltrans and County property according to Title 27 in a common construction project. Central Valley Water Board staff reaffirmed this directive.
57. In November 2007, an EMP was conducted, consisting of exploring for the presence of shallow aquifer groundwater along the northern and southern boundaries of the landfill. The purpose of this EMP was to extend the shallow aquifer monitoring program to the west to determine the extent of the impacts (if any) in that direction. Several boreholes were drilled along the boundary west of monitoring well MW-5 on the north and MW-4 on the south. The investigation encountered a shallow groundwater aquifer approximately 400 feet west of MW-5, and monitoring well MW-8 was installed at that location. No shallow aquifer groundwater was detected further west than MW-8. On the southern boundary of the landfill, the exploration borings did not encounter the shallow groundwater aquifer to the west of MW-4 and therefore no new shallow monitoring well was installed on that side of the landfill.
58. On 14 January 2008, VOCs were detected in monitoring well MW-8. The compounds and concentrations detected indicate that the source of ground water contamination emanates from an area near MW-5, most likely from LFG not captured by the existing LFG system, which includes the area without a final cover. The County proposed to install three additional LFG wells in the in the area presently without a final cover.
59. In early 2008 the Discharger submitted a Conceptual Closure Design, showing closure with GCL under a vegetative layer for Discharger property only. On January 30, 2008, Board Staff issued a letter to the Discharger and to Caltrans reaffirming that the both Discharger and Caltrans areas should be closed in a single project. On April 1, 2008, the Discharger submitted an addendum to the Closure and Postclosure Maintenance Plans. The addendum only addressed closure and postclosure on Discharger property. The Discharger restated readiness to close over Discharger property as a separate project.
60. On 10 April 2008, a new subsurface perimeter LFG migration monitoring well (GW-1A) was installed to replace well GW-1. Replacement was required because the deepest probe of the original GW-1 was found submerged, thereby preventing monitoring of offsite migration at that probe. Well GW-1A's installation allows multi-depth monitoring with a shallow, intermediate, and deep probe.
61. In the Third Quarterly Report of 2008, the increase in alkalinity in MW-4 and MW-5 above the established concentration limits was reported. However, in the third quarter 2010, this condition was seen only at monitoring well SB-1.
62. In December 2008, five new LFG extraction wells were installed. The additional wells were placed to control LFG impacts to groundwater near MW-5. The vacuum at these wells was set at -0.1 in. water column (w.c.). Vacuum applied to these wells has been gradually increased. Since October 2009, the vacuum on the wells has been set to -0.3 in. w.c. The concentration of methane from the gas monitoring wells remains below 2%.

Continuing to collect low-methane gas from these wells reduces the methane content of the LFG reaching the flare station, inhibiting the ability of the flare to maintain proper temperature.

63. On 22 February 2011, a meeting was held at Central Valley Water Board offices attended by the County, and the Central Valley Water Board. An impending Order pursuant to Water Code section 13267 was discussed. The County and Caltrans received a draft of this Order on or about 17 June 2011.
64. In a letter dated 28 June 2011, the County stated it had reached agreement with CalTrans to participate in a single project to extend the closure cover over the refuse on both properties.
65. On 7 July 2011, the County and Caltrans both received a Water Code section 13267 Order to submit plans to extend the closure cap over the over the areas of refuse identified outside of the landfill footprint. The Order also required the County to submit an Evaluation Monitoring Program work plan to characterize the nature and extent of shallow groundwater impacted from a release of the WMUs. The work plan required a minimum of three groundwater monitoring wells.
66. On 30 August 2011, the County and Caltrans signed a Memorandum of Understanding agreeing to allow the County access to Caltrans property to install groundwater monitoring wells required in the Order, and that the extension closure cap would be installed over both properties in a single project.
67. On 10 October 2011, the County drilled three temporary borings offsite to assess the extent of the release from the WMUs as required by the Order. VOCs were detected in the grab groundwater samples collected from the three temporary wells, and according to the approved work plan, the County initiated step out borings to define the VOC plume. The three initial temporary borings were abandoned per San Joaquin County guidelines.
68. During February 2012, the County advanced three step-out borings to fulfill the requirements of the EMP. Three borings were constructed as permanent groundwater monitoring wells MW-9A through MW-11A. Groundwater samples were collected and analyzed for VOCs. Sampling results indicated that several VOCs were detected at low concentrations in all three step-out wells.
69. In a letter dated 26 September 2012, Board staff issued a Notice of Violation requesting that the County provide a work plan to conduct additional off site investigation to define the VOC plume northeast of the site, to conduct a water supply well search within a 1-mile radius of the site, and to propose the installation of a minimum of two soil gas probes along the northern site boundary to monitor migrating landfill gas.
70. In a letter dated 29 October 2012 the County submitted a work plan proposing to conduct a water supply well search and install two soil gas probes. The letter also confirmed a

meeting between the County and Board staff on 17 October 2012 discussing the 26 September NOV and staff's request for further off-site investigation. The County insisted that additional work in the northeast direction to further define the plume would not affect the approach to corrective action. Regional Board staff agreed that the Discharger could proceed to evaluate corrective action without further defining the extent of the plume. A complete EMP Report or Engineering Feasibility Study (EFS) to evaluate corrective action measures has not been submitted and is required under the 13267 Order.

### **LANDFILL GAS EXTRACTION SYSTEM**

71. Forty-four landfill gas extraction wells have been installed vertically to approximately five feet above the base of the refuse. The extracted landfill gas is routed to a blower/flare facility located at the southern end of the landfill. Additional gas extraction wells will be installed based on the effectiveness of the corrective action proposed by the Discharger to remediate off-property discharges of contaminants of concern.
72. Gas condensate sumps are installed along low points of the piping and gas condensate is collected into one holding tank located near the blower/flare station. Accumulation of liquid within the holding tank triggers a pump that routes the condensate liquid to the flare for evaporation.

### **CONSTRUCTION AND ENGINEERED ALTERNATIVE**

73. 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.
74. Title 27, section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with Title 27, sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in Title 27, section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative liner system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080(b)(2).

75. 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.
76. The unsaturated zone monitoring system consists of 7 soil gas wells GW-1 thru GW-7 installed in the vadose zone. The wells are monitored for combustible gas quarterly and one probe in each well is sampled for VOCs semiannually.
77. The 26 October 2012 ROWD includes a stability analysis for final cover extension pursuant to Title 27, section 21750(f)(5). The Discharger performed a slope stability analysis for the proposed final cover extension. The slope stability analysis determined that for an earthquake of magnitude 6.5 to 7.5 and peak ground acceleration in rock of 0.56g the maximum expected displacement in the cover is approximately 10.1 inches. RCRA Subtitle D (258) provides a maximum allowable permanent displacement of 6 to 12 inches. The Discharger's stability analysis includes components to demonstrate the integrity of the landfill final cover extension under both static and dynamic conditions throughout the landfill's closure period and post-closure maintenance period. The stability analysis demonstrates that the structural components of landfill cover extension will withstand the forces of the Maximum Probable Earthquake (MPE) without failure of the landfill cover extension.

### LANDFILL CLOSURE

78. Title 27, section 21090 provides the minimum prescriptive final cover components for landfills consisting of, in ascending order, the following layers:
- a. Two-foot soil foundation layer.
  - b. One-foot soil low flow-hydraulic conductivity layer, less than  $1 \times 10^{-6}$  cm/s or equal to the hydraulic conductivity of any bottom liner system.
  - c. Geomembrane layer (this layer is required for composite-lined landfills for equivalency to bottom liner).
  - d. One-foot soil erosion resistant/vegetative layer.
79. 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.
80. The Discharger submitted a 26 October 2012 Addendum to the *Closure and Postclosure Maintenance Plan* for closure of waste discovered outside the previously closed landfill footprint and post-closure maintenance of all landfill units at the Facility.
81. During the fall of 1995, the county constructed a final cover over 43 acres of the unlined WMU in compliance with WDR Order No. 94-259. The final cover is as prescribed in Title 27 and consists of a foundation layer of soil that varies from 2-feet to 6-feet thick. A low-

permeability soil layer that is a minimum of 1-foot thick overlies the foundation layer. The low-permeability soil is an engineered mixture of selected soil and red clay. The uppermost layer is a nominal 1-foot thick vegetative layer of compacted soil that was hyroseeded after preparation.

82. The Discharger proposes an engineered alternative final cover for approximately 1.6 acres of the closure cover extension consisting of, in ascending order, the following layers:
  - a. Two-foot soil foundation layer.
  - b. A 60 mil double-sided textured LLDPE geomembrane.
  - c. A 200 mil geocomposite drainage net (HDPE core with non-woven polyester or polypropylene geotextile on either side.
  - d. Two-foot vegetative erosion control soil layer.
83. The Discharger has demonstrated that the engineered alternative final cover meets the performance goals of Title 27 and that it is equivalent to the prescriptive standard.
84. Side slopes for the closed landfill will be sloped at maximum 3H:1V and will include 15-foot wide benches every 50 vertical feet as required by Title 27.
85. Title 27 section 21090(a) requires that a slope stability analysis be performed for any final cover having a geosynthetic component. The Discharger performed a slope stability analysis for the proposed final cover extension. The Discharger's static and dynamic stability analysis demonstrates that the side slopes of the final cover will be stable in accordance with the requirements of Title 27.
86. Pursuant to Title 27, section 21090(e)(1), this Order requires a survey of the final cover following closure activities for later comparison with iso-settlement surveys required to be conducted every five years.
87. This Order approves the proposed final cover extension and accepts the final closure and post-closure maintenance plan, design documents, and CQA plan associated with the closure of the waste discovered outside the original closure area.

### **LANDFILL POST-CLOSURE MAINTENANCE**

88. The Discharger submitted a 26 October 2012 Addendum to the *Closure and Postclosure Maintenance Plan* for closure and post-closure maintenance of all landfill units. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire Facility. Inspection and maintenance will include the condition of the final cover, drainage features, LCRS, groundwater monitoring wells, unsaturated zone monitoring points, access roads, landfill gas system, groundwater corrective action system, and site security.

The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to environmental quality, whichever is greater.

89. 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.
90. 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**

91. 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 26 October 2012 *Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2012 dollars is \$0.76 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. As of 2012, the Discharger continues to use a dedicated Pledge of Revenues as financial assurances in lieu of maintaining a balance in a closure fund. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's 26 October 2012 *Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill post-closure maintenance. The amount of the cost estimate for post-closure maintenance in 2012 dollars is \$3.1 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. As of 2012, Discharger continues to use a dedicated Pledge of Revenues as financial assurances in lieu of maintaining a balance in a post-closure maintenance fund.
92. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 23 May 2012 cost estimate of \$902,360 for corrective action of all known or reasonably foreseeable releases. This Order requires that the Discharger maintain financial assurance with the CalRecycle in at least the amount of the cost estimate adjusted annually for inflation. As of 2012, Discharger continues to use a dedicated Pledge of Revenues as financial assurances in lieu of maintaining a balance in a corrective action fund.

## CEQA AND OTHER CONSIDERATIONS

93. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) ("CEQA") in accordance with California Code of Regulations, title 14, section 15301.

94. This Order implements:

- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition;*
- b. The prescriptive standards and performance goals of California Code of Regulations, title 27, section 20005 et seq., effective 18 July 1997, and subsequent revisions;
- c. State Water Board Resolution 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993, and revised on 21 July 2005.
- d. The applicable provisions of Title 40 C.F.R. section 258 "Subtitle D" federal regulations as required by State Water Board Resolution 93-62.

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

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

96. Water Code section 13267(b) provides that:

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

97. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0013 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**

98. 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.
99. 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.
100. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267, that WDRs Order 5-01-176 is rescinded except for purposes of enforcement, and that San Joaquin County Department of Public Works, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the Water Code and the regulations adopted thereunder, shall comply with the following:

#### **A. PROHIBITIONS**

1. The discharge of "*hazardous waste*" or "*designated waste*" is prohibited. For the purposes of this Order, the term "*hazardous wastes*," is as defined in California Code of Regulations, title 22, section 66261.1 *et seq.*, and "*designated waste*" is as defined in Title 27.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012 which are attached hereto and made part of this Order by reference.

#### **B. DISCHARGE SPECIFICATIONS**

1. The Discharger shall not accept any new waste at this landfill facility.
2. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

#### **C. FACILITY SPECIFICATIONS**

1. The Discharger shall comply with all Standard Facility Specifications listed in Section E of the SPRRs dated January 2012 which are part of this Order.

#### **D. CONSTRUCTION SPECIFICATIONS**

1. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved.
2. The Discharger may propose changes to the closure cover system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an engineered alternative and approval by the Central Valley Water Board in revised WDRs.
3. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
4. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated January 2012 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 sixty days before the completion of the closure construction of the extension cover in accordance with requirements in Section G of the Standard Closure and Post-Closure Specifications in the SPRRs.
2. The Discharger shall close all uncovered landfill waste with a final cover as proposed in the 26 October 2012 Addendum to the Closure and Postclosure Maintenance Plan (PCPCMP) and as approved by this Order. The components of the approved final cover as proposed in the PCPCMP are listed in Finding 82.
3. The Discharger shall obtain revised WDRs prior to closure with any other final cover design than the design or designs approved in this Order.
4. 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.
5. The Discharger shall install an active landfill gas extraction system for the closed landfill area during landfill closure, and landfill gas shall be extracted from closed landfill area until such time that the landfill gas is no longer a threat to water quality as documented by the Discharger and approved by the Executive Officer.

6. The Discharger shall extend the final cover beyond the extent of the waste and seal the edges of the final cover such that the final cover adequately prevents surface and subsurface flowing liquids from contacting waste confined in the landfill units.
7. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report.
8. The Discharger shall ensure that the vegetative/erosion resistant layer receives necessary seed, binder, and nutrients to establish the vegetation proposed in the final closure plan. The Discharger shall install necessary erosion and sedimentation controls to prevent erosion and sediment in runoff from the closed landfill during the period the vegetation is being established.
9. The Discharger shall comply with all Standard Closure and Post-Closure Specifications listed in Section G and all Standard Construction Specifications that are applicable to closure in Section F of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

## **F. FINANCIAL ASSURANCE SPECIFICATIONS**

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Findings 91 and 92, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.
2. The Discharger shall update the 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 prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in F.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably

foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 91. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

## **G. MONITORING SPECIFICATIONS**

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with MRP R5-2013-0013, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP R5-2013-0013, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012 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 R5-2013-0013, and the SPRRs dated January 2012 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 R5-2013-0013.
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 R5-2013-0013 and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.
6. The Discharger shall perform corrective action monitoring for delineation of the extent of the groundwater contamination plume originating from the landfill. Implementation

of corrective action to remediate discharge of waste constituents from plume contamination and a time schedule for completion of the corrective action will be required under a separate Order.

7. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012 which are attached hereto and made part of this Order by reference.

## H. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the Facility, including the MRP R5-2013-0013 and the SPRRs dated January 2012 which are part of this Order, and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP R5-2013-0013, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27*, dated January 2012, which are attached hereto and made part of this Order by reference.
5. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
6. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
7. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

### Task

### Compliance Date

#### **A. Installation of landfill cover extension**

The Discharger shall complete installation of landfill cover extension, associated ground water monitoring wells, gas extraction wells, gas probes, and related equipment and appurtenances and perform final CQA as described in Addendum to the Final Closure Plan dated 26 October 2012

1 September 2013

## **B. Final CQA documentation**

The Discharger shall submit a Final CQA Documentation Report containing all reports submitted concerning the placement of the cover extension containment system. This report shall include at an minimum all documentation required under Title 27 §20324(d)(1), and shall show that the landfill cover extension was constructed as required by this Order.

1 November 2013

8. The Discharger shall comply with all General Provisions listed in Section K of the SPRs dated January 2012 which are part of this Order.

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

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 of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

[http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 1 February 2013.

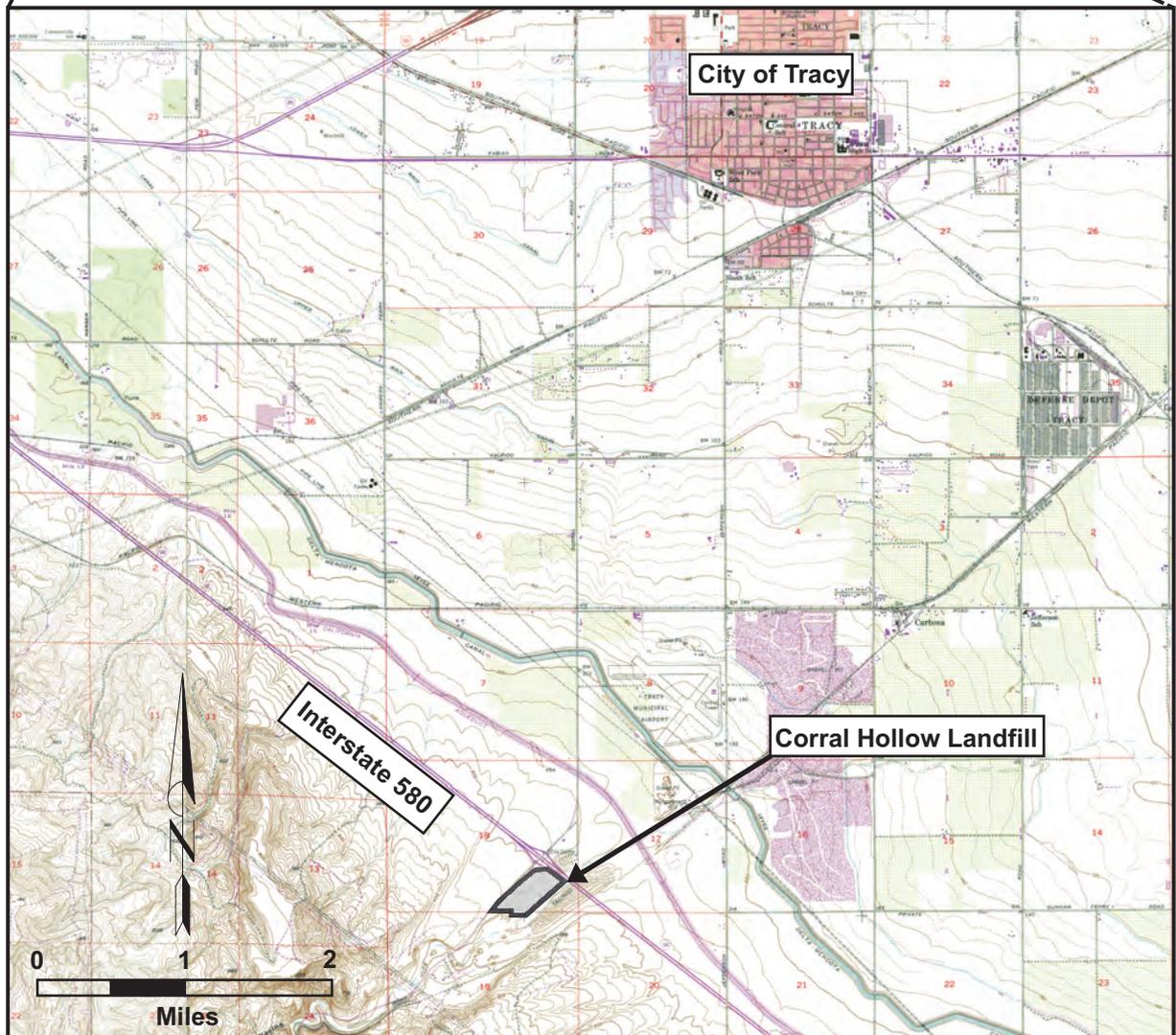
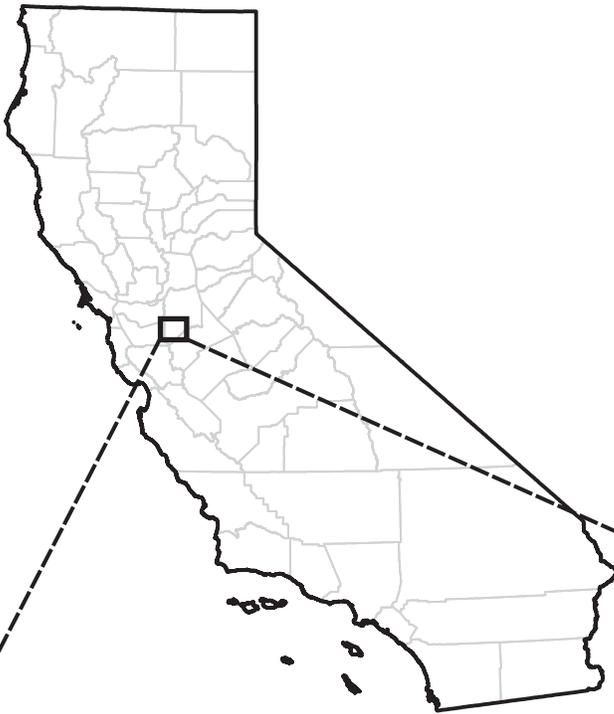
*Original Signed By*

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PAMELA C. CREEDON, Executive Officer

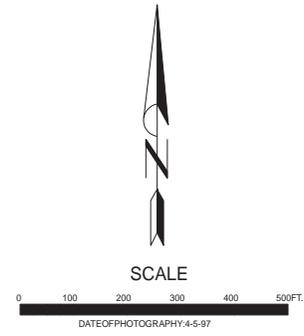
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Attachment A: Location Map  
San Joaquin County Department  
of Public Works  
Corral Hollow Landfill  
San Joaquin County  
WDR Order No. R5-2013-0013



# Legend

-  MW DEEP AQUIFER GROUNDWATER MONITORING WELL
-  MW SHALLOW AQUIFER GROUNDWATER MONITORING WELL
-  GW LFG PERIMETER MONITORING WELL
-  EW LFG EXTRACTION WELL
-  SW SURFACE WATER MONITORING POINT



General direction of shallow groundwater flow

Closure Cap Extension (Approx. 1.6 Acres)

Property Line

Corral Hollow Road

Interstate 580

Retention Pond

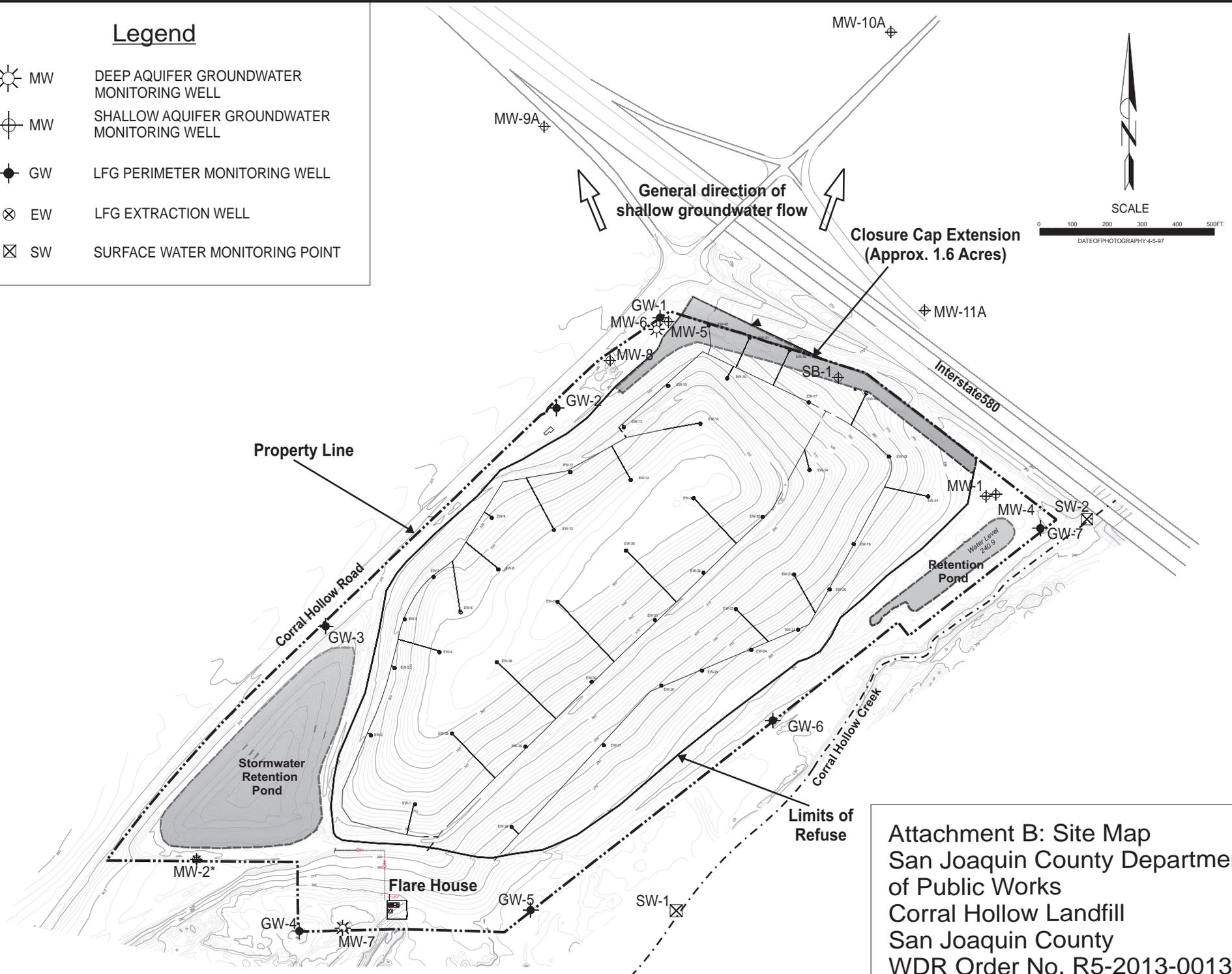
Stormwater Retention Pond

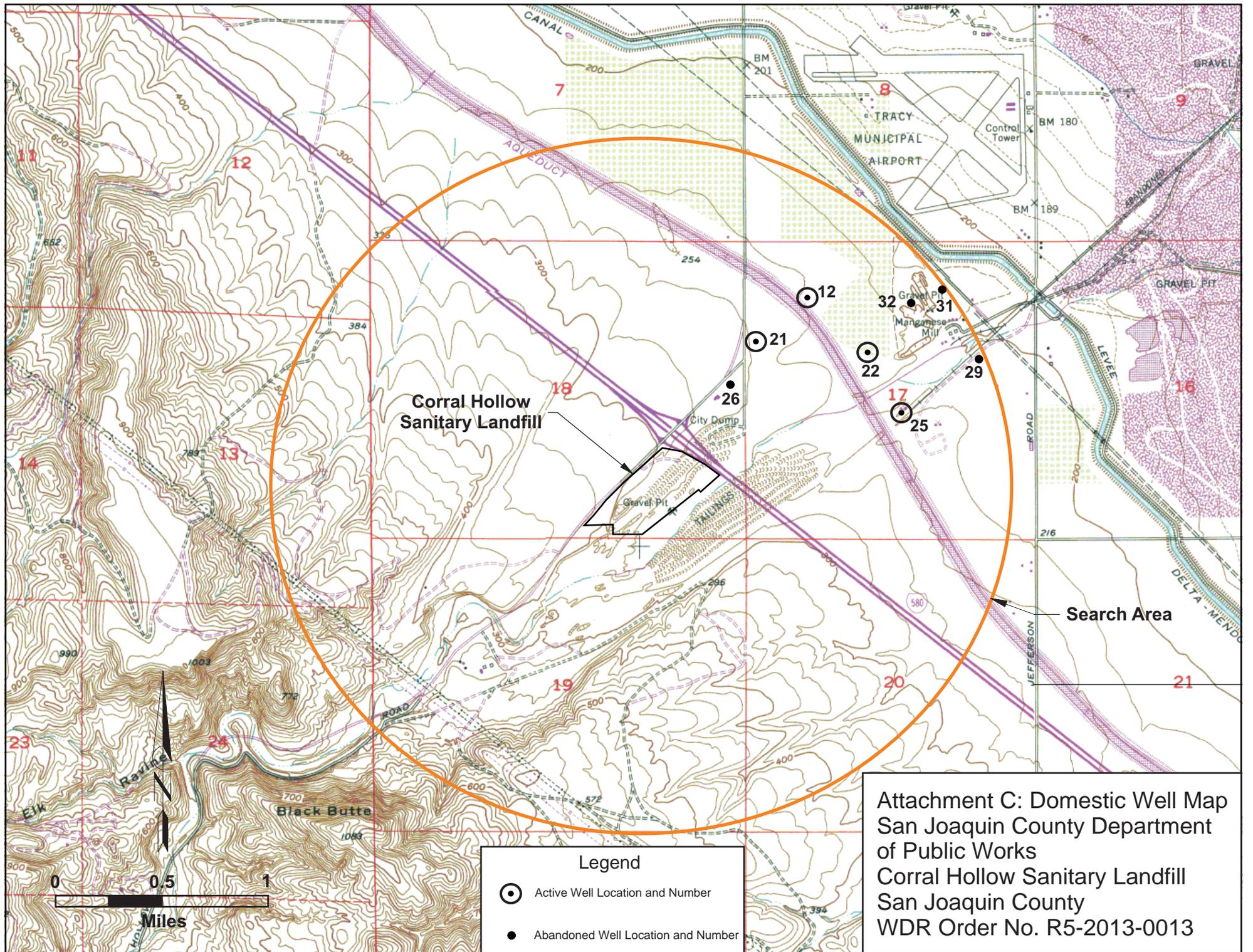
Corral Hollow Creek

Limits of Refuse

Flare House

Attachment B: Site Map  
 San Joaquin County Department of Public Works  
 Corral Hollow Landfill  
 San Joaquin County  
 WDR Order No. R5-2013-0013





**Corral Hollow Sanitary Landfill**

**Search Area**

**Legend**

- Active Well Location and Number
- Abandoned Well Location and Number

Attachment C: Domestic Well Map  
 San Joaquin County Department of Public Works  
 Corral Hollow Sanitary Landfill  
 San Joaquin County  
 WDR Order No. R5-2013-0013

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2013-0013  
FOR  
SAN JOAQUIN COUNTY DEPARTMENT OF PUBLIC WORKS  
CORRAL HOLLOW SANITARY LANDFILL  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
POST-CLOSURE MAINTENANCE,  
AND CORRECTIVE ACTION  
SAN JOAQUIN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California 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 No. R5-2013-0013, and the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

**A. MONITORING**

The 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 approved 1988 *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. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate/seep, 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 USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the approved Sample Collection and Analysis Plan.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Leachate Monitoring, Seep Monitoring, and LCRS Testing
A.4	Surface Water Monitoring
A.5	Facility Monitoring
A.6	Corrective Action Monitoring

**1. Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. 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. The Discharger shall revise the groundwater detection monitoring system (after review and approval by Central Valley Water Board staff) as needed each time a new landfill cell or module is constructed.

The current groundwater monitoring network shall consist of the following:

<u>Well</u>	<u>Status</u>	<u>Zone</u>	<u>Units Being Monitored</u>
SB-1	Detection/Corrective Action	Shallow	# 1
MW-4	Detection/Corrective Action	Shallow	# 1
MW-5	Detection/Corrective Action	Shallow	# 1
MW-8	Detection/Corrective Action	Shallow	# 1
MW-9A	Corrective Action	Shallow	# 1
MW-10A	Corrective Action	Shallow	# 1
MW-11A	Corrective Action	Shallow	# 1
MW-7	Detection	Deep	# 1
MW-6	Detection	Deep	# 1

Groundwater samples shall be collected from the background wells, detection monitoring wells, corrective action monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the specified methods and frequencies. The Discharger

shall collect, preserve, and transport groundwater samples in accordance with the approved Sample Collection and Analysis Plan.

**Once per quarter**, the Discharger shall measure the groundwater elevation in each well, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported quarterly, 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 2010 and shall be monitored again in **2015**. 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 current unsaturated zone detection monitoring system meets the applicable requirements of Title 27.

The current unsaturated zone monitoring network shall consist of:

<u>Mon Pt.</u>	<u>Status</u>	<u>Probe Depth</u>
GW-1	Perimeter Detection, Soil-Pore Gas	Deep
GW-2	Perimeter Detection, Soil-Pore Gas	Deep
GW-3	Perimeter Detection, Soil-Pore Gas	Middle
GW-4	Perimeter Detection, Soil-Pore Gas	Middle
GW-5	Perimeter Detection, Soil-Pore Gas	Shallow
GW-6	Perimeter Detection, Soil-Pore Gas	Deep
GW-7	Perimeter Detection, Soil-Pore Gas	Shallow, Middle

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.

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

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

### 3. Seep Monitoring

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

### 4. Surface Water Monitoring

The Discharger shall operate a surface water detection monitoring system for any landfill facility where runoff from landfill areas flows or could flow to waters of the United States. The monitoring system shall comply with the applicable provisions of Title 27, sections 20415 and 20420. At the Corral Hollow Sanitary Landfill, runoff from landfill areas flows to retention ponds that upon overflow can discharge to Corral Hollow Creek as permitted under a separate WDRs 97-03-DWQ Order, *Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities* (NPDES General Permit CAS000001). The current surface water detection monitoring system meets the applicable requirements of Title 27.

The current surface water monitoring points for the landfill are:

<u>Mon Pt.</u>	<u>Status</u>
S-1	Background or Upstream
S-2	Discharge or Downstream

For surface water detection monitoring, a sample shall be collected at each monitoring point location and analyzed for the monitoring parameters and constituents in accordance with the methods and frequency specified in Table IV. All surface water monitoring samples shall be collected and analyzed for the 5-year COCs specified in Table IV every five years, beginning again in **2015**.

### 5. Facility Monitoring

#### a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and

shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in 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**

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 next iso-settlement survey shall be conducted in **2013**.

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>
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 unit:
  - 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 unit:
  - 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 quarterly monitoring reports required in Section B.1 of this MRP.

## 6. Corrective Action Monitoring

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

Well	Zone	Additional Constituents	Sampling Frequency
MW-5	Shallow	1-3-5-Trimethylbenzene	Quarterly
MW-5	Shallow	Methyl tert-butyl ether (MtBE)	Quarterly
MW-5	Shallow	tert-Butylbenzene	Quarterly
MW-5	Shallow	trans-1,4-Dichloro-2-butene	Quarterly

The following monitoring parameters shall be monitored quarterly in all corrective action groundwater monitoring wells for the duration of the corrective action period:

Total Dissolved Solids (TDS)	mg/L
Chloride	mg/L
Carbonate	mg/L
Bicarbonate	mg/L
Nitrate - Nitrogen	mg/L
Sulfate	mg/L
Calcium	mg/L

Magnesium	mg/L
Potassium	mg/L
Sodium	mg/L

## 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	Quarterly Monitoring Report	31 March, 30 June, 30 September, 31 December	<b>1 May, 1 August, 1 November, 1 February</b>
B.2	Annual Monitoring Report	31 December	<b>1 February</b>
B.3	Seep Reporting	Continuous	<b>Immediately &amp; 7 Days</b>
B.4	Annual Facility Inspection Report	31 October	<b>1 December</b>
B.5	Major Storm Event Reporting	Continuous	<b>7 days from damage discovery</b>
B.6	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	<b>At closure completion and every five years</b>
B.7	Financial Assurances Report	31 December	<b>1 June</b>
B.8	Corrective Action Reports	31 March, 30 September	<b>1 May, 1 Nov</b>

### Reporting Requirements

The Discharger shall submit monitoring reports **quarterly** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2013-0013 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. Quarterly and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were

taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27.

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. **Quarterly Monitoring Report:** Monitoring reports shall be submitted quarterly and are due on **1 February, 1 May, 1 August, and 1 November**. Each quarterly monitoring report shall contain at least the following:
  - a) For each groundwater monitoring point addressed by the report, a description of:
    - 1) The time of water level measurement;
    - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
    - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging;

results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;

- 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
  - c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
  - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, leachate, and surface water. Concentrations below the reporting limit shall not be reported as "ND" unless the concentration is below the method detection limit and the method detection 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.
  - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
  - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit. Report any actions taken under Section J: Response to a Release for verified exceedances of a concentration limit.
  - g) An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities. Include a summary of any instances where leachate depth on an MSW landfill liner system exceeded 30 cm (excluding the leachate sump), and information about the required notification and corrective action in Standard Facility Specification E.13 of the SPRRs.
  - h) A summary of all Standard Observations for the reporting period required in Section A.5.d of this MRP.
  - i) A summary of inspection, leak search, and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance

plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.

2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the 4<sup>th</sup> quarter report, but if so, shall clearly state that it is both a quarterly and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
  - a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, than these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
  - b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
  - c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
  - d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
  - e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
  - f) A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours, and include a projection of the year in which each discrete landfill module will be filled.
  - g) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.

- h) The results of the annual testing of leachate collection and removal systems required under Standard Facility Specification E.14 of the SPRRs.
  - i) Updated WQPS concentration limits for each monitoring parameter at each monitoring well based on the new data set.
  - j) A comprehensive discussion of any Corrective Action Program required by this MRP or a companion Order.
3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
- a) A map showing the location(s) of seepage;
  - b) An estimate of the flow rate;
  - c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
  - d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
  - e) Corrective measures underway or proposed, and corresponding time schedule.
4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.5.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.5.b of this MRP, above.
6. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.5.c of this MRP, above. The next report is due by 1 January 2013.
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.3 of the WDRs.

8. **Corrective Action Report:** Semiannually per the schedule in Section B. The Discharger shall provide a report describing the results of corrective action monitoring, including interpretation of the results certified by a California-licensed professional civil engineer or geologist that concludes whether the corrective actions implemented by the Discharger is adequately addressing associated water quality impacts. The licensed professional shall provide an updated schedule based on corrective action monitoring when completion of correction will occur such that water quality protection standards are met.

## C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

### 1. Water Quality Protection Standard Report

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

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

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

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

The Water Quality Protection Standard 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 29 December 1993 *Water Quality Protection Standard Report*. The limits are calculated using intrawell tolerance coefficient at 95% confidence and 95% coverage based on historical background data from each well. Since the intrawell tolerance limit method has been approved each well provides its own background data. The Water Quality Protection Standard shall be updated annually for each monitoring well using new and historical monitoring data. The Water Quality Protection Standards shall not be calculated using data identified as outliers using the EPA 1989 Outlier Test or calculated using data that indicates an upward trend due to a release of COCs to receiving water.

## **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 2010 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2015**.

#### 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 29 December 1993 *Water Quality Protection Standard Report*. The approved method uses intrawell tolerance coefficient at 95% confidence and 95% coverage based on historical background data from each well. Since the intrawell tolerance limit method has been approved each well provides its own background data.

The Water Quality Protection Standards shall not be calculated using data identified as outliers using the EPA 1989 Outlier Test or calculated using data that indicates an upward trend due to a release of COCs to receiving water. The most recent concentration limits calculated using the outlier and upward trend exclusion criteria stated above for select parameters are as follows:

Sampling Well	SB-1	MW-4	MW-5	MW-8	MW-6	MW-7
Analysis Type	Intrawell	Intrawell	Intrawell	Intrawell	Intrawell	Intrawell
pH (Units)	5.98-7.62	6.68-7.83	6.49-7.9	6.82-7.9	<b>5.70-9.78</b>	<b>6.68-8.04</b>
EC <sup>1</sup> (umhos/cm)	1180	2920	<b>1700</b>	745	1144	1636
Turbidity (NTU)	202	170	102	57	57	45
TDS <sup>2</sup> (mg/L)	719	<b>2000</b>	909	442	780	<b>1100</b>
Chloride (mg/L) <sup>3</sup>	26	<b>380</b>	139	86	117	165
Nitrate as N (mg/L)	0.33	16	19	14	3	6
Sulfate (mg/L)	58	776	18	26	323	369
Carbonate Alkalinity as CaCO <sub>3</sub>	<b>0.81</b>	5.4	<b>480</b>	<b>2</b>	3.4	3.6
Bicarbonate Alkalinity as CaCO <sub>3</sub>	<b>600</b>	<b>400</b>	<b>660</b>	281	277	330
VOCs	Non Detect	Non Detect	Non Detect	Non Detect	Non Detect	Non Detect

Notes: The limits in bold are concentration limits that were set by the Discharger and not adjusted due to increasing trends e.g. evidence of a release. Concentration limits not in bold are concentration limits that RWQCB staff calculated after outliers were removed. Outliers should not be used to calculate concentration limits when concentration limits are used for detection monitoring.

<sup>1</sup> Electrical Conductivity  
<sup>2</sup> Total Dissolved Solids  
<sup>3</sup> Milligrams per liter

## **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:

### Point of Compliance Monitoring Wells

- SB-1 (Shallow Zone)
- MW-4 (Shallow Zone)
- MW-5 (Shallow Zone)
- MW-8 (Shallow Zone)
- MW-6 (Deep Zone)
- MW-7 (Deep Zone)

## **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.

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

Ordered by:

*Original Signed By*

\_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
1 February 2013

(Date)

vkj

**TABLE I**  
**GROUNDWATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Quarterly
Temperature	°C	Quarterly	Quarterly
Electrical Conductivity	umhos/cm	Quarterly	Quarterly
pH	pH units	Quarterly	Quarterly
Turbidity	Turbidity units	Quarterly	Quarterly
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L <sup>1</sup>	Quarterly	Quarterly
Chloride	mg/L	Quarterly	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly	Quarterly
Sulfate	mg/L	Quarterly	Quarterly
Carbonate	mg/L	Semiannually	Semiannual
Bicarbonate	mg/L	Semiannually	Semiannual
Calcium	mg/L	Semiannually	Semiannual
Magnesium	mg/L	Semiannually	Semiannual
Potassium	mg/L	Semiannually	Semiannual
Sodium	mg/L	Semiannually	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L <sup>2</sup>	Quarterly	Quarterly
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Quarter 2015
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 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

<sup>1</sup> Milligrams per liter

<sup>2</sup> Micrograms per liter

**TABLE II**  
**UNSATURATED ZONE DETECTION MONITORING PROGRAM**

<b>SOIL-PORE GAS<sup>1</sup></b>			
<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Monitoring Parameters</b>			
Volatile Organic Compounds (USEPA Method TO-15)	ug/cm <sup>3</sup>	Quarterly	Quarterly
Methane	% by volume	Quarterly	Quarterly
Carbon Dioxide	% by volume	Quarterly	Quarterly
Oxygen (O <sub>2</sub> )	% by volume	Quarterly	Quarterly

**PAN LYSIMETERS (or other vadose zone monitoring device) DOES NOT APPLY**

<sup>1</sup> Soil-pore gas samples collected from landfill gas probes are only subject to the VOC (USEPA Method TO-14) and methane sampling (not the other parameters listed for pan lysimeters).

**TABLE III**  
**SEEP MONITORING <sup>1</sup>**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Total Flow	Gallons	See Note 1	See Note 1
Flow Rate	Gallons/Day	" "	" "
Electrical Conductivity	umhos/cm	" "	" "
pH	pH units	" "	" "
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	See Note 1	See Note 1
Chloride	mg/L	" "	" "
Carbonate	mg/L	" "	" "
Bicarbonate	mg/L	" "	" "
Nitrate - Nitrogen	mg/L	" "	" "
Sulfate	mg/L	" "	" "
Calcium	mg/L	" "	" "
Magnesium	mg/L	" "	" "
Potassium	mg/L	" "	" "
Sodium	mg/L	" "	" "
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	" "	" "

<sup>1</sup> 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

**TABLE IV**  
**SURFACE WATER DETECTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> <sup>1</sup>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Temperature	°C	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Flow to Waters of U.S.	Yes or No	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table V)	ug/L	Semiannual	Semiannual
<b>5-Year Constituents of Concern (see Table VI)</b>			
Total Organic Carbon	mg/L	5 years	1 <sup>st</sup> Quarter 2015
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 8270D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

<sup>1</sup> 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:

pH  
Total Dissolved Solids  
Electrical Conductivity  
Chloride  
Sulfate  
Nitrate nitrogen

#### Volatile Organic Compounds, short list:

##### USEPA Method 8260B

Acetone  
Acrylonitrile  
Benzene  
Bromochloromethane  
Bromodichloromethane  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans-1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC-12)  
1,1-Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1,1 -Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans-1,2-Dichloroethylene (trans-1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
2-Hexanone (Methyl butyl ketone)  
Hexachlorobutadiene  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)

**TABLE V**

**MONITORING PARAMETERS FOR DETECTION MONITORING**

**Continued**

Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Methyl ethyl ketone (MEK: 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether  
4-Methyl-2-pentanone (Methyl isobutylketone)  
Naphthalene  
Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)  
Toluene  
1,2,4-Trichlorobenzene  
1,1,1-Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride  
Xylenes

**TABLE VI**  
**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

<b><u>Inorganics (dissolved):</u></b>	<b><u>USEPA Method</u></b>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium, Hexavalent	7199
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010C
Sulfide	9030B

**Volatile Organic Compounds, extended list:**

**USEPA Method 8260B**

Acetone  
Acetonitrile (Methyl cyanide)  
Acrolein  
Acrylonitrile  
Allyl chloride (3-Chloropropene)  
Benzene  
Bromochloromethane (Chlorobromomethane)  
Bromodichloromethane (Dibromochloromethane)  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Chloroprene  
Dibromochloromethane (Chlorodibromomethane)  
1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1 -Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1 -Dichloropropene  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
Ethyl methacrylate  
Hexachlorobutadiene  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether  
Methyl methacrylate  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Propionitrile (Ethyl cyanide)  
Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)  
Toluene  
1,2,4-Trichlorobenzene

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

1,1,1 -Trichloroethane (Methylchloroform)  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride (Chloroethene)  
Xylene (total)

**Semi-Volatile Organic Compounds:**

**USEPA Method 8270D - base, neutral, & acid extractables**

Acenaphthene  
Acenaphthylene  
Acetophenone  
2-Acetylaminofluorene (2-AAF)  
Aldrin  
4-Aminobiphenyl  
Anthracene  
Benzo[a]anthracene (Benzanthracene)  
Benzo[b]fluoranthene  
Benzo[k]fluoranthene  
Benzo[g,h,i]perylene  
Benzo[a]pyrene  
Benzyl alcohol  
Bis(2-ethylhexyl) phthalate  
alpha-BHC  
beta-BHC  
delta-BHC  
gamma-BHC (Lindane)  
Bis(2-chloroethoxy)methane  
Bis(2-chloroethyl) ether (Dichloroethyl ether)  
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)  
4-Bromophenyl phenyl ether  
Butyl benzyl phthalate (Benzyl butyl phthalate)  
Chlordane  
p-Chloroaniline  
Chlorobenzilate  
p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol  
4-Chlorophenyl phenyl ether  
Chrysene  
o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
Diallate  
Dibenz[a,h]anthracene  
Dibenzofuran  
Di-n-butyl phthalate  
3,3'-Dichlorobenzidine  
2,4-Dichlorophenol  
2,6-Dichlorophenol  
Dieldrin  
Diethyl phthalate  
p-(Dimethylamino)azobenzene  
7,12-Dimethylbenz[a]anthracene  
3,3'-Dimethylbenzidine  
2,4-Dimehtylphenol (m-Xylenol)  
Dimethyl phthalate  
m-Dinitrobenzene  
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)  
2,4-Dinitrophenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Di-n-octyl phthalate  
Diphenylamine  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Ethyl methanesulfonate  
Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
Hexachlorocyclopentadiene  
Hexachloroethane  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene  
Isodrin  
Isophorone  
Isosafrole  
Kepone  
Methapyrilene  
Methoxychlor  
3-Methylcholanthrene

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

Methyl methanesulfonate  
2-Methylnaphthalene  
1,4-Naphthoquinone  
1-Naphthylamine  
2-Naphthylamine  
o-Nitroaniline (2-Nitroaniline)  
m-Nitroaniline (3-Nitroaniline)  
p-Nitroaniline (4-Nitroaniline)  
Nitrobenzene  
o-Nitrophenol (2-Nitrophenol)  
p-Nitrophenol (4-Nitrophenol)  
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)  
N-Nitrosodiethylamine (Diethylnitrosamine)  
N-Nitrosodimethylamine (Dimethylnitrosamine)  
N-Nitrosodiphenylamine (Diphenylnitrosamine)  
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)  
N-Nitrosomethylethylamine (Methylethylnitrosamine)  
N-Nitrosopiperidine  
N-Nitrosopyrrolidine  
5-Nitro-o-toluidine  
Pentachlorobenzene  
Pentachloronitrobenzene (PCNB)  
Pentachlorophenol  
Phenacetin  
Phenanthrene  
Phenol  
p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol  
o-Toluidine  
Toxaphene  
2,4,5-Trichlorophenol  
2,4,6-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**TABLE VI**

**5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

**Chlorophenoxy Herbicides:**

**USEPA Method 8151A**

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

**Organophosphorus Compounds:**

**USEPA Method 8141B**

Atrazine  
Chlorpyrifos  
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Diazinon  
Dimethoate  
Disulfoton  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate  
Simazine

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.)

JANUARY 2012

**TABLE OF CONTENTS**

<b>Section</b>	<b>Page</b>
A. APPLICABILITY .....	2
B. TERMS AND CONDITIONS .....	2
C. STANDARD PROHIBITIONS .....	4
D. STANDARD DISCHARGE SPECIFICATIONS .....	5
E. STANDARD FACILITY SPECIFICATIONS .....	6
F. STANDARD CONSTRUCTION SPECIFICATIONS .....	8
G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS .....	11
H. STANDARD FINANCIAL ASSURANCE PROVISIONS .....	15
I. STANDARD MONITORING SPECIFICATIONS .....	15
J. RESPONSE TO A RELEASE .....	25
K. GENERAL PROVISIONS .....	27
L. STORM WATER PROVISIONS .....	29

## **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. 97-03-DWQ (or most recent general industrial storm water permit), or retain all storm water on-site.
16. Internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
17. New MSW landfill units or lateral expansions of existing units shall not be sited in a "wetland" [as defined in 40 C.F.R. § 232.29(r)] unless there is no practical alternative; steps have been taken to assure no net loss of wetland; the landfill unit will not degrade the wetland; the unit will not jeopardize threatened or endangered species or produce adverse modification of a critical habitat or violate any requirement of the Marine Protection, Research, and Sanctuaries Act of 1972 [40 C.F.R. § 258.12].

## F. STANDARD CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for review and approval at least **90 days** prior to proposed construction, design plans and specifications for new landfill modules that include the following:
  - a. Detailed construction drawings showing all required liner system components, the LCRS, leachate sump, unsaturated zone monitoring system, any proposed landfill gas monitoring and extraction points, and access to the LCRS for required annual testing.
  - b. A Construction Quality Assurance (CQA) Plan prepared by a California-registered civil engineer or certified engineering geologist, and that meets the requirements of Title 27, section 20324.
  - c. A geotechnical evaluation of the area soils, evaluating their use as the base layer or reference to the location of this information in the ROWD/JTD [Title 27, § 21750(f)(4)].
  - d. Information about the seismic design of the proposed new module (or reference to the location of this information in the ROWD/JTD) in accordance with Title 27, section 20370.
  - e. A revised water quality monitoring plan for groundwater detection monitoring (or information showing the existing plan is adequate) in accordance with Title 27, section 20415.
  - f. An Operation Plan (or reference to the location of this information in the ROWD/JTD) meeting the requirements of Title 27, section 21760(b).
2. All containment structures shall be designed by, and construction shall be supervised by, a California registered civil engineer or a certified engineering geologist, and shall be certified by that individual as meeting the prescriptive standards, or approved engineered alternative design, in accordance with this Order prior to waste discharge.
3. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved. Waste management units shall receive a final inspection and approval of the construction by Central Valley Water Board staff before use of the unit commences [Title 27, § 20310(e)].
4. Any report, or any amendment or revision of a report, that proposes a design or design change that might affect a waste management unit's containment features or monitoring systems shall be approved by a California registered civil engineer or a certified engineering geologist [Title 27, § 21710(d)].

5. Materials used in containment structures shall have appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of pressure gradients, physical contact with waste or leachate, chemical reactions with soil or rock, climatic conditions, the stress of installation, or because of the stress of daily operations [Title 27, § 20320(a)].
6. Waste management units and their respective containment structures shall be designed and constructed to limit, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, washout, and overtopping [Title 27, § 20365(a)].
7. The Discharger shall design storm water conveyance systems for Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
8. All Class III landfill units shall be designed to withstand the maximum probable earthquake and Class II waste management units shall be designed to withstand maximum credible earthquake without damage to the foundation or to the structures that control leachate, or surface drainage, or erosion, or gas [Title 27, § 20370(a)].
9. The Discharger shall perform stability analyses that include components to demonstrate the integrity of the landfill foundation, final slopes, and containment systems under both static and dynamic conditions throughout the landfill's life including the closure period and post-closure maintenance period [Title 27, § 21750(f)(5)].
10. New waste management units and expansions of existing units shall not be located on a known Holocene fault [Title 27, § 20260(d)].
11. Liners shall be designed and constructed to contain the fluid, including landfill gas, waste, and leachate [Title 27, § 20330(a)].
12. Hydraulic conductivities shall be determined primarily by appropriate field test methods in accordance with accepted civil engineering practice. The results of laboratory tests with both water and leachate, and field tests with water, shall be compared to evaluate how the field permeabilities will be affected by leachate. It is acceptable for the Discharger to use appropriate compaction tests in conjunction with laboratory hydraulic conductivity tests to determine field permeabilities as long as a reasonable number of field hydraulic conductivity tests are also conducted [Title 27, § 20320(c)].
13. Hydraulic conductivities specified for containment structures other than the final cover shall be relative to the fluids (leachate) to be contained. Hydraulic conductivities for the final cover shall be relative to water [Title 27, § 20320(b)].

14. A test pad for each barrier layer and final cover shall be constructed in a manner duplicating the field construction. Test pad construction methods, with the designated equipment, shall be used to determine if the specified density/moisture-content/hydraulic conductivity relationships determined in the laboratory can be achieved in the field with the compaction equipment to be used and at the specified lift thickness [Title 27, § 20324(g)(1)(A)].
15. Performance requirements for geosynthetic membranes shall include, but are not limited to, a need to limit infiltration of water, to the greatest extent possible; a need to control landfill gas emissions; mechanical compatibility with stresses caused by equipment traffic, and for final covers the result of differential settlement over time and durability throughout the post-closure maintenance period [Title 27, § 20324(i)(1)].
16. The Discharger shall ensure proper preparation of the subgrade for any liner system that includes a GCL so as to provide a smooth surface that is free from rocks, sticks, or other debris that could damage or otherwise limit the performance of the GCL.
17. The Discharger shall propose an electronic leak location survey of the top liner for any new landfill module in the construction quality assurance plan unless the Discharger demonstrates that a leak location survey is not needed.
18. Leachate collection and removal systems are required for Class II landfills and surface impoundments, MSW landfills, and for Class III landfills which have a liner or which accept sewage or water treatment sludge [Title 27, § 20340(a)].
19. All new landfill units or lateral expansions of existing units that require a LCRS shall have a blanket-type LCRS that covers the bottom of the unit and extends as far up the sides as possible. The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit [Title 27, § 20340(e)].
20. The LCRS shall be designed, constructed, maintained, and operated to collect and remove twice the maximum anticipated daily volume of leachate from the waste management unit [Title 27, § 20340(b)].
21. Leachate collection and removal systems shall be designed and operated to function without clogging through the scheduled closure of the landfill unit and during the post-closure maintenance period.
22. The LCRS shall be designed to maintain the depth of fluid over any portion of the LCRS of no greater than 30 cm [40 C.F.R. § 258.40(a)(2)], excluding the leachate sump. The leachate sump, leachate removal pump, and pump controls shall be designed and set to maintain a fluid depth no greater than the minimum needed for efficient pump operation [Title 27, § 20340(c)].

23. All construction of liner systems and final cover systems shall be performed in accordance with a Construction Quality Assurance Plan certified by a registered civil engineer or a certified engineering geologist [Title 27, § 20323].
24. The Construction Quality Assurance program shall be supervised by a registered civil engineer or a certified engineering geologist who shall be designated the CQA officer [Title 27, § 20324(b)(2)].
25. The Discharger shall ensure that a third party independent of both the Discharger and the construction contractor performs all of the construction quality assurance monitoring and testing during the construction of a liner system.
26. The Discharger shall notify Central Valley Water Board staff at least **14 days** prior to commencing field construction activities including construction of a new lined cell or module, construction of a final cover, or any other construction that requires Central Valley Water Board staff approval under this Order.
27. The Discharger shall submit for review and approval at least **60 days** prior to proposed discharge, final documentation required in Title 27 Section 20324(d)(1)(C) following the completion of construction of a new lined landfill module. The report shall be certified by a registered civil engineer or a certified engineering geologist and include a statement that the liner system was constructed in accordance with the approved design plans and specifications, the CQA Plan, the requirements of the WDRs, and that it meets the performance goals of Title 27. The report shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, the construction quality assurance plan, and the performance goals of Title 27.
28. The Discharger shall not discharge waste onto a newly constructed liner system until the final documentation report has been reviewed and an acceptance letter has been received.
29. Prior to placement of waste in a new landfill unit, the Discharger shall monitor any pan lysimeter for the unit that has received enough rainfall to flood the LCRS sump. If liquid is detected in the pan lysimeter, the Discharger shall verify that the liquid is not from a leak in the primary liner system before waste can be accepted to the new module.

#### **G. STANDARD CLOSURE AND POST-CLOSURE SPECIFICATIONS**

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

2. The Discharger shall notify the Central Valley Water Board in writing that a landfill unit or portion of a unit is to be closed either at the same time that the California Department of Resources Recycling and Recovery (CalRecycle) is notified or **180 days** prior to beginning any final closure activities, whichever is sooner [Title 27, § 21710(c)(5)(A)]. The notice shall include a statement that all closure activities will conform to the most recently approved final or partial final closure plan and that the plan provides for site closure in compliance with all applicable federal and state regulations [Title 27, § 21710(c)(5)(C)].
3. Initiation of closure activities shall begin within **30 days** of final waste receipt, or within **one year** of receipt of most recent waste if additional capacity remains [40 C.F.R. § 258.60(f)].
4. Closure activities shall be completed within **180 days** of the beginning of closure activities unless an extension is granted by the Executive Officer [40 C.F.R. § 258.60(g)].
5. The Discharger shall carry out both mandatory closure and normal closure of a waste management unit or a portion of a unit in accordance with a closure and post-closure maintenance plan approved by the Central Valley Water Board [Title 27, § 20950(a)(1)] through the issuance of closure waste discharge requirements.
6. The Discharger shall notify the Central Valley Water Board that a preliminary closure and post-closure maintenance plan has been prepared and placed in the operating record by the date of initial receipt of waste at any new MSW landfill unit or lateral expansion of any existing unit [40 C.F.R. § 258.60(d)]. This notification shall be included in the cover letter transmitting the preliminary closure and post-closure maintenance plan.
7. In addition to the applicable provisions of Title 27, the preliminary closure and/or the post-closure maintenance plans for MSW landfill units shall include the following:
  - a. A description of the steps necessary to close all MSW landfill units at any point during their active life in accordance with the cover design requirements [40 C.F.R. § 258.60(c)];
  - b. An estimate of the largest area of the landfill unit(s) ever requiring a final cover at any time during the active life of the unit(s) [40 C.F.R. § 258.60(c)(2)];
  - c. An estimate of the maximum inventory of wastes ever on-site over the active life of the waste management facility [40 C.F.R. § 258.60(c)(3)]; and
  - d. A schedule for completing all activities necessary to satisfy the closure criteria in 40 C.F.R. section 258.60 [40 C.F.R. § 258.60(c)(4)].

8. The final closure and post-closure maintenance plan for the waste management unit shall include at least the following: an itemized cost analysis, closure schedule, any proposed final treatment procedures, map, changes to the unit description presented in the most recent ROWD, federal requirements for a MSW facility, land use of the closed unit, and a construction quality assurance plan [Title 27, § 21769(c) & (d)].
9. Closure of each waste management unit shall be under the direct supervision of a registered civil engineer or certified engineering geologist [Title 27, § 20950(b)].
10. The final cover of closed landfills shall be designed, graded, and maintained to prevent ponding and soil erosion due to high run-off velocities [Title 27, § 21090(b)(1)(A)].
11. The final grading design shall be designed and approved by a registered civil engineer or certified engineering geologist [Title 27, § 21090(b)(1)(C)].
12. All final cover designs shall include a minimum 1-foot thick erosion resistant layer [Title 27, § 21090(a)(3)(A)].
13. The Discharger shall close the landfill with minimum 15-foot wide benches every 50 vertical feet [Title 27, § 21090(a)].
14. Final cover slopes shall not be steeper than a horizontal to vertical ratio of one and three quarters to one and designs having any slopes steeper than a horizontal to vertical ratio of three to one, or having a geosynthetic component, shall have these aspects of their design specifically supported in the slope stability report required in Title 27, section 21750(f)(5) [Title 27, § 21090(a)].
15. For any portions of the final cover installed after July 18, 1997, for which the Central Valley Water Board has not approved a slope and foundation stability report on or before that date, the Discharger shall meet the requirements of Title 27, section 21750(f)(5) [Title 27, § 21090(a)(6)].
16. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be designed and constructed to prevent such erosion [Title 27, § 21090(b)(2)].
17. The Discharger shall design storm water conveyance systems for closed Class III units for a 100-year, 24-hour storm event, and shall design storm water conveyance systems for closed Class II units for a 1,000-year, 24-hour storm event [Title 27, § 21750(e)(3)].
18. Closed landfill units shall be provided with at least two permanent surveying monuments, installed by a licensed land surveyor or by a registered civil engineer, from which the location and elevation of all wastes, containment

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

19. Following closure of any MSW landfill units, the Discharger shall notify the Executive Officer that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been recorded and a copy placed in the operating record. The notation on the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill facility and that use of the land is restricted to the planned use described in the post-closure maintenance plan [Title 27, § 20515(a)(4) and §21170, and 40 C.F.R. § 258.60(i)].
20. Construction or repair of the final cover system's low-hydraulic conductivity layer is to be carried out in accordance with an approved construction quality assurance plan [Title 27, § 21090(b)(1)(E)].
21. The Discharger shall incorporate into the closure and post-closure maintenance plan a cover-integrity monitoring and maintenance program which includes at least the following: a periodic leak search, periodic identification of other problem areas, prompt cover repair, and vegetation maintenance [Title 27, § 21090(a)(4)].
22. The Discharger shall complete a final cover survey upon completion of closure activities for that portion of the landfill. The final cover surveys shall include an initial survey and map [Title 27, § 21090(e)(1). Every **five years**, the Discharger shall conduct a survey of the closed landfill cover and submit an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer [Title 27, § 21090(e)(2)].
23. Within **30 days** of completion of all closure activities, the Discharger shall certify that all closure activities were performed in accordance with the most recently approved final closure plan and CQA Plan, and in accordance with all applicable regulations. The Discharger shall also certify that closed landfill units shall be maintained in accordance with and approved post-closure maintenance plan [Title 27, § 21710(c)(6)].
24. Within **180 days** of completion of closure construction activities, the Discharger shall submit final documentation of closure, including the Certification of Closure. The closure documents shall include a final construction quality assurance report and any other documents necessary to support the certification [Title 27, § 21880].
25. The post-closure maintenance period shall continue until the Central Valley Water Board determines that wastes remaining in the landfill unit(s) no longer pose a threat to water quality [Title 27, § 20950(a)(1)].

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

#### **H. STANDARD FINANCIAL ASSURANCE PROVISIONS**

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

#### **I. STANDARD MONITORING SPECIFICATIONS**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- a. **Initial Determination of Measurably Significant Evidence of a Release.** The Discharger shall compare the value reported by the laboratory for each analyte to the statistically-derived concentration limit from the most recent report (Annual Monitoring Report or Water Quality Protection Standard Report) that uses the approved statistical procedure. If the value exceeds

the concentration limit for that constituent, the Discharger shall conclude that there is measurably significant evidence of a release [Title 27, § 20420(i)].

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

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

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

## **J. RESPONSE TO A RELEASE**

**1. Measurably Significant Evidence of a Release Has Been Confirmed.** If the Discharger has confirmed that there is measurably significant evidence of a release from a waste management unit pursuant to Standard Monitoring Specification I.46 or I.47, then the Discharger shall:

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

necessary to meet the requirements of Title 27, section 20430. At a minimum, the initial engineering feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all constituents of concern [Title 27, § 20420(k)(6)].

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

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

## K. GENERAL PROVISIONS

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

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

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

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

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

#### **L. STORM WATER PROVISIONS**

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

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

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

## INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER R5-2013-0013  
SAN JOAQUIN COUNTY DEPARTMENT OF PUBLIC WORKS  
CORRAL HOLLOW SANITARY LANDFILL  
SAN JOAQUIN COUNTY

### **Background**

The San Joaquin County Department of Public Works (hereinafter Discharger) owns and operates the closed Class III Corral Hollow Sanitary Landfill (Facility) approximately 5 miles south of the city of Tracy. The Facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.

The closed facility is on a 58-acre property at 31130 Corral Hollow Road. The Facility is comprised of Assessor's Parcel Numbers (APN) 253-030-005, 253-030-006, and 253-030-007.

The landfill was operated by the City of Tracy from 1946 until 1991. The Discharger operated the landfill after that time.

In the fourth quarter of 1991, volatile organic compounds (VOCs) (Trichlorofluoromethane and Tetrachloroethene) were first detected in groundwater samples collected from MW-5 (shallow aquifer), and were confirmed in February 1992.

On 26 September 1994, the Central Valley Water Board issued Order No. 94-259 classifying the unlined landfill waste management unit at the Facility as a Class III unit for the discharge of municipal solid waste. This Order continues to classify the landfill as Class III in accordance with Title 27.

In 1995, a corrective action plan (CAP) was implemented which included the closure and final cover construction for the landfill. The Discharger ceased accepting waste in 1995 and formal closure was completed in 1996.

The closed landfill area consisted of one unlined waste management unit covering approximately 43 acres. The 43-acre final cover was installed as prescribed in Title 27 and consists of a foundation layer of soil that varies from 2 to 6 feet thick. A low-permeability soil layer that is a minimum of 1-foot thick overlies the foundation layer. The low-permeability soil is an engineered mixture of selected soil and red clay. The uppermost layer is a nominal 1-foot thick vegetative layer of compacted soil that was hyroseeded after preparation.

On-site facilities at the Corral Hollow Sanitary Landfill currently include: a landfill closure cover, shallow and deep aquifer groundwater monitoring networks, an unsaturated (vadose) zone soil gas sampling network, an active landfill gas extraction system, and a landfill gas flare.

The landfill is on the alluvial fan at the mouth of Corral Hollow Creek at the base of the eastern side of the Coast Range. The nearest surface water is Corral Hollow Creek, which is adjacent to the southeastern boundary of the landfill.

Past drilling and geologic investigations at the site suggest that the landfill is underlain by recent alluvium, Quaternary stream terrace deposits, and relatively unconsolidated sedimentary rock of the Plio-Pleistocene age Turlock Formation. Lithologies within these three units are similar, and include assemblages of clays, silts, sands, and gravels. The Corcoran Clay member of the Corcoran Formation (also referred to as the Turlock Formation) has been identified in exploratory boreholes drilled around the northern third of the landfill. The Corcoran Formation is characterized as moderately to high plastic clays, and mixtures of clays with silts, sands, and gravels.

The first encountered groundwater ranges from about 12 feet to 65 feet below the native ground surface. This shallow perched aquifer is found beneath the northeast and east side of the landfill property. This aquifer is not found west of the landfill. Groundwater elevations range from about 228 feet MSL to 237 feet MSL. The direction of shallow perched groundwater flow varies due to groundwater mounding at groundwater monitoring well SB-1. However, there are indications of shallow groundwater flowing northeasterly from the Facility due to groundwater elevation monitoring in wells MW-9A through MW-11A located offsite. The estimated average groundwater gradient is approximately 0.04 feet per foot. The estimated average groundwater velocity is 11.16 feet per year.

A deep aquifer exists from about 300 feet to 350 feet below the native ground surface. Groundwater elevations range from about -39 feet MSL to -57 feet MSL. The direction of deep aquifer groundwater flow is generally toward the northeast. The estimated average groundwater gradient is approximately 0.005 feet per foot. The estimated average groundwater velocity is 1.39 feet per year.

In 2005 the Discharger discovered additional municipal waste outside of the original landfill area. In 2007, the Discharger determined that an additional 1.6 acres of municipal solid waste existed outside of the original landfill area. Approximately 0.3 acres of the 1.6 acres exists on California Department of Transportation (Caltrans) property.

On 14 January 2008, VOCs were detected in shallow monitoring well MW-8. The compounds and concentrations detected indicate that the source of ground water contamination emanates from an area near MW-5, most likely from LFG not captured by the existing LFG system, which includes the area without a final cover.

During February 2012, the Discharger advanced three step-out borings to fulfill the requirements of the Evaluation Monitoring Plan. Three borings were constructed as permanent groundwater monitoring wells MW-9A through MW-11A. Groundwater samples detected at low concentrations in all three step-out wells. In a letter dated 26 September 2012, Board staff issued a Notice of Violation (NOV) requesting that the Discharger provide a work plan to conduct additional off site investigation to define the VOC plume northeast of the site. In a letter dated 29 October 2012 the Discharger submitted a work plan to comply with

the NOV. The Discharger is currently complying with Board staff in evaluating and correcting the shallow groundwater contamination plume through implementation of a separate Order.

WDRs Order R5-2001-176, adopted by the Central Valley Water Board on 14 June 2001, prescribes requirements for closure and postclosure maintenance at the closed Class III Corral Hollow Sanitary Landfill. The Discharger through an amended Report of Waste Discharge (ROWD) proposes to extend the closure cover over the 1.6 acres of waste discovered outside of the previously closed landfill area. Order R5-2001-179 will be rescinded and replaced with this Order.

### **Planned Changes at the Facility**

On 6 October 2011, the Discharger submitted an amended ROWD as part of the Joint Technical Document (JTD) for the landfill. This document was revised on 26 October 2012. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including:

1. Addendum to the closure and postclosure maintenance plan to include extension of closure cover over approximately 1.6 acres of landfill waste discovered outside of previously covered landfill. The Discharger proposes an engineered alternative final cover for the closure cover extension consisting of, in ascending order, the following layers:
  - a. Two-foot soil foundation layer.
  - b. A 60 mil double-sided textured LLDPE geomembrane.
  - c. A 200 mil geocomposite drainage net (HDPE core with non-woven polyester or polypropylene geotextile on either side).
  - d. Two-foot vegetative erosion control soil layer.

The Discharger has demonstrated that the engineered alternative final cover meets the performance goals of Title 27 and that it is equivalent to the prescriptive standard.

2. Expansions of landfill gas collection well network into the closure cover extension project area. The landfill gas collection well network will be expanded from 44 gas extraction wells to 46 gas extraction wells by installing two new extraction wells in the adjacent Caltrans owned property;
3. Evaluation and delineation of the extent of groundwater contamination plume originating from landfill. The time schedule for completion of this action will be required under a separate Order; and
4. Implementation of corrective action to remediate discharge of waste constituents to receiving waters. The time schedule for completion of this action will be required under a separate Order.

The existing unsaturated zone monitoring consists of seven landfill gas monitoring probes GW-1 through GW-7, located along the perimeter of the landfill. The gas probes are monitored for fixed gases quarterly and gas samples are collected and analyzed for Volatile Organic Compounds (VOCs) semiannually. VOCs are regularly detected in landfill gas (LFG) samples collected and are partitioning into groundwater beneath the site. All shallow groundwater wells have been affected by LFG emanating from the WMU.

### Discharge Prohibitions, Specifications and Provisions

The Discharger submitted a Water Quality Protection Standard (WQPS) report on 29 December 1993 proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed to use intrawell data analysis to calculate tolerance limits for the monitored constituents.

The Water Quality Protection Standards in this revised Order were updated excluding data identified as outliers using the EPA 1989 Outlier Test or data that indicates an upward trend due to a release of COCs to receiving water. The most recent concentration limits calculated using the outlier and upward trend exclusion criteria stated above for select parameters are as follows:

Sampling Well	SB-1	MW-4	MW-5	MW-8	MW-6	MW-7
Analysis Type	Intrawell	Intrawell	Intrawell	Intrawell	Intrawell	Intrawell
pH (Units)	5.98-7.62	6.68-7.83	6.49-7.9	6.82-7.9	<b>5.70-9.78</b>	<b>6.68-8.04</b>
EC <sup>1</sup> (umhos/cm)	1180	2920	<b>1700</b>	745	1144	1636
Turbidity (NTU)	202	170	102	57	57	45
TDS <sup>2</sup> (mg/L)	719	<b>2000</b>	909	442	780	<b>1100</b>
Chloride (mg/L) <sup>3</sup>	26	<b>380</b>	139	86	117	165
Nitrate as N (mg/L)	0.33	16	19	14	3	6
Sulfate (mg/L)	58	776	18	26	323	369
Carbonate Alkalinity as CaCO <sub>3</sub>	<b>0.81</b>	5.4	<b>480</b>	<b>2</b>	3.4	3.6
Bicarbonate Alkalinity as CaCO <sub>3</sub>	<b>600</b>	<b>400</b>	<b>660</b>	281	277	330
VOCs	Non Detect	Non Detect	Non Detect	Non Detect	Non Detect	Non Detect

Notes: The limits in bold are concentration limits that were set by the Discharger and not adjusted due to increasing trends e.g. evidence of a release. Concentration limits not in bold are concentration limits that RWQCB staff calculated after outliers were removed. Outliers should not be used to calculate concentration limits when concentration limits are used for detection monitoring.

- <sup>1</sup> Electrical Conductivity
- <sup>2</sup> Total Dissolved Solids
- <sup>3</sup> Milligrams per liter

The Monitoring and Reporting Program is designed to verify compliance with concentration limits, and other operational requirements of the WDRs.

The Discharger shall complete the tasks contained in the revised waste discharge requirements in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
<b>A. Installation of landfill cover extension</b> The Discharger shall complete installation of landfill cover extension, associated ground water monitoring wells , gas extraction wells, gas probes, and related equipment and appurtenances and perform final CQA as described in Addendum to the Final Closure Plan dated 26 October 2012.	1 September 2013
<b>B. Final CQA documentation</b> The Discharger shall submit a Final CQA Documentation Report containing all reports submitted concerning the placement of the cover extension containment system. This report shall include at an minimum all documentation required under Title 27 §20324(d)(1), and shall show that the landfill cover extension was constructed as required by this Order.	1 November 2013