

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2014-0084

WASTE DISCHARGE REQUIREMENTS  
FOR  
GLENN COUNTY  
FOR  
CORRECTIVE ACTION AND FINAL CLOSURE  
GLENN COUNTY CLASS III MUNICIPAL SOLID WASTE LANDFILL  
GLENN COUNTY

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

1. Glenn County (hereafter Discharger) owns and operates the Glenn County Class III Municipal Solid Waste Landfill (Glenn County Landfill) located at the end of County Road 33, approximately five miles west of the town of Artois in Sections 26, 27, 34 and 35, T21N, R4W, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order. The majority of the landfill property is located in Section 35. The landfill facility is comprised of Assessor Parcel Numbers (APN) 024-220-032-9, 024-220-034-9, 024-220-037-9, and 024-220-039-9.
2. The Glenn County Landfill facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.
3. The entire Glenn County Landfill facility encompasses a total of 356.39 acres of land. The landfill consists of one unlined waste management unit (Unit) referred to as Area A covering approximately 76.3 acres, Expansion Area B located in the northeastern part of the property which is used for obtaining borrow soil and managing storm water, a perimeter access road around the Unit and Expansion Area B, an equipment shop located at the west end of the facility, and a scale house and recyclable material public drop off area at the eastern part of the property as shown on Attachment B, which is incorporated herein and made part of this Order by reference. At the west end of the facility, the Unit was formerly split by an access road leading to the equipment shop. Wastes are not buried beneath this access road or the equipment shop. In 2006, the Discharger began placing baled waste tires on the road. The baled waste tires are stacked on top of each other until sufficient elevation is reached. The tire bales are then covered with soil at an elevation that corresponds with proposed final cover contours and then graded to drain storm water away from the Unit. Waste tires are considered

inert waste, so this was not a lateral expansion of the Unit. The final cover proposed for the Unit will fully cover all of Area A, including the waste tire bales.

4. Household hazardous wastes (HHW) are collected at the site during specific collection events, and occasionally during load-checking of self-hauled wastes. The landfill contracts with a professional HHW contractor for removal of HHW within 90 days of collection. During the period before off-site disposal, HHW are stored in a building located near the scale house.
5. The Discharger uses a heavy reusable tarp for alternative daily cover (ADC) over compacted wastes. The tarp was approved for use as ADC by the Glenn County Solid Waste Local Enforcement Agency (LEA). Reusable tarps are adequate for limiting percolation of liquids through exposed wastes at the active face. Six inches of soil cover is applied every seven days at a minimum. Areas that do not receive waste for 180 days are covered with 12 inches of soil.
6. Landfills propose use of new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any new ADC (other than tarps) proposed for use at the facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. The approved ADC materials should then be listed in the facility's WDRs during the next regular update or revision with information about the Discharger's demonstration. This Order also includes a requirement that ADC only be used in internal areas of the landfill unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality. The demonstration can take sedimentation basins into account.
7. Glenn County Landfill is unlined and has no leachate collection and removal system (LCRS). Historically, leachate seeps have been observed at Glenn County Landfill after extended periods of precipitation. Leachate seeps have sometimes been observed discharging to areas outside of the existing Unit boundary and seeps are further exacerbated by rainfall that mobilizes pollutants for potential discharge to adjacent properties. In response to recurring leachate seeps at the site, the Discharger prepared an 11 September 2009 Leachate Management Master Plan that includes response actions to be implemented by Glenn County Landfill staff when leachate seeps are identified. The Leachate Management Master Plan was conditionally approved by Central Valley Water Board staff in a 17 September 2009 letter.
8. Originally, the Glenn County Landfill encompassed 192.62 acres that were leased from the Coleman Foley Marital Trust. The lack of ownership by the county created permitting difficulties and the county wanted to expand the facility

boundary to provide a buffer area around the landfill. The county elected to obtain the landfill and expansion area properties via eminent domain. In August 2009, the County of Glenn was awarded pre-judgment possession of the properties through an eminent domain action. The original landfill site and the added 163.77 acres of expansion area increased the total landfill property to 356.39 acres.

9. The Discharger anticipates accepting wastes at the landfill through 2016, when final capacity should be reached based on current waste acceptance rates. The Discharger will construct and operate a temporary solid waste transfer station and inert waste disposal cell once the landfill ceases to accept wastes for disposal. Inert wastes that will be accepted include concrete, cinder blocks, fully cured asphalt, bricks, and clean soil. The temporary inert disposal cell will cover 0.26 acres and have a total capacity of 1,500 cubic yards. A permanent solid waste transfer station and inert disposal cell may be operated in the future, depending on the solid waste management needs of Glenn County. If needed, the permanent inert disposal cell will cover 0.98 acres and have a total capacity of approximately 20,000 cubic yards. Once the inert cells reach capacity, a final cover consisting of three feet of compacted soil will be installed with appropriate erosion and sediment control best management practices (BMPs) implemented.
10. Glenn County first leased the landfill property in July 1971, and waste disposal operations began in 1972. Glenn County previously operated the site under Waste Discharge Requirements (WDRs) Order Nos. 95-161 and R5-2006-0119, which classified the Unit as a Class III Unit for the discharge of non-hazardous municipal solid waste. The site meets the siting criteria for a Class III Unit because (1) groundwater is more than five feet below the bottom of the waste, (2) the foundation is suitable for waste filling, (3) the site is not susceptible to rapid geologic change, (4) no known Holocene faults are present within seven miles of the landfill, and (5) the landfill is not susceptible to floods, inundation, seiches, or tsunamis. This Order continues to classify the Unit as a Class III Unit. This Order supersedes all previous WDRs and establishes a schedule for corrective action and landfill closure.
11. On 8 March 2013, the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. The ROWD was revised again 12 February 2014 to include a description of the temporary and permanent (if needed) inert disposal cells and a preliminary closure and post-closure maintenance plan with cost estimates for both inert disposal cells. Additionally, in January 2013, the Discharger submitted Final Closure and Post-Closure Maintenance Plans (FCPCMP) for the landfill. The information in the ROWD/JTD and the FCPCMP has been used in revising these WDRs. The ROWD and the FCPCMP contain applicable information required in Title 27.
12. Groundwater quality has been impacted in the vicinity of Glenn County Landfill as a result of waste disposal activities, as described later in this Order. Additionally,

it's estimated that the landfill will reach its design capacity in late 2016. The Discharger has proposed installation of a final cover system over buried wastes as corrective action in response to the groundwater impacts. The Discharger is also proposing to construct and operate a temporary transfer station and an inert disposal cell north of the landfill scale house. A permanent transfer station and second inert disposal cell may be constructed and operated in the future near the existing household hazardous waste building.

13. 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.
14. 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 attached Monitoring and Reporting Program (MRP) No. R5-2014-0084 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.
15. 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 LEA in charge of implementing CalRecycle's regulations.

#### **WASTE CLASSIFICATION AND UNIT CLASSIFICATION**

16. Based on a site life projection included with the FCPCMP, the Discharger proposes to continue to discharge nonhazardous solid waste, including municipal

solid waste, construction and demolition waste, green waste, and fiberglass to the unlined Class III Unit known as Area A through September 2016. These classified wastes may continue to be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.

The active unlined landfill Unit at the facility is an "existing Unit" under Title 27 that was operating prior to 27 November 1984. The landfill may continue to accept waste in the "Existing Footprint" until ready for closure unless waste receipts do not meet the timeframes and amounts in Title 27, section 21110, or they are required to close sooner to address environmental impacts or other regulatory concerns. The "Existing Footprint" as defined in Title 27, section 20164 is the area that was covered by waste as of the date that the landfill unit became subject to Subtitle D. The Existing Footprint for the active unlined area of the landfill is shown on Attachment B.

### SITE DESCRIPTION

17. Glenn County Landfill is located at the western edge of the Sacramento Valley where the terrain changes from relatively flat ground to the east to hilly ground to the west. Native slopes range from less than 5% in the valley bottoms to as steep as 2-to-1 (horizontal to vertical) on the side slopes of hills. The elevation ranges from 200 feet MSL in the drainage bottoms at the east edge of the property to over 300 feet MSL on the ridge top at the west edge of the property.
18. Glenn County Landfill is located on a drainage divide between shallow valleys located on the north and south of the landfill. Both valleys drain toward the east. The southern valley contains White Cabin Creek and the northern valley contains the headwaters of Wilson Creek. Both creeks flow under the Tehama-Colusa Canal east of the landfill and are tributary to Willow Creek a mile north of the town of Willows.
19. Land immediately surrounding the landfill is range land used for dry-land grazing of livestock. There are no irrigated lands adjoining the landfill property. The nearest permanent residence is approximately 5,000 feet northeast of the facility's eastern boundary. A seasonal residence used by sheepherders is located approximately 1,800 feet west of the facility's western boundary. The Tehama-Colusa Canal abuts the southeast boundary of the landfill property and the community of Artois is located approximately five miles east of the landfill.
20. The Land Use Element of the Glenn County General Plan specifies that use of land surrounding the landfill be limited to agriculture with minimum parcel sizes of 80 acres. In adopting the General Plan, the Glenn County Board of Supervisors designated the Glenn County Landfill as "Landfill" and the surrounding land as "Agriculture Preserve" and deemed these uses compatible. The landfill is consistent with the General Plan and a Use Permit is not required. The Glenn

County Landfill is in conformance with the Glenn County Solid Waste Management Plan.

21. Potable water for the landfill and its employees is provided by bottled water. Water for dust control is obtained from the adjacent Tehama-Colusa Canal via a portable pump. Non-potable water is obtained from on-site wells located near the equipment shop at the west end of the landfill and the household hazardous waste collection and storage facility east of the scale house.
22. The ROWD identified four parcels with structures and possible domestic water supply wells located within one mile of the landfill. Use of these wells is unknown.
23. Glenn County Landfill is located in the northwestern part of the Colusa Sub-basin, a sub-basin of the Sacramento Valley groundwater basin. In the area near the landfill, the Sacramento Valley groundwater basin is filled with Tertiary-age sediments that are thickest in the central part of the valley and thin to the east and west.
24. Geologic units occurring at the surface in the western part of the Colusa Sub-basin are, from youngest to oldest, recent stream deposits consisting of unconsolidated gravel, sand, silt, and clay; the Pleistocene-age Modesto and Riverbank Formations; Stony Creek alluvial fan deposits; and the Pliocene-age Tehama and Tuscan Formations. The Oligocene to late-Miocene-age Upper Princeton Gorge Formation and the late-Jurassic to Cretaceous-age Great Valley Sequence are subsurface geologic units near the landfill.
25. The Modesto Formation consists of unconsolidated, slightly weathered gravel, sand, silt, and clay. The Riverbank Formation consists of unconsolidated to semi-consolidated gravel, sand, silt and minor clay. These units were deposited by streams on the eroded surface of the older underlying units. The Modesto and Riverbank Formations can contain groundwater, but these units do not support the main water-supply aquifers in the area.
26. Glenn County Landfill is located west of the Stony Creek alluvial fan, which consists of unconsolidated sediment from Stony Creek and the Sacramento River. It has a maximum thickness of 120 feet with an average thickness of 50 to 80 feet. The Stony Creek alluvial fan is approximately 14 miles wide and 26 miles long running from southern Tehama County to the town of Willows. Unconfined groundwater occurs in the alluvial fan and water from Stony Creek can move into the fan deposits replenishing groundwater in the area.
27. The Tehama Formation underlies the landfill area and parts of the Stony Creek alluvial fan. The Tehama Formation consists of interbedded clay, silt, sand, and gravel that are thought to be alluvial in origin. The Tehama Formation is one of the main water-bearing formations in the Sacramento Valley groundwater basin.

In general, the Tehama Formation is moderately to highly permeable with moderate to high (100 to over 1,000 gallons per minute) groundwater yields.

28. To the east of the landfill, the Tuscan Formation is interfingering with the Tehama Formation. Sediment in the Tuscan Formation originated from volcanic terrains in the Cascade Mountains east of the Sacramento Valley, rather than the Coast Ranges. The Tuscan Formation consists of volcanic mudflows, ash beds, tuff breccias, and tuffaceous sandstones and conglomerates, which do not occur beneath the landfill.
29. The Oligocene to late-Miocene age Upper Princeton Gorge Formation underlies the Tehama and Tuscan Formations east of the landfill. The Upper Princeton Gorge Formation consists of non-marine sandstone with shale or conglomerate interbeds, and is a source of natural gas.
30. The late-Jurassic to Cretaceous-age Great Valley Sequence or Chico Formation underlies the Tertiary-age units in the western part of the basin. These units consist of well-consolidated to cemented, interbedded sandstone and shale. In general, these units contain poor quality groundwater with low yields.
31. Relatively undisturbed samples from borings that were later converted to monitoring wells at the landfill had laboratory measured vertical permeabilities ranging between  $2.33 \times 10^{-7}$  and  $1.0 \times 10^{-9}$  centimeters per second (cm/sec). Undisturbed soil samples collected from pits near the borrow area had measured permeabilities ranging between  $1.3 \times 10^{-6}$  and  $1.9 \times 10^{-6}$  cm/sec. In general, the undisturbed silt layers that form aquitards or perching strata beneath the landfill have very low permeability, in the range of  $1 \times 10^{-6}$  to  $1 \times 10^{-7}$  cm/sec. Sand lenses have much higher permeabilities ranging from  $1 \times 10^{-3}$  to  $1 \times 10^{-4}$  cm/sec.
32. The closest Holocene fault to the Glenn County Landfill that shows surface rupture and has the potential to produce the greatest seismic acceleration at the site is the Bartlett Springs Fault, located approximately 30 miles to the west. Only a small portion (five miles) of the fault is considered active. However, conservative calculations using the magnitude for the entire fault produced the highest anticipated bedrock acceleration of 0.16 g at the landfill. After adding sediment amplification, the deterministic seismic acceleration is 0.18 g.
33. The facility receives an average of 16.59 inches of precipitation per year as measured at the Willows Station. Nearly all the precipitation occurs as rain during the wet season (November – March). Hot, dry weather is prevalent during the rest of the year.
34. The 100-year, 24-hour precipitation event for the facility is estimated to be 4.0 inches, as depicted on Isopluvials of 100-Year 24-Hour Precipitation For Northern California, NOAA Atlas 2, Volume XI (1890 – 2000).

35. There is no short duration (less than 24 hours) data for the Willows Station, so the Department of Water Resources (DWR) Sacramento Airport Station was used to estimate shorter duration rainfall events. The Sacramento Airport Station has similar annual rainfall to the Willows Station. At the Sacramento Airport Station, the 100-year 1-hour storm is 1.07 inches.
36. The mean Class A pan evaporation at the DWR Willows 6S and the U.S. Bureau of Reclamation Willows Stations is approximately 117 inches per year, based on the California DWR, November 1979, *Evaporation from Water Surfaces in California, Bulletin 73-70*. True evaporation is assumed to be 75% of Class A pan evaporation, or about 57.61 inches.
37. The landfill is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 0600570350B.
38. Storm water sedimentation basins are located north of the shop building and east of the northern part of the Unit in the west part of the soil borrow area. The larger sedimentation basin in the soil borrow area receives runoff from a roadside ditch along a portion of the north side of the landfill. Discharge from the basin crosses the perimeter road and enters an ephemeral drainage course to the north. The basin in the west part of the sedimentation basin receives water from portions of the north side of the landfill, scale area, and the current borrow area. This basin is operated as a retention basin. That is, runoff that enters the basin either infiltrates or evaporates. Although there is no formal outlet to the retention basin, if outflow occurs, it will be to the north into the ephemeral drainage.

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

39. 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.
40. Surface water drainage on the north side of the landfill is toward an unnamed intermittent tributary of Wilson Creek and surface drainage on the south and west sides of the landfill is toward intermittent White Cabin Creek in the Colusa Trough Hydrologic Subarea (520.21) of the Sacramento Hydrologic Basin. Wilson Creek and White Cabin Creek flow under the Tehama-Colusa Canal east of the facility and both creeks are tributary to Willow Creek a mile north of the town of Willows. Willow Creek flows into Colusa Trough near the town of Colusa, and is tributary to the Yolo Bypass and the Sacramento River.
41. The beneficial uses of the Sacramento River apply to its tributaries, including Wilson Creek and White Cabin Creek. The designated beneficial uses of the



Sacramento River from Shasta Dam to the Colusa Basin Drain, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service supply; water contact and non-contact water recreation; warm and cold freshwater habitat; fish migration and spawning and wildlife habitat; and navigation.

42. The first encountered groundwater in the vicinity of the landfill ranges from about 59 to 68 feet below the native ground surface (at well M-7A). Multiple gravel/sand layers at varying depths have been observed in borings from site monitoring wells. Most of the gravel/sand intervals above about 120 feet mean sea level (MSL) are laterally discontinuous and do not exhibit fully saturated conditions. The deepest continuously saturated aquifer penetrated to date at the landfill occurs about 90 to 100 feet MSL and groundwater in this zone is confined.
43. Monitoring data indicate background groundwater quality for first encountered groundwater at well M-6 has electrical conductivity (EC) ranging between 320 and 450 micromhos/cm, with total dissolved solids (TDS) ranging between 150 and 260 milligrams per liter (mg/L).
44. The direction of the groundwater gradient in the uppermost continuously saturated interval beneath the site is generally toward the south at magnitudes ranging from 0.0041 to 0.0090 feet per foot. The estimated average groundwater velocity is 14 feet per year.
45. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

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

46. The current groundwater monitoring network for the landfill consists of 11 wells (M-4, M-5A, M-5B, M-6, M-7A, M-7B, M-8, M-9, M-10, M-11, and M-12), although three of these wells have been dry since installation (M-5A, M-9 and M-10). These WDRs require the Discharger to continue gauging wells M-5A, M-9, and M-10 for the presence of water each semiannual monitoring event and to collect samples if sufficient water is encountered during a monitoring event. Groundwater monitoring wells at the landfill have been installed in at least four different higher-permeability gravel intervals across the site, which are described in more detail below. Wells M-7A and M-7B are nested in the same boring and monitor different higher-permeability intervals. Wells M-4, M-6, M-11 and M-12 are installed into the deepest laterally continuous aquifer penetrated beneath the site at approximately 90 to 100 feet MSL.
47. Well M-4, which is installed into the deeper laterally continuous aquifer (Zone D as described below), is the only well monitoring the hydraulically downgradient edge

of the Unit. The hydraulically downgradient edge of the Unit is approximately 950 feet long. Well M-4 has been dry or contained insufficient water for sampling purposes nine times over the last 17 quarterly monitoring events (September 2009 through September 2013). This Order requires the Discharger to install at least one additional groundwater monitoring well along the hydraulically downgradient edge of the Unit into the deeper laterally continuous aquifer that is penetrated by wells M-4, M-6, M-11, and M-12. This new well is necessary to provide consistent water samples at the Point of Compliance (as defined in Title 27, section 20164) and for assessing the efficacy of the corrective action program.

48. Three additional wells (M-1, M-2, and M-5) were formerly part of the groundwater monitoring system. Wells M-1 and M-2 were destroyed in 2002. Well M-5 was located at the southeast corner of the Unit and consistently contained water. Groundwater quality in the vicinity of well M-5 was impacted with elevated inorganic constituent concentrations and consistent low-concentration volatile organic compounds (VOCs). Impacted groundwater quality in the vicinity of well M-5 is described in more detail in Finding 61 below. Well M-5 was destroyed in December 2010 and replaced with two new wells, M-5A and M-5B, with well M-5A monitoring a shallow higher-permeability interval between 41 and 56 feet below ground surface (bgs) and M-5B monitoring a deeper zone between 103 and 123 feet bgs. Well M-5A has always been dry while M-5B has consistently contained sufficient water for sampling.
49. Groundwater monitoring wells at Glenn County Landfill have been completed in at least four different sand/gravel higher-permeability intervals. To better understand the groundwater monitoring network and the water-bearing zones the wells penetrate, the sand/gravel higher-permeability intervals are referenced as Zone A (shallowest zone located between 140 and 200 feet MSL), Zone B (located between 120 and 140 feet MSL), Zone C (located between 100 and 120 feet MSL), and Zone D (deepest zone penetrated located between 90 and 100 feet MSL). Zone D is the only higher-permeability interval being monitored by at least three wells. The other zones appear laterally discontinuous and are monitored by less than three wells.
50. Well construction details for the current groundwater monitoring system are provided below:

Well ID	Installation Date	Total Depth	Screen Interval	Well Type
M-4	August 1990	163.3 ft bgs	152 – 162 ft bgs	Compliance (Zone D)
M-5A	December 2010	57 ft bgs	41 – 56.5 ft bgs	Compliance (Zone A)
M-5B	November 2010	124 ft bgs	103 – 123 ft bgs	Compliance (Zone B)
M-6	September 1990	142.87 ft bgs	132 -142 ft bgs	Background (Zone D)
M-7A	October 2002	146.5 ft bgs	59.75 – 69.75 ft bgs	Compliance (Zone A)
M-7B	October 2002	146.5 ft bgs	109.75 – 144.75 ft bgs	Compliance (Zone C)
M-8	October 2002	167 ft bgs	145 – 165 ft bgs	Compliance (Zone B)
M-9	October 2007	125 ft bgs (backfilled with bentonite from 87 to 125 ft bgs)	65 – 85 ft bgs	Compliance (Zone A)
M-10	October 2007	135 ft bgs (backfilled with bentonite from 110 to 135 ft bgs)	97 – 107 ft bgs	Compliance (Zone B)
M-11	August 2012	170 ft bgs	142 – 162 ft bgs	Compliance (Zone D)
M-12	August 2012	275 ft bgs	219 – 229 ft bgs	Background (Zone D)

51. As described in Finding 47 above, the Discharger's corrective action monitoring program for groundwater at the landfill requires installation of an additional groundwater monitoring well along the hydraulically downgradient edge of the Unit.
52. A suction lysimeter (SL-1) is located along the northwestern boundary of the Unit. Total depth of SL-1 is 26.5 feet bgs. Suction lysimeter SL-1 will be monitored for the parameters and constituents and at the frequency listed in Table II of MRP No. R5-2014-0084.
53. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since VOCs are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill Unit. Title 27, sections 20415(e)(8) and (9) allow 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.

54. 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.
55. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill Unit, the 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.
56. For a naturally occurring constituent of concern, Title 27 requires concentration limits for each constituent of concern be determined as follows:
  - a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
  - b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).
57. The Discharger submitted a 23 February 2009 Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed use of Shewhart-CUSUM control charts for evaluating groundwater monitoring data. The WQPS concentration limits have not been updated since 2009, so this Order requires submittal of an updated WQPS report that includes updated concentration limits.

## GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

58. Between December 2000 and October 2006, each monitoring well included in the groundwater monitoring program had at least one detection of a volatile organic compound above its respective PQL. Between December 2007 and December 2010, Bis(2-ethylhexyl)phthalate was detected at low concentrations in wells M-4, M-6, M-7A, and M-7B and Di-n-butyl phthalate was detected below the PQL in wells M-5B and M-7B. Wells M-5B, M-7A, and former well M-5 also exhibit elevated inorganic constituent concentrations as compared to other site monitoring wells.
59. On 14 October 2003, 10 dual completion soil gas monitoring wells were sampled for volatile organic compounds using EPA Method TO-14. The gas monitoring wells have shallow (5-10 feet bgs) and deep (25 to 30 feet bgs) screened intervals. The 14 October 2003 soil gas samples were obtained during a period of high atmospheric pressure. Sample results identified 26 different VOCs found throughout the landfill at varying concentrations. Eighteen of the 20 soil gas probes had at least one detection of VOCs. On 4 and 5 December 2003, additional soil gas samples were obtained during a period of low atmospheric pressure. During the December 2003 soil gas sampling event, VOCs were detected in all but one soil gas probe. These VOC detections in soil gas around the landfill may be an indication that landfill gas is contributing to observed groundwater impacts at the site.
60. Suction lysimeter SL-1 located along the northwestern edge of the Unit has been monitored for VOCs since 2006. During that time, 27 different VOCs were detected in soil pore liquid. In September 2013, acetone, 1,4-dichlorobenzene, 1,1-DCA, cis-1,2-di-chloroethene, methyl iodide, and MtBE were detected above laboratory reporting limits in soil pore liquid from SL-1.
61. Groundwater quality in the vicinity of former well M-5 has been impacted from elevated inorganic constituent concentrations and consistent low-concentration VOCs. In July 2010, the Discharger inspected the integrity of well M-5 using down-hole video and discovered that the PVC casing was damaged at several joints beginning at 28 feet bgs allowing leachate to enter the well. The well casing acted as a direct conduit for leachate migration to groundwater causing water quality impacts. Well M-5 was destroyed in December 2010 and replaced with two new wells, M-5A and M-5B.
62. Trilinear diagrams and Stiff patterns for former well M-5, wells M-5B and M-7A, and leachate are similar, although the leachate pattern is about five times larger than well patterns. Some inorganic parameters in former well M-5 had concentrations approaching the concentrations found in pure leachate because the damaged well casing allowed leachate to directly contact groundwater. Water quality in well M-7A shows a more "muted leachate signature" possibly from

undergoing chemical changes during downward migration of leachate through the subsurface.

63. The uppermost continuously saturated zone beneath the landfill as represented by wells M-4, M-6, M-11, and M-12 does not show impacts from leachate migration. However, isolated shallower higher-permeability intervals have shown groundwater impacts, as represented by wells M-5B, M-7A, and former well M-5.
64. In November 2011, the Discharger submitted a report titled *Hydrogeological Evaluation and Site Review for Glenn County Landfill*. This report concluded that groundwater pollution at the Glenn County Landfill appears to be caused mainly by leachate migration, although landfill gas has the potential to impart VOCs to groundwater. This report recommended installation of a final cover system over the Unit with passive gas venting as the preferred corrective action for the site.

### LANDFILL CLOSURE

65. 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 a bottom liner).
  - d. One-foot soil erosion resistant/vegetative layer.
66. 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.
67. The Discharger submitted a January 2013 *Final Closure and Post-Closure Maintenance Plan* (FCPCMP) for closure and post-closure maintenance of the Unit. The FCPCMP proposes an alternative final cover system as described in Finding 68 below. Beginning in 2014, the Discharger's landfill staff will start constructing the foundation layer over inactive portions of the landfill. The Discharger anticipates receiving wastes through September 2016, but this date is only an estimate and may be affected by lower or higher waste receipt volumes. The Discharger's landfill staff will complete installation of the foundation layer as described in the FCPCMP and in accordance with the approved Construction Quality Assurance Plan in fall 2016 or spring/summer 2017, depending on waste receipt volumes. This Order requires completion of final closure construction activities **by 15 November 2018**.

68. The Discharger proposes an engineered alternative final cover consisting of, in ascending order, the following layers:
- a. 2-foot thick foundation layer.
  - b. 40-mil HDPE or LLDPE geomembrane, whichever is less costly.
  - c. Geocomposite drainage layer for slopes steeper than 19.4%.
  - d. 8-oz geotextile cushioning layer (or several inch thick sand layer if sand is available).
  - e. 1.5-foot thick vegetative layer.
69. The HDPE or LLDPE geomembrane proposed for use as the low-hydraulic conductivity layer of the final cover system has permeability much less than the prescriptive standard of  $1 \times 10^{-6}$  cm/s contained in Title 27, section 21090.
70. A passive landfill gas collection and venting system will be installed in the upper layer of waste immediately below the foundation layer. Landfill gas will be collected in horizontal collection pipes and vented to the atmosphere at risers installed at the ends of each row.
71. Side slopes for the closed landfill will not exceed a ratio of 3H:1V and the flatter top deck will have a minimum slope of 3% or greater. Side slopes do not exceed 50 vertical feet in elevation, so benches are not proposed.
72. The Discharger performed a slope stability analysis for the proposed final cover using Geoslope's model Slope/W Version 4.0. The slope stability analysis calculated a static and pseudostatic factor of safety for the weakest failure plane (foundation layer side slopes with geocomposite drainage layer) of 2.48 and 1.52, respectively. 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 and have a dynamic factor of safety greater than 1.5.
73. 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.

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

74. The Discharger submitted a January 2013 *Final Closure and Post-Closure Maintenance Plan* (FCPCMP) for closure and post-closure maintenance of Glenn County Landfill. 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. Post-closure maintenance inspections will assess the condition of the final cover, drainage features, groundwater monitoring wells, access roads, passive landfill gas collection and venting 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.

75. Once every five years during the post-closure maintenance period, topographic 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 after the Initial Survey and Map are prepared after final closure construction is completed.
76. The completed final cover will be periodically assessed for damage or defects during annual inspections of the final cover system pursuant to Title 27, section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the Construction Quality Assurance (CQA) Plan used during closure.

#### **INERT CELL CLOSURE AND POST-CLOSURE MAINTENANCE**

77. The Discharger submitted a Preliminary Closure and Post-Closure Maintenance Plan for the temporary and permanent (if needed) inert disposal cells with the ROWD. When an inert disposal cell reaches capacity, it will receive a final cover system consisting of three feet of compacted soil. The soil final cover will be fertilized and seeded with native grasses as an erosion and sediment control BMP. A cost estimate for closure of the temporary inert cell was estimated to be \$33,252, with post-closure maintenance costs estimated at \$91,412, both in 2014 dollars. A cost estimate for closure of the permanent inert cell (if needed) is estimated to be \$109,591, with post-closure maintenance costs estimated at \$149,012, both in 2014 dollars.

#### **FINANCIAL ASSURANCES**

78. 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 January 2013 *Final Closure and Post-Closure Maintenance Plan* includes a cost estimate for landfill closure. The total amount of the closure cost estimate in 2014 dollars is \$10,018,312 including a 20% contingency. This Order requires the Discharger to maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate adjusted annually for inflation. As of 2012, the trust fund balance for closure costs was \$3,825,760. The Discharger intends to apply for a low-interest loan to fund the remaining portion of landfill closure.



79. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's January 2013 *Final 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 2014 dollars is \$4,182,920. This Order requires the Discharger to maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation. The Discharger does not have a funding mechanism for post-closure maintenance. The Discharger anticipates establishing a Pledge of Revenue or similar mechanism for post-closure maintenance prior to closure.
80. Title 27, section 22100(b) requires owners and operators of disposal facilities that are required to be permitted as solid waste landfills to provide cost estimates for initiating and completing corrective action for known or reasonably foreseeable releases of waste. Title 27, section 22101 requires submittal of a *Water Release Corrective Action Estimate* and a *Non-Water Release Corrective Action Cost Estimate*. The *Water Release Corrective Action Estimate* is for scenarios where there is statistically significant evidence of a release of waste to ground or surface water. The *Non-Water Release Corrective Action Cost Estimate* is for complete replacement of the landfill final cover system, however a site-specific corrective action plan pursuant to Title 27, section 22101(b)(2) may be provided in lieu of the final cover replacement cost estimate. Title 27, section 22221 requires establishment of financial assurances in the amount of the approved *Water Release Corrective Action Estimate* or an approved *Non-Water Release Corrective Action Cost Estimate*, whichever is greater.
81. In the January 2013 FCPCMP, the Discharger provided a *Water Release Corrective Action Estimate* in the amount of \$695,500 for a groundwater pump-and-treat system with discharge of treated groundwater to an evaporation pond on-site. The Discharger has not provided a *Non-Water Release Corrective Action Cost Estimate* in accordance with Title 27, section 22101(b). This Order requires the Discharger to provide a *Non-Water Release Corrective Action Cost Estimate* and to maintain financial assurances in the amount of the approved *Water Release Corrective Action Estimate* or an approved *Non-Water Release Corrective Action Cost Estimate*, whichever is greater.
82. The Discharger needs to establish financial assurances for closure and post-closure maintenance costs associated with the temporary and permanent inert disposal cells. Finding 77 above lists the closure and post-closure maintenance cost estimates.

### CEQA AND OTHER CONSIDERATIONS

83. Closure of the landfill and opening a new landfill or transfer station was described in a Programmatic Environmental Impact Report (PEIR) that evaluated several

options for waste management within Glenn County. Therefore, final closure of the Phase A Unit at the landfill was evaluated in conformance with the California Environmental Quality Act (CEQA), although a Notice of Determination for the PEIR pertained only to expanding the property boundary. Because the previous Notice of Determination did not explicitly address landfill closure, an Initial Study for closure of the landfill and operation of temporary and permanent transfer stations (if needed) will be prepared. The Initial Study will be circulated per the CEQA process, and the appropriate environmental document will be prepared and certified. The Discharger anticipates filing a Notice of Determination for landfill closure and operation of a transfer station by May 2014.

84. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the CEQA, Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with California Code of Regulations, title 14, section 15301.

85. 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.

86. 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."

87. Water Code section 13267(b) provides that: "In conducting an investigation specified in subdivision (a), the Regional Board may require that any person who

has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge, waste outside of its region that could affect the quality of waters 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."

88. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2014-0084" 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**

89. 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.
90. 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.
91. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

**IT IS HEREBY ORDERED**, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2006-0119 is rescinded except for purposes of enforcement, and that Glenn County, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

#### **A. PROHIBITIONS**

1. The discharge of 'hazardous waste' or 'designated waste' is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in California Code of Regulations, Title 23, section 2510 et seq., and 'designated waste' is as defined in Water Code section 13173.
2. The discharge of any material other than concrete (including fiberglass or steel reinforcing bar embedded in the concrete), cinder blocks, fully cured asphalt, bricks, or clean soil to the inert disposal cells is prohibited, unless the Discharger first receives

written approval from Central Valley Water Board staff and the Glenn County Local Enforcement Agency (LEA) for a material other than those listed above.

3. The Discharger shall comply with all applicable 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 only discharge the wastes listed or allowed under the Waste Classification and Unit Classification section in the Findings of this Order.
2. The Discharger shall only discharge concrete (including fiberglass or steel reinforcing bar embedded in the concrete), cinder blocks, fully cured asphalt, bricks, or clean soil to the inert disposal cells, unless the Discharger first receives written approval from Central Valley Water Board staff and the Glenn County LEA for a material other than those listed above.
3. The Discharger may not use any material as alternative daily cover (ADC) that is not listed as approved ADC in the Findings of these WDRs unless and until the Discharger demonstrates it meets the requirements in Title 27, section 20705, and the Discharger has received Central Valley Water Board approval that it may begin using the material as ADC. Currently, the Discharger is only approved to use tarps as ADC.
4. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the Unit unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
5. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.
6. The Discharger shall comply with all applicable 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. **Prior to the start of the wet weather season and no later than 31 October annually**, the Discharger shall construct a wet weather tipping pad (if still operating)

and install any necessary erosion and sediment control best management practice needed to limit erosion and off-site transport of sediment.

2. The Discharger shall maintain a Storm Water Pollution Prevention Plan (SWPPP) that is site specific and addresses operation and closure of the Phase A MSW disposal area and the temporary and permanent transfer stations and inert cells in accordance with State Water Resources Control Board Order No. 97-03-DWQ and subsequent replacement Orders. The SWPPP shall be updated prior to constructing and operating the temporary and permanent transfer stations and inert cells. Any storm water discharge off-site shall be done in accordance with applicable storm water regulations.
3. The Discharger shall comply with all applicable 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 comply with all applicable 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.

#### **E. CLOSURE AND POST-CLOSURE MAINTENANCE SPECIFICATIONS**

1. The Discharger shall close the landfill Unit with a final cover as proposed in the January 2013 *Final Closure and Post-Closure Maintenance Plan (FCPCMP)* and as approved by this Order. The components of the approved final cover as proposed in the FCPCMP are listed in Finding 68.
2. The Discharger shall close the inert disposal cells after reaching capacity with a three-foot compacted soil cover, graded to drain away from the waste pile, with appropriate erosion and sediment control best management practices implemented.
3. The Discharger shall obtain revised WDRs prior to closing the landfill with any other final cover design than the design or designs approved in this Order.
4. The Discharger shall close the landfill with side slope steepness of 3H:1V or less, and top deck areas shall be sloped at three percent or greater.
5. The Discharger shall install a passive landfill gas collection and venting system beneath the foundation layer of the final cover system during landfill closure. If VOC concentrations increase in groundwater monitoring wells around the landfill after installation of the final cover system, then the Discharger may be required to install an active landfill gas extraction system to reduce VOC impacts to groundwater.
6. The Discharger shall test the critical interfaces of the final cover in a laboratory to ensure minimum design shear strengths are achieved and include the results in the final documentation report. If needed, the Discharger may recalculate the factor of

safety based on the tested shear strengths and, if needed, use a more rigorous displacement analysis to demonstrate conformance with Title 27.

7. 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 that vegetation is being established.
8. **By 15 November 2018**, the Discharger shall complete final closure activities, including installation of the passive landfill gas collection and venting system, installation of the final cover system, and installation of all necessary erosion and sediment control best management practices. The Discharger shall provide a Final Closure Construction Report including all CQA data **by 31 January 2019**.
9. The Discharger shall comply with all applicable 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 of the landfill in at least the amount described in Finding 78 (\$10,018,312) or as described in the most recently approved closure cost estimate, adjusted for inflation annually. A report regarding financial assurances for closure shall be submitted to the Central Valley Water Board by **1 June of each year (beginning in 2015)**. 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 obtain and maintain assurances of financial responsibility with CalRecycle for post-closure maintenance in at least the amount described in Finding 79 (\$4,182,920) or as described in the most recently approved post-closure maintenance cost estimate, adjusted for inflation annually. A report regarding financial assurances for post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year (beginning in 2015)**. 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.

3. The Discharger shall submit **by 1 September 2014** a *Non-Water Release Corrective Action Cost Estimate* in accordance with Title 27, section 22101(b).
4. **By 31 December 2014**, 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 approved *Water Release Corrective Action Estimate* (\$695,500) or a *Non-Water Release Corrective Action Cost Estimate*, whichever is greater, adjusted for inflation annually. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year (beginning in 2015)**. 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.
5. The Discharger shall establish financial assurances for closure and post-closure maintenance of the inert disposal cells in the amounts of the cost estimates listed in Finding 77, prior to constructing and operating the cells.
6. The Discharger shall comply with all applicable 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 corrective action monitoring program provisions of Title 27, section 20430, for groundwater and the unsaturated zone in accordance with Monitoring and Reporting Program (MRP) No. R5-2014-0084, 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. **By 1 September 2014**, the Discharger shall submit for review and approval a work plan proposing installation of an additional groundwater monitoring well along the southern, hydraulically downgradient edge of the Unit. After receiving approval of the work plan, the Discharger shall complete installation of the new groundwater monitoring well **by 15 December 2014**. Once the new well is installed, the Discharger shall begin sampling the well in accordance with the methods and frequencies listed in Table 1 of Monitoring and Reporting Program No. R5-2014-0084.
3. **By 31 December 2014**, collect a sample from the non-potable equipment shop well and analyze the sample for the Field Parameters, Monitoring Parameters, and annual Constituents of Concern (no Chlorophenoxy Herbicides or Organophosphorus Compounds) listed in Table 1 of Monitoring and Reporting Program No. R5-2014-0084. Provide the sample results and a description of the construction details (total

depth, screen interval, etc.) for the equipment shop well with the 2014 Annual Monitoring Report, **due by 1 February 2015**.

4. **By 15 January 2015**, the Discharger shall provide an updated Water Quality Protection Standard (WQPS) report in accordance with Title 27, sections 20390 through 20410. The updated WQPS report shall list all constituents of concern, their calculated concentration limits, identify all monitoring points and the point of compliance, and describe the compliance period.
5. 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 in the WQPS Report.
6. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2014-0084 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.
7. The Discharger shall provide Semiannual Progress Reports pursuant to Title 27, section 20430(h) regarding the effectiveness of the corrective action program in accordance with MRP No. R5-2014-0084. Semiannual Progress Reports shall also include information regarding the status of constructing the foundation layer of the final cover system in accordance with the 12 November 2013 *Foundation Layer Installation Plan* and the schedule included with that plan. Semiannual Progress Reports may be included with the corresponding semiannual monitoring reports required by MRP No. R5-2014-0084.
8. The Discharger shall comply with all applicable 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 MRP No. R5-2014-0084 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 No. R5-2014-0084, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the SPRRs 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:

<u>Task</u>	<u>Compliance Date</u>
<b>A. Financial Assurances</b>	
Submit a Non-Water Release Corrective Action Cost Estimate for review and approval. (see Financial Assurance Specification F.3 above).	<b>By 1 September 2014</b>
Submit proof of financial assurances for corrective action in the amount of the approved Water Release Corrective Action Estimate or a Non-Water Release Corrective Action Cost Estimate, whichever is greater. (see Financial Assurance Specification F.4 above).	<b>By 31 December 2014</b>
<b>B. Final Closure Construction</b>	
Complete all final closure construction activities. (see Closure and Post-Closure Maintenance Specification E.8 above).	<b>By 15 November 2018</b>
Submit a Final Closure Construction Report. (see Closure and Post-Closure Maintenance Specification E.8 above).	<b>By 31 January 2019</b>

### **C. Monitoring Specifications**

Submit a work plan proposing installation of a new groundwater monitoring well along the hydraulically downgradient edge of the Unit. (see Monitoring Specification G.2 above).

**by 1 September 2014**

Complete installation of the new groundwater monitoring well. (see Monitoring Specification G.2 above).

**By 15 December 2014**

Sample the non-potable equipment shop well. (see Monitoring Specification G.3 above).

**By 31 December 2014**

Submit an updated Water Quality Protection Standard Report. (see Monitoring Specification G.4 above).

**By 15 January 2015**

8. The Discharger shall comply with all applicable General Provisions listed in Section K of the SPRRs dated January 2012 which are part of this Order.
9. 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.

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)

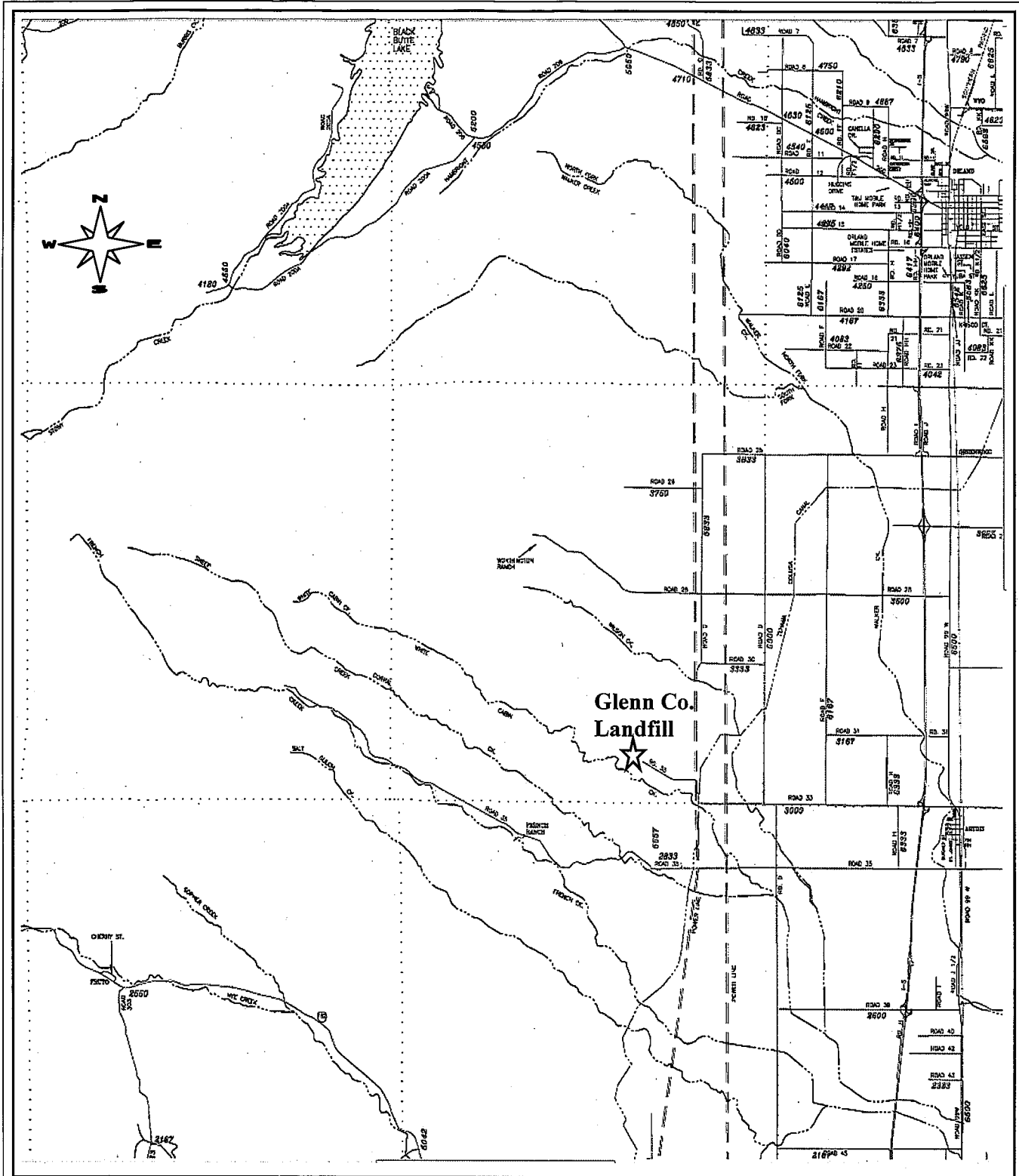
or will be provided upon request.

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 6 June 2014.

A handwritten signature in cursive script that reads "Pamela Creedon".

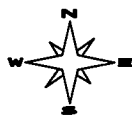
PAMELA C. CREEDON, Executive Officer

DPS

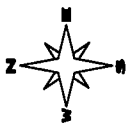
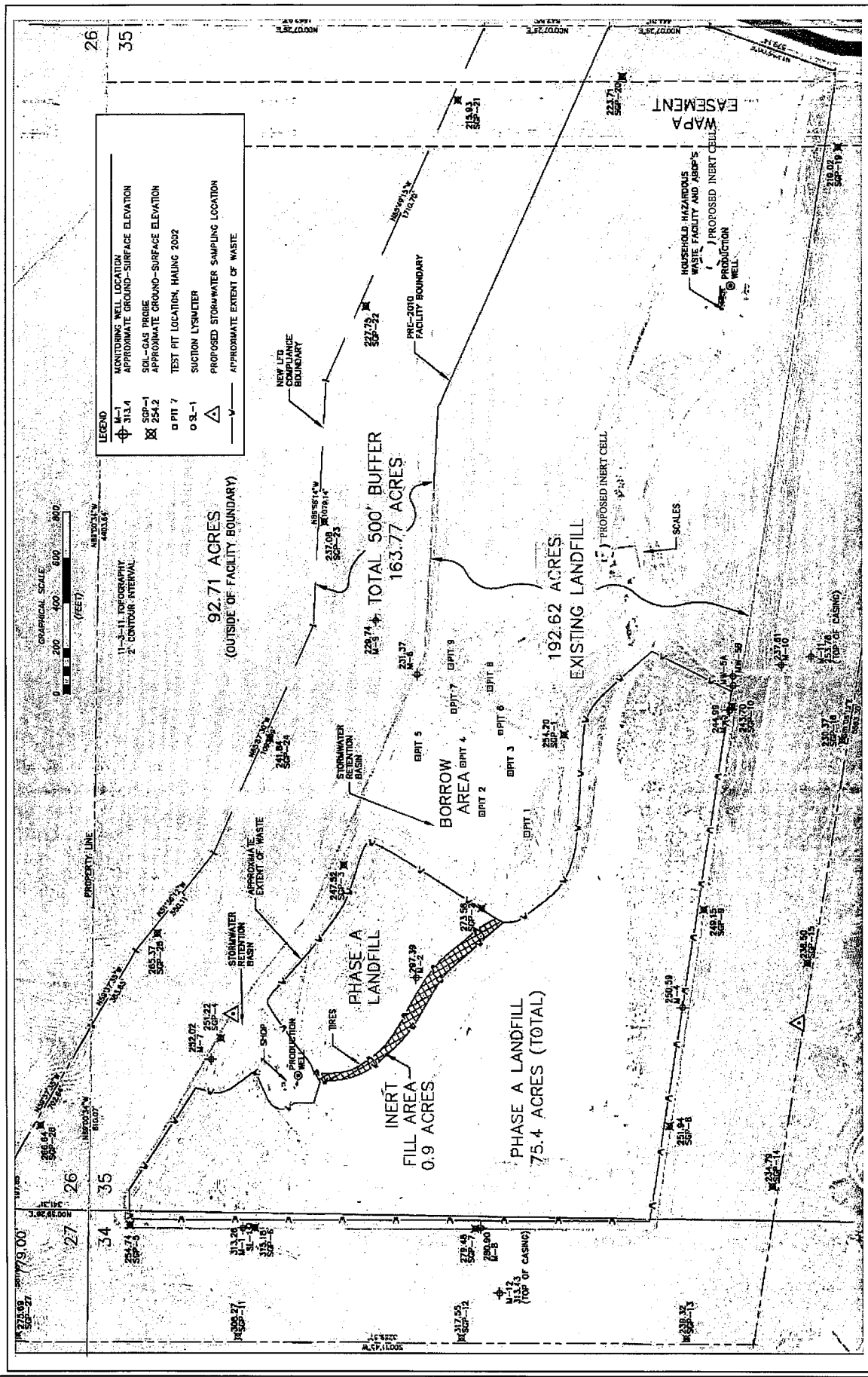


Drawing Reference:  
 Glenn County Planning &  
 Public Works Agency  
 Engineering Division  
 2012 Glenn County  
 Emergency Response Map

**SITE LOCATION MAP**  
**COUNTY OF GLENN**  
**CLASS III MUNICIPAL SOLID WASTE LANDFILL**  
**GLENN COUNTY**



Scale:  
 Approx 1"=2 miles



Approximate Scale  
1" = 1000'

**Drawing Reference:**  
Lawrence & Associates  
Facility Plan Glenn County Landfill  
Topography (11-3-2011 Flight)

**SITE PLAN  
COUNTY OF GLENN  
CLASS III MUNICIPAL SOLID WASTE LANDFILL  
GLENN COUNTY**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2014-0084  
FOR  
GLENN COUNTY  
FOR  
CORRECTIVE ACTION AND FINAL CLOSURE  
GLENN COUNTY CLASS III MUNICIPAL SOLID WASTE LANDFILL  
GLENN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater monitoring and reporting; facility monitoring, maintenance, and reporting; corrective action program monitoring and reporting; and financial assurances reporting contained in California Code of Regulations, Title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2014-0084, 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 corrective action monitoring program provisions of Title 27 for groundwater 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 31 October 2007 *Sample Collection and Analysis Plan*, which includes quality assurance/quality control standards.

All compliance monitoring wells established for the corrective action monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard (WQPS). All corrective action monitoring program groundwater monitoring wells and unsaturated zone monitoring devices shall be sampled and analyzed for monitoring parameters and constituents of concern (COCs) as indicated and listed in Tables I through IV of this MRP.

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

The corrective action 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 Seep Monitoring
A.4	Facility Monitoring
A.5	Corrective Action Monitoring

## 1. **Groundwater Monitoring**

The Discharger shall operate and maintain a groundwater corrective action monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20430. The current groundwater corrective action monitoring system meets applicable requirements of Title 27. However, only one well, M-4, monitors the hydraulically downgradient edge of the landfill, which is approximately 950 feet long on the southern boundary of the Unit. Well M-4 has been dry or contained insufficient water for sampling purposes nine times over the last 17 quarterly monitoring events (September 2009 through September 2013). This Order requires the Discharger to install one new groundwater monitoring well along the southern boundary of the Unit in accordance with Monitoring Specification G.2 and Provision H.7 of WDR Order No. R5-2014-0084. This new well should be installed in the uppermost laterally continuous aquifer that wells M-4, M-6, M-11, and M-12 are screened across (Zone D as described in more detail below). The Discharger shall revise the groundwater corrective action monitoring system (after review and approval by Central Valley Water Board staff) as needed to assess the efficacy of the corrective action program implemented at the landfill.

The current groundwater monitoring network for the landfill consists of 11 wells (M-4, M-5A, M-5B, M-6, M-7A, M-7B, M-8, M-9, M-10, M-11, and M-12), although three of these wells have been dry since installation (M-5A, M-9 and M-10). These WDRs require the Discharger to continue gauging wells M-5A, M-9, and M-10 for the presence of water each semiannual monitoring event and to collect samples if sufficient water is encountered during a monitoring event. Groundwater monitoring wells at the landfill have been installed in at least four different higher-permeability gravel intervals across the site, which are described in more detail below. Wells M-7A and M-7B are nested in the same boring and monitor different higher-permeability intervals. Wells M-4, M-6, M-11 and M-12 are installed into the uppermost laterally continuous aquifer penetrated beneath the site at approximately 90 to 100 feet MSL.

To better understand the groundwater monitoring network and the water-bearing zones the wells penetrate, the higher-permeability sand/gravel intervals are referenced as Zone A (shallowest zone located between 140 and 200 feet MSL), Zone B (located between 120 and 140 feet MSL), Zone C (located

between 100 and 120 feet MSL), and Zone D (deepest zone penetrated located between 90 and 100 feet MSL). Zone D is the only interval being monitored by at least three wells. The other zones appear laterally discontinuous and are monitored by less than three wells.

The current groundwater monitoring network consists of the following wells:

Well ID	Installation Date	Total Depth	Screen Interval	Well Type
M-4	August 1990	163.3 ft bgs	152 – 162 ft bgs	Compliance (Zone D)
M-5A	December 2010	57 ft bgs	41 – 56.5 ft bgs	Compliance (Zone A)
M-5B	November 2010	124 ft bgs	103 – 123 ft bgs	Compliance (Zone B)
M-6	September 1990	142.87 ft bgs	132 -142 ft bgs	Background (Zone D)
M-7A	October 2002	146.5 ft bgs	59.75 – 69.75 ft bgs	Compliance (Zone A)
M-7B	October 2002	146.5 ft bgs	109.75 – 144.75 ft bgs	Compliance (Zone C)
M-8	October 2002	167 ft bgs	145 – 165 ft bgs	Compliance (Zone B)
M-9	October 2007	125 ft bgs (backfilled with bentonite from 87 to 125 ft bgs)	65 – 85 ft bgs	Compliance (Zone A)
M-10	October 2007	135 ft bgs (backfilled with bentonite from 110 to 135 ft bgs)	97 – 107 ft bgs	Compliance (Zone B)
M-11	August 2012	170 ft bgs	142 – 162 ft bgs	Compliance (Zone D)
M-12	August 2012	275 ft bgs	219 – 229 ft bgs	Background (Zone D)

Groundwater samples shall be collected from all wells included in the corrective action monitoring system as listed above, and from the new well to be installed along the southern boundary of the Unit. Wells M-5A, M-9, and M-10, which have been consistently dry since installation, shall be inspected for the presence of groundwater each sampling event and samples shall be collected if sufficient groundwater is present. 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 depth to groundwater in each well, calculate the groundwater elevation, determine the direction and magnitude of the groundwater gradient, and estimate the groundwater flow velocity in the uppermost continuously saturated aquifer and in any other saturated zones that are monitored. If sufficient volumes of groundwater are present in wells M-5A, M-9, and/or M-10, then samples shall be collected and analyzed for the parameters and constituents listed in Table I. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15).

Samples collected for the COCs specified in Table I shall be collected and analyzed in accordance with the methods and frequencies listed in Tables I and IV every five years. **Five-year COCs are due to be monitored during first half 2014 and shall be monitored again during first half 2019, and every five years thereafter.** The results of all groundwater sampling shall be reported in the corresponding Semiannual Monitoring Report required in section B.1 of this MRP, below.

## **2. Unsaturated Zone Monitoring**

Glenn County Landfill has one existing suction lysimeter (SL-1) along the northwestern side of the Unit. Lysimeter SL-1 is located slightly outside of the Unit at a depth of 26.5 feet. Lysimeter SL-1 consistently produces sufficient soil pore liquids for volatile organic compound (VOC) analyses.

A sample shall be collected from lysimeter SL-1 semiannually and analyzed for the parameters and constituents listed in Table II of this MRP. Since only a limited volume of soil pore liquid is obtainable during most sampling events, analyses for VOCs shall be prioritized over the other parameters and constituents listed in Table II. If sufficient soil pore liquid is available, then analyses for the field parameters and general mineral parameters listed in Table II shall also be completed. Lysimeter samples shall be collected, preserved, and transported in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. The results of the unsaturated zone monitoring shall be reported in the corresponding Semiannual Monitoring Report required in section B.1 of this MRP, below.

## **3. Leachate Seep Monitoring**

**Seep Monitoring:** Leachate that seeps to the surface from a landfill Unit shall be sampled and analyzed for the Field Parameters, Monitoring Parameters, and Constituents of Concern 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. 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, including any inert disposal cells constructed in the future. 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 controls and constructing a winter tipping pad). 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**. Results of the annual facility inspection shall be reported by **15 November annually** as required in section B.4 of this MRP, below.

##### 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. For facility monitoring purposes, a major storm event shall be defined as a five-year 24-hour storm event, resulting in 2.5 inches or more of rain within a 24-hour period. 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, below.

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

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map that shall be prepared immediately after closure [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.6 of this MRP, below.

d. **Standard Observations**

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

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

The Standard Observations shall include:

- 1) For the landfill Unit and any inert disposal cell:
  - 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 and any inert disposal cell:
  - 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.

Results of Standard Observations shall be submitted in the corresponding Semiannual Monitoring Reports required in Section B.1 of this MRP, below.

**5. Corrective Action Monitoring**

The Discharger shall conduct corrective action monitoring to demonstrate the effectiveness of corrective actions implemented in accordance with Title 27, section 20430 and this MRP. Groundwater monitoring wells and the unsaturated zone monitoring point that are in the 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 monitoring frequencies.

**The groundwater COCs including Total Organic Carbon, Inorganics (dissolved) and Semi-Volatile Organic Compounds shall be analyzed annually during the first half of each year in accordance with the methods and frequencies listed in Table 1 of this MRP. The remaining COCs listed**

**in Table 1 shall be analyzed every five years beginning in the first half of 2014.**

The Discharger shall submit Semiannual Progress Reports assessing the effectiveness of the corrective action program, in accordance with Title 27, section 20430(h). Beginning in 2014 and continuing until final closure construction is completed, the Semiannual Progress Reports shall describe progress with installing the passive landfill gas collection and venting system and the phased construction of the foundation layer and other components of the final cover system. Include a map showing the areas where construction of the passive landfill gas collection and venting system and final cover system occurred during the corresponding reporting period. Once final closure construction is completed, the Semiannual Progress Reports shall evaluate groundwater and unsaturated zone sample results for increasing or decreasing concentration trends and also describe the condition of the final cover system, passive landfill gas collection and venting system, and corrective action program monitoring devices around the landfill. Semiannual Progress Reports shall be included with the corresponding Semiannual Monitoring Reports required in section B.1 of this MRP, below.

**B. REPORTING**

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

**Reporting Schedule**

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	<b>1 August, 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>15 November</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>

**Reporting Requirements**

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in

WDRs Order No. R5-2014-0084 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 so that compliance with the WDRs, or lack thereof, is clearly illustrated. Data shall also be submitted in a digital format, such as a computer disk.

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

- a) Sample identification and the 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 method detection limit (MDL) and practical quantitation limit (PQL) for each analysis. All peaks shall be reported.

## Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due by **1 August** and **1 February**. Each Semiannual Monitoring Report shall contain at least the following:
  - a) For each groundwater monitoring point addressed by the report, a description of:
    - 1) The time of water level measurement;
    - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;
    - 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity; and turbidity testing; and the method of disposing of the purge water;
    - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
    - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
  - b) A map or aerial photograph showing the locations of the Unit, observation stations, monitoring points, all appurtenant structures and roads, and the areas where construction of the passive landfill gas collection and venting system and final cover system occurred during the corresponding reporting period.
  - c) The estimated quarterly magnitude and direction of the groundwater gradient in the uppermost continuously saturated aquifer, and if possible, in any zones of perched water and 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 from each monitoring point for all monitoring parameters and constituents of concern for groundwater, the unsaturated zone, and leachate seeps (if any). Units shall be as required in Tables I through III 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 sample results for all analyses evaluating compliance with these requirements.
  - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when 5-year COC sampling is conducted) as compared to the current concentration limits in the Water Quality Protection Standard, 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) A summary of all Standard Observations for the reporting period required in Section A.4.d of this MRP.
  - h) A summary of inspections, leak searches, and repairs of the final cover on any closed landfill Unit in accordance with the approved final post-closure maintenance plan and as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.
  - i) The Semiannual Progress Reports required for a corrective action program pursuant to Monitoring Specification G.7 of WDR Order No. R5-2014-0084 and Title 27, section 20430(h).
2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second Semiannual Monitoring Report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:
- a) Results of all monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point for all samples taken. 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) Updated concentration limits for each monitoring parameter and constituent of concern at each monitoring well based on the new data set.
  - i) A comprehensive discussion of any Corrective Action Program required by this MRP under Section A.5.
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, monitoring parameters, and constituents of concern 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 a corresponding time schedule for completing the corrective action.
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.4.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger shall **immediately** 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. For facility monitoring purposes, a major storm event shall be defined as a five-year 24-hour storm event, resulting in



2.5 inches or more of rain within a 24-hour period. Refer to Section A.4.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 after completing the Initial Survey and Map pursuant to Title 27, section 21090(e). Refer to Section A.4.c of this MRP, above.
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 Assurance Specifications F.1 through F.5 of the WDRs.

## C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

### 1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard (WQPS) shall consist of all monitoring parameters and COCs, the concentration limit for each COC, 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.

Any proposed changes to the WQPS other than annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all zones of groundwater monitored at the site** that could be affected in the event of a release from the 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 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).

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

The Discharger proposed methods for calculating concentration limits in the 25 February 2009 *Water Quality Protection Standard Report*. However, the WQPS concentration limits have not been updated since 2009, so General Monitoring Specification G.4 of WDR Order No. R5-2014-0084 requires the Discharger to provide an updated WQPS report with updated concentration limits and monitoring points **by 15 January 2015**.

The WQPS concentration limits shall be updated annually in the Annual Monitoring Report for each monitoring well using new and historical monitoring data.

## **2. Monitoring Parameters**

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through III 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, or more frequently as required in a Corrective Action Program. The COCs for the Unit are those listed in Tables I, III, and IV for the specified monitored medium. The 5-year COCs are due to be monitored during first half 2014 and again every five years thereafter.

#### **4. Concentration Limits**

For a naturally occurring constituent of concern, the concentration limit 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 concentration limits included in the February 2009 *Water Quality Protection Standard Report* have not been updated. This Order requires the Discharger to provide an updated WQPS report **by 15 January 2015** that includes updated concentration limits and water quality monitoring points.

#### **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 procedures 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. All groundwater monitoring wells at Glenn County Landfill, except for wells M-6 and M-12 are considered point of compliance monitoring wells for the corrective action program.

#### **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**

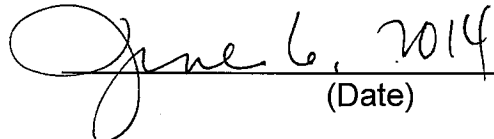
A monitoring point is a well, device, or location specified in the waste discharge requirements, at which monitoring is conducted and the WQPS applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

**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 in accordance with General Provision K.2 of the SPRRs.

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

Ordered by:   
PAMELA C. CREEDON, Executive Officer

  
(Date)

DPS

**TABLE I**  
**GROUNDWATER CORRECTIVE ACTION 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	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Total Dissolved Solids (TDS)	mg/L <sup>1</sup>	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	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, extended list, see Table IV)	ug/L <sup>2</sup>	Semiannual	Semiannual
<b>Constituents of Concern (see Table IV)</b>			
Total Organic Carbon	mg/L	Annually <sup>3</sup>	Annually
Inorganics (dissolved)	ug/L	Annually <sup>3</sup>	Annually
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	Annually <sup>3</sup>	Annually
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years <sup>4</sup>	1 August 2014 & every 5 years thereafter
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years <sup>4</sup>	1 August 2014 & every 5 years Thereafter

<sup>1</sup> Milligrams per liter (Parts Per Million – PPM).

<sup>2</sup> Micrograms per liter (Parts Per Billion – PPB).

<sup>3</sup> Annual samples shall be collected during the first half of each year at the time of highest anticipated groundwater elevation.

<sup>4</sup> 5-year Constituent of Concern sampling shall occur during the first half of each year, beginning in 2014.

**TABLE II**  
**UNSATURATED ZONE CORRECTIVE ACTION MONITORING PROGRAM**

**SUCTION LYSIMETERS SL-1**

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
<b>Field Parameters</b>			
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Volume of liquid removed	gallons	Semiannual	Semiannual
<b>Monitoring Parameters</b>			
Volatile Organic Compounds (VOCs) <sup>1</sup> (USEPA Method 8260B, extended list, see Table IV)	ug/L	Semiannual	Semiannual
Total Dissolved Solids (TDS)	mg/L	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	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

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<sup>1</sup> Due to low yields, prioritize analyses of soil pore liquid samples for VOCs first, then the Field Parameters, and then the remaining Monitoring Parameters.

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

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>
<b>Field Parameters</b>		
Total Flow	Gallons	Upon Detection
Flow Rate	Gallons/Day	Upon Detection
Electrical Conductivity	umhos/cm	Upon Detection
pH	pH units	Upon Detection
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Upon Detection
Chloride	mg/L	Upon Detection
Carbonate	mg/L	Upon Detection
Bicarbonate	mg/L	Upon Detection
Nitrate - Nitrogen	mg/L	Upon Detection
Sulfate	mg/L	Upon Detection
Calcium	mg/L	Upon Detection
Magnesium	mg/L	Upon Detection
Potassium	mg/L	Upon Detection
Sodium	mg/L	Upon Detection
<b>Constituents of Concern (see Table IV)</b>		
Total Organic Carbon	mg/L	Upon Detection
Inorganics (dissolved)	ug/L	Upon Detection
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	Upon Detection
Semi-Volatile Organic Compounds (USEPA Method 8270D)	ug/L	Upon Detection
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	Upon Detection
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	Upon Detection

<sup>1</sup> Leachate seeps shall be sampled and analyzed for the Field Parameters, Monitoring Parameters, and Constituents of Concern listed in this table upon detection. The quantity of leachate shall be estimated and reported in gallons/day. Also, refer to Section B.3 of this MRP.

**TABLE IV**  
**CONSTITUENTS OF CONCERN (COCs) & APPROVED USEPA ANALYTICAL METHODS**

<u>Inorganics (dissolved):</u>	<u>USEPA Method</u>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
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 IV**

**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 IV**

**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 IV**

**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-Dimethylphenol (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 IV**

**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  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**TABLE IV**

**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  
Ethion  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate  
Simazine

## INFORMATION SHEET

ORDER NO. R5-2014-0084  
GLENN COUNTY  
GLENN COUNTY CLASS III MUNICIPAL SOLID WASTE LANDFILL  
GLENN COUNTY

Glenn County (Discharger) owns and operates the Glenn County Class III Municipal Solid Waste Landfill (Glenn County Landfill), located approximately five miles west of the town of Artois, Glenn County. Glenn County first leased the landfill property in 1971 and began land disposal operations in 1972.

Glenn County Landfill is located at the western edge of the Sacramento Valley where the terrain changes from relatively flat ground to the east to hilly ground to the west. The landfill is situated on a drainage divide between shallow valleys north and south of the site. Both valleys drain toward the east. The southern valley contains White Cabin Creek and the northern valley contains the headwaters of Wilson Creek. Both creeks flow under the Tehama-Colusa Canal east of the landfill and are tributary to Willow Creek a mile north of the town of Willows. Land immediately surrounding the landfill is range land used for dry-land grazing of livestock. There are no irrigated lands adjoining the landfill property. The nearest permanent residence is approximately 5,000 feet northeast of the facility's eastern boundary. A seasonal residence used by shepherders is located approximately 1,800 feet west of the facility's western boundary.

Glenn County Landfill is located in the northwestern part of the Colusa Sub-basin, a sub-basin of the Sacramento Valley groundwater basin. In the area near the landfill, the Sacramento Valley groundwater basin is filled with Tertiary-age sediments that are thickest in the central part of the valley and thin to the east and west. The Tehama Formation underlies the landfill area and parts of the Stony Creek alluvial fan, which runs from southern Tehama County to the town of Willows. The Tehama Formation consists of interbedded clay, silt, sand, and gravel that are thought to be alluvial in origin. The Tehama Formation is one of the main water-bearing formations in the Sacramento Valley groundwater basin. In general, the Tehama Formation is moderately to highly permeable with moderate to high (100 to over 1,000 gallons per minute) groundwater yields.

Originally, the Glenn County Landfill encompassed 192.62 acres of land that were leased from the Coleman Foley Marital Trust. The lack of ownership created permitting difficulties and the county wanted to expand the facility boundary to provide a buffer area around the landfill. The county elected to obtain the property and expansion area via eminent domain. In August 2009, Glenn County was awarded pre-judgment possession of the property through the eminent domain action. The original landfill site and the added 163.77 acres of expansion area increased the total landfill property to 356.39 acres.

Glenn County Landfill consists of one unlined waste management unit (Unit) referred to as Area A covering approximately 76.3 acres, Expansion Area B located in the northeastern part of the property which is used for obtaining borrow soil, a perimeter site access road, an equipment shop located at the west end of the facility, and a scale house and recyclable material public drop off area at the eastern part of the property. At the west end of the facility, the Unit was split by an internal access road leading to the equipment shop. Wastes are not buried beneath the road or equipment shop. In 2006, the Discharger began placing baled waste tires along the internal road. The baled waste tires are stacked on top of each other until a sufficient elevation is reached that corresponds with proposed final cover contours. Waste tires are considered inert, so this was not a lateral expansion of the Unit.

Glenn County anticipates accepting wastes for disposal through September 2016, and then completing a phased final closure of the landfill by November 2018. While operating, the landfill accepts municipal solid waste consisting primarily of municipal and industrial refuse, construction and demolition wastes, green waste, fiberglass, and baled waste tires. A temporary transfer station and inert disposal cell will be constructed prior to final closure of the landfill. A permanent transfer station and a second inert disposal cell may be constructed and operated in the future, depending on local needs.

The current groundwater monitoring network for the landfill consists of 11 wells (M-4, M-5A, M-5B, M-6, M-7A, M-7B, M-8, M-9, M-10, M-11, and M-12), although three of these wells have been dry since installation (M-5A, M-9 and M-10). Wells M-7A and M-7B are nested in the same boring and monitor different higher-permeability intervals. Wells M-4, M-6, M-11 and M-12 are installed into the deepest laterally continuous aquifer penetrated beneath the site at approximately 90 to 100 feet MSL (Zone D). A suction lysimeter (SL-1) is located along the northwestern boundary of the Unit. Total depth of SL-1 is 26.5 feet bgs.

Groundwater monitoring wells at Glenn County Landfill have been completed in at least four different sand/gravel higher-permeability intervals. To better understand the groundwater monitoring network and the water-bearing zones the wells penetrate, the sand/gravel higher-permeability intervals are referenced as Zone A (shallowest zone located between 140 and 200 feet MSL), Zone B (located between 120 and 140 feet MSL), Zone C (located between 100 and 120 feet MSL), and Zone D (deepest zone penetrated located between 90 and 100 MSL). Zone D is the only higher-permeability interval being monitored by at least three wells. The other zones appear laterally discontinuous and are monitored by less than three wells.

Groundwater quality in the vicinity of former well M-5 has been impacted from elevated inorganic constituent concentrations and consistent low-concentration volatile organic compounds (VOCs). In July 2010, the Discharger inspected the integrity of well M-5 using down-hole video and discovered that the PVC casing was damaged at several joints beginning at 28 feet below ground surface (bgs) allowing leachate to enter the well. The well casing acted as a direct conduit for leachate migration to groundwater causing water quality impacts. Well M-5 was destroyed in December 2010 and replaced with two new wells, M-5A and M-5B.

Trilinear diagrams and Stiff patterns for former well M-5, wells M-5B and M-7A, and leachate are similar, although the leachate pattern is about five times larger than well patterns. Some inorganic parameters in former well M-5 had concentrations approaching the concentrations found in pure leachate because the damaged well casing allowed leachate to directly contact groundwater. Water quality in well M-7A shows a more "muted leachate signature" possibly from undergoing chemical changes during downward migration of leachate through subsurface soils.

The uppermost continuously saturated zone beneath the landfill as represented by wells M-4, M-6, M-11, and M-12 does not show impacts from leachate migration. However, isolated shallower higher-permeability intervals have shown groundwater impacts, as represented by wells M-5B, M-7A, and former well M-5. In November 2011, the Discharger submitted a report titled *Hydrogeological Evaluation and Site Review for Glenn County Landfill*. This report concluded that groundwater pollution at the Glenn County Landfill appears to be caused mainly by leachate migration, although landfill gas has the potential to impart VOCs to groundwater. This report recommended constructing a final cover system over the Unit and installing a passive landfill gas collection and venting system below the foundation layer of the final cover as the preferred corrective action for the site.

The Discharger submitted a January 2013 *Final Closure and Post-Closure Maintenance Plan* (FCPCMP) as part of the corrective action program. The FCPCMP proposes an alternative final cover system consisting of, in ascending order, a two-foot thick foundation layer, 40-mil HDPE or LLDPE geomembrane, a geocomposite drainage layer for slopes steeper than 19.4%, an 8-oz geotextile, and a 1.5 foot thick vegetative layer. A passive gas collection and venting system consisting of horizontal collection pipes vented to the atmosphere at risers installed on the ends of each row will be installed beneath the foundation layer. The Discharger's landfill staff will construct the foundation layer in phases beginning during the 2014 construction season in an effort to reduce final closure costs.

The Waste Discharge Requirements (WDRs) for Glenn County Landfill are being revised to implement a corrective action program that consists of constructing a final cover system over the Unit and installing a passive gas collection and venting system beneath the foundation layer of the final cover system. The revised WDRs also require installation of a new groundwater monitoring well in the deeper laterally continuous aquifer at the hydraulically downgradient edge of the Unit, submittal of an updated Water Quality Protection Standard report, submittal of a non-water release corrective action cost estimate and demonstration of adequate financial assurances in the amount of the water release corrective action estimate or the non-water release corrective action cost estimate, whichever is greater, and completion of final closure construction by 15 November 2018.



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

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## **A. APPLICABILITY**

1. These Standard Provisions and Reporting Requirements (SPRRs) are applicable to nonhazardous solid waste disposal sites that are regulated by the Central Valley Regional Water Quality Control Board (hereafter, Central Valley Water Board) pursuant to the provisions of California Code of Regulations, title 27 ("Title 27"), section 20005 et seq., and municipal solid waste (MSW) landfills that are subject to the Federal Subtitle D regulations contained in 40 Code of Federal Regulations section 258 (hereafter, "Subtitle D" or "40 C.F.R. § 258.XX") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62. The Subtitle D regulations are only applicable to MSW landfills and therefore any requirements in these SPRRs that are referenced as coming from Subtitle D are not applicable to non-MSW waste management units such as Class II surface impoundments, Class II waste piles, and non-MSW landfill units. All Subtitle D requirements in these SPRRs are referenced with "[40 C.F.R. § 258.XX]" after the requirement.
2. "Order," as used throughout this document, means the Waste Discharge Requirements (WDRs) to which these SPRRs are incorporated.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, and do not protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
4. The provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
5. If there is any conflicting or contradictory language between the WDRs, the Monitoring and Reporting Program (MRP), or the SPRRs, then language in the WDRs shall govern over either the MRP or the SPRRs, and language in the MRP shall govern over the SPRRs.
6. If there is a site-specific need to change a requirement in these SPRRs for a particular landfill facility, the altered requirement shall be placed in the appropriate section of the WDRs and will supersede the corresponding SPRRs requirement. These SPRRs are standard and cannot be changed as part of the permit writing process or in response to comments, but they will be periodically updated on an as-needed basis.
7. Unless otherwise stated, all terms are as defined in Water Code section 13050 and in Title 27, section 20164.

## **B. TERMS AND CONDITIONS**

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

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

2. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to [Wat. Code, § 13381]:
  - a. Violation of any term or condition contained in this Order;
  - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
  - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
  - d. A material change in the character, location, or volume of discharge.
3. Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall file a new report of waste discharge (ROWD), or other appropriate joint technical document (JTD), with the Central Valley Water Board [Wat. Code, § 13260(c) and § 13264(a)]. A material change includes, but is not limited to, the following:
  - a. An increase in area or depth to be used for solid waste disposal beyond that specified in waste discharge requirements;
  - b. A significant change in disposal method, location, or volume (e.g., change from land disposal to land treatment);
  - c. A change in the type of waste being accepted for disposal; or
  - d. A change to previously-approved liner systems or final cover systems that would eliminate components or reduce the engineering properties of components.
4. Representatives of the Central Valley Water Board may inspect the facilities to ascertain compliance with the waste discharge requirements. The inspection shall be made with the consent of the owner or possessor of the facilities or, if the consent is refused, with a duly issued warrant. However, in the event of an emergency affecting the public health or safety, an inspection may be made without consent or the issuance of a warrant [Wat. Code, §13267(c)].

5. The Central Valley Water Board will review this Order periodically and will revise these waste discharge requirements when necessary [Wat. Code, § 13263(e) and Title 27, § 21720(b)].
6. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Central Valley Water Board [Wat. Code, § 13267(b)]. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.
7. A discharge of waste into the waters of the state is a privilege, not a right. No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge [Wat. Code, § 13263(g)].
8. Technical and monitoring reports specified in this Order are requested pursuant to the Water Code [§13267(b)]. Failure to furnish the reports by the specified deadlines or falsifying information in the reports, are misdemeanors that may be liable civilly in accordance with §13268(b) of the Water Code [Wat. Code, §13268(a)].

#### **C. STANDARD PROHIBITIONS**

1. The discharge of liquid or semi-solid waste (waste containing less than 50 percent solids) is prohibited, except for the following when proposed in the ROWD/JTD and approved by this Order:
  - a. Dewatered sewage or water treatment sludge as described in Title 27, section 20220(c) provided it is discharged above a composite liner with a leachate collection and removal system (LCRS) [Title 27, § 20200(d)(3)].
  - b. Leachate and/or landfill gas condensate that is returned to the composite-lined waste management unit (with an LCRS) from which it came [Title 27, § 20340(g) and 40 C.F.R. § 258.28].
2. The discharge of wastes which have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the waste management unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products, which, in turn:
  - a. require a higher level of containment than provided by the unit; or
  - b. are 'restricted wastes'; or
  - c. impair the integrity of containment structures;is prohibited [Title 27, § 20200(b)].

3. The discharge of wastes outside of a waste management unit or portions of a unit specifically designed for their containment is prohibited.
4. The discharge of solid waste containing free liquid or which may contain liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement is prohibited.
5. The discharge of waste to a closed landfill unit is prohibited.
6. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
7. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

#### **D. STANDARD DISCHARGE SPECIFICATIONS**

1. The Discharger is responsible for accurate characterization of wastes, including a determination of whether or not wastes will be compatible with containment features and other wastes at the waste management unit and whether or not the wastes are required to be managed as a hazardous waste [Title 27, § 20200(c)] or designated waste [Title 27, § 20210].
2. Leachate and landfill gas condensate collected from a waste management unit shall be discharged to the unit from which it came, or discharged to an appropriate waste management unit in accordance with Title 27 and in a manner consistent with the waste classification of the liquid [Title 27, § 20200(d) and § 20340(g)].
3. The discharge of leachate or landfill gas condensate is restricted to those portions of a waste management unit that has a composite liner system and LCRS meeting the Federal Subtitle D requirements [40 C.F.R. § 258.28].
4. Leachate and condensate returned to a composite-lined landfill unit (when approved by this Order) shall be discharged and managed such that it does not cause instability of the waste, does not cause leachate seeps, does not generate additional landfill gas that is not extracted from the landfill by an active landfill gas extraction system, does not cause contaminants to enter surface water runoff, and does not cause leachate volumes to exceed the maximum capacity of the LCRS.
5. Any discharge of waste outside the portion of the landfill that was already covered with waste as of the landfill unit's respective Federal Deadline constitutes a "lateral expansion" and requires the installation of an approved composite liner system and LCRS [40 C.F.R. § 258.40(b)].

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

#### **E. STANDARD FACILITY SPECIFICATIONS**

1. All waste management units shall be designed, constructed, and operated to ensure that wastes, including leachate, will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater [Title 27, § 20240(c)], including the capillary fringe.
2. Surface and subsurface drainage from outside of a waste management unit shall be diverted from the unit [Title 27, § 20365(e)].
3. Interim cover is daily and intermediate cover [Title 27, § 20750(a)]. Interim cover over wastes discharged to a landfill shall be designed and constructed to minimize percolation of liquids through the wastes [Title 27, § 20705(b)].
4. Intermediate cover consisting of compacted earthen material of at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within **180 days** [Title 27, § 20700(a)].
5. During wet weather conditions, the facility shall be operated and graded to minimize leachate generation.
6. The Discharger shall **immediately** notify the Central Valley Water Board staff of any slope failure occurring at a waste management unit. Any failure which threatens the integrity of containment features or the waste management unit shall be promptly corrected in accordance with an approved method [Title 27, § 21710(c)(2)].
7. The Discharger shall **immediately** notify Central Valley Water Board staff of any flooding, unpermitted discharge of waste off-site or outside of waste management units, equipment failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
8. The Discharger shall limit water used for facility maintenance within landfill areas to the minimum amount necessary for dust control and construction.
9. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.

10. The Discharger shall lock all groundwater monitoring wells with a lock on the well cap or monitoring well box. All monitoring devices shall be clearly labeled with their designation including all monitoring wells, LCRS risers, and lysimeter risers and shall be easily accessible for required monitoring by authorized personnel. Each monitoring device shall be clearly visible and be protected from damage by equipment or vehicles.
11. The Discharger shall ensure that methane and other landfill gases are adequately vented, removed from landfill units, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, degradation, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
12. The Discharger shall maintain the depth of the fluid in the sump of each landfill unit at the minimum needed for efficient pump operation (the depth at which the pump turns on given the pump intake height and maximum pump cycle frequency).
13. The depth of fluid on the landfill liner shall not exceed **30 centimeters** (cm) [40 C.F.R. § 258.40(a)(2)]. This regulation is interpreted by the Central Valley Water Board to exclude the leachate sump. The Discharger shall **immediately** notify the Central Valley Water Board staff by telephone, and follow up in writing within **seven** days if monitoring reveals that the depth of fluid on any portion of the liner (excluding the sump) exceeds 30 cm (approximately 12 inches). The written notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.
14. Each LCRS shall be tested at least annually to demonstrate proper operation. The results of the tests shall be compared with earlier tests made under comparable conditions [Title 27, § 20340(d)].
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Board Order No. 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)].