

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2012-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF FRESNO
AMERICAN AVENUE MUNICIPAL SOLID WASTE LANDFILL
CLASS III LANDFILL
CONSTRUCTION, OPERATION, AND CORRECTIVE ACTION
FRESNO COUNTY

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

1. The County of Fresno (hereinafter Discharger) owns and operates the American Avenue Municipal Solid Waste Landfill (facility) about five miles southwest of the City of Kerman, in Sections 32 and 33 , T14S, R17E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a municipal solid waste (MSW) landfill regulated under authority given in California Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and Title 40 Code of Federal Regulations 40 CFR section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.

The facility is on a 440-acre property at 18950 W. American Ave, Kerman. The existing and future landfill area is approximately 440-acres. The landfill consists of a

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closed unlined waste management unit (WMU) covering 30 acres (Phase I), an active-composite-lined WMU covering 160 acres (Phase II, 8 modules), and a 250 acre composite lined WMU (Phase III) comprised of active Modules 1-3 and future Modules 4-12. The existing permitted landfill area is shown in Attachment B, which is incorporated herein and made part of this Order by reference. The facility is comprised of Assessor's Parcel Numbers (APN) 020-052-04ST, 020-052-05ST, APN 020-052-06T, 020-052-09ST, 020-052-13ST, 020-210-26ST, 020-210-27ST, 020-210-33ST, 020-210-34ST, and 020-210-35ST.

2. In December 2004 (revised January 2006) the Discharger submitted an amended Report of Waste Discharge (ROWD) as part of the Joint Technical Document (JTD) for the landfill. The information in the ROWD/JTD has been used in revising these waste discharge requirements (WDRs). The ROWD contains the applicable information required in Title 27. The ROWD/JTD and supporting documents contain information related to this revision of the WDRs including:
 - a. corrective action.
 - b. changes to the Monitoring and Reporting Program.
 - c. future landfill expansion.
 - d. excavation of the existing unlined WMU (Phase I).
3. On 29 April 2005, the Central Valley Water Board issued Order No. R5-2005-0067 in which the landfill waste management units at the facility were classified as a Class III units for the discharge of non-hazardous waste and municipal solid waste. This Order continues to classify the landfill units as Class III units in accordance with Title 27.

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4. The existing and future landfill units authorized by this Order are described as follows:

<u>Unit</u>	<u>Area</u>	<u>Liner/LCRS¹ Components²</u>	<u>Unit Classification & Status</u>
Phase I	30 acres	Unlined	Class III, inactive
Phase II, Modules 1-8	160 acres	Composite lined	Class III, active
Phase III, Modules 1-6 Modules 7-12	250 acres	Composite lined	Class III, active & future

¹ LCRS - Leachate collection and removal system

² All liner systems are composite liner systems unless otherwise noted

5. On-site facilities at landfill include: an active landfill gas extraction system, a landfill gas flare, scale house, maintenance/office building, self-haul area, and three leachate collection tanks in containment structures.
6. 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

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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.

7. 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 dated January 2012 (SPRRs) which are attached hereto and made part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2012-XXXX 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.

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

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

9. The Discharger proposes to discharge nonhazardous solid waste, including municipal solid waste and treated wood waste, to lined Class III landfill units at the facility. These classified wastes may be discharged only in accordance with Title 27, Resolution 93-62, and Subtitle D as required by this Order.
10. The Discharger proposes to continue to discharge treated wood waste in the composite-lined units at the landfill. Title 22 defines "treated wood" to mean wood that has been treated with a chemical preservative for purposes of protecting the wood against attacks from insects, microorganisms, fungi, and other environmental conditions that can lead to decay of the wood and the chemical preservative is registered pursuant to the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Sec. 136 and following). This may include but is not limited to waste wood that has been treated with chromated copper arsenate (CCA), pentachlorophenol, creosote, acid copper chromate (ACC), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), or chromated zinc chloride (CZC).
11. Title 22, section 67386.11 allows treated wood waste to be discharged to a composite-lined portion of a MSW landfill that is regulated by WDRs issued pursuant to the Water Code provided that the landfill owner/operator:
 - a. Comply with the prohibitions in Title 22, section 67386.3, which are:
 - i. Treated wood waste shall not be burned, scavenged, commingled with other waste prior to disposal, stored in contact with the ground, recycled without treatment (except as in iii, below), treated except in compliance with Title 22,

section 67386.10, or disposed of to land except in compliance with Title 22, section 67386.11.

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

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

(1) Reuse is on-site.

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

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

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

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

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

12. Title 27, section 20690 allows the use of alternative daily cover (ADC) at MSW landfills upon approval by the Local Enforcement Agency (LEA) and concurrence from CalRecycle. Title 27, section 20705 provides the Regional Board's regulations for all daily and intermediate cover including that it shall minimize the percolation of liquids

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

13. Landfills propose new ADC materials regularly in order to preserve landfill air space and to beneficially reuse waste materials. Title 27, section 20686 includes regulations for beneficial reuse, including use of ADC. Approval of ADC is primarily handled by the LEA and CalRecycle under Title 27, section 20690. This Order allows any ADC proposed for use at the facility after the adoption of this Order to be approved by Central Valley Water Board staff provided the Discharger has demonstrated it meets the requirements in Title 27, section 20705. The approved ADC materials should then be listed in the facility's WDRs during the next regular update or revision. 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.

14. The Discharger proposes to return leachate and landfill gas condensate to the composite-lined landfill units from which they came. Title 27, section 20340(g) requires that leachate be returned to the unit from which it came or be discharged in a manner approved by the regional board. This section of Title 27 also references State Water Board Resolution 93-62 regarding liquids restrictions in 40 C.F.R. section 258.28 for MSW landfills. Section 258.28 of 40 C.F.R. states that liquid waste may not be placed in MSW landfill units unless the waste is leachate or gas condensate derived from the

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landfill unit and it is designed with a composite liner and an LCRS. Therefore, leachate and landfill gas condensate from composite lined units with an LCRS may be returned to the unit from which they came. This Order includes requirements for returning leachate and landfill gas condensate back to composite-lined units such that the liquid waste is not exposed to surface water runoff, will not cause instability of the landfill, and will not seep from the edges of the units.

15. Leachate collected from the sumps will be pumped to storage tanks fitted with secondary containment systems. Leachate will be used for on-site dust control over lined areas of the landfill.

SITE DESCRIPTION

16. The facility is located in a relatively flat topographic region of the San Joaquin Valley. Native ground surface elevation ranges approximately from 180 feet above mean sea level at the southwestern site boundary to 190 feet above mean sea level at the northeastern site boundary.
17. Land uses within 1000 feet of the facility includes agriculture, rural residences, and open space.
18. There are approximately 64 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the facility.
19. The facility is located near the trough of the San Joaquin Valley, which is the southern portion of the Central Valley of California. The Central Valley is a large, northwest trending structural trough bounded by the Sierra Nevada to the east and the Coast Ranges to the west, and filled with both marine and continental deposits of Jurassic to Holocene age.

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20. The measured hydraulic conductivity of the native soils underlying the landfill units ranges between 1×10^{-3} centimeters per second (cm/s) and 1×10^{-5} (cm/s).
21. The facility is not within a fault hazard zone. The closest Holocene fault is the Coast Range/ Central Valley Fault, approximately 23 miles southwest of the site. The Maximum Credible Earthquake (MCE) for this fault is a Magnitude 7.0 earthquake, which is predicted to produce a peak horizontal bedrock acceleration of 0.14. The MCE associated with the San Andreas Fault, approximately 48 miles to the southwest, is a Magnitude 8.0 event. The estimated peak horizontal bedrock acceleration from this event is 0.096 g at the site.
22. The facility receives an average of 10.9 inches of precipitation per year as measured at the Fresno Station. The mean pan evaporation is 79.8 inches per year as measured at the Tranquility Station.
23. The 100-year, 24-hour precipitation event for the facility is estimated to be 2.86 inches, as calculated by a Pearson type II distribution.
24. The existing waste management units are not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 06019C 2075F (19 July 2001). A portion of the northeast corner of the Phase III expansion area is within a 100-year flood zone (Zone A) according to the FEMA map. The Phase III Module will be protected from flooding by a perimeter berm.
25. Storm water sedimentation basins are located southwest of the landfill as shown on Attachment B. The basins detain storm water for sedimentation control during the rainy season and are normally dry during the summer months.

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SURFACE WATER AND GROUNDWATER CONDITIONS

26. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
27. Surface water drainage from the site is to James Bypass of the Fresno Slough in the South Valley Floor Hydrologic Unit (551.20) of the Tulare Lake Basin. The Fresno Slough discharges to the San Joaquin River.
28. The designated beneficial uses of the Valley Floor Waters, as specified in the Basin Plan, are agricultural supply; industrial service supply; industrial process supply; water contact recreation; non-contact water recreation; warm fresh water habitat; wildlife habitat; rare, threatened, or endangered species; and ground water recharge.
29. The first encountered groundwater ranges from about 112 feet to 140 feet below the native ground surface. Groundwater elevations range from 48 feet MSL to 70 feet MSL. The groundwater is unconfined. The depth to groundwater fluctuates seasonally as much as 10 feet.
30. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 1450 and 2400 micromhos/cm, with total dissolved solids (TDS) ranging between 960 and 1900 milligrams per liter (mg/L).
31. The direction of groundwater flow is generally toward the southeast. The direction of groundwater flow varies seasonally and periodically flows toward the south. The estimated average groundwater gradient is approximately 0.0016 feet per foot

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32. The facility is in the Delta-Mendota Basin Hydrologic Unit, Detailed Analysis Unit (DAU) 235. The designated beneficial uses of the groundwater, as specified in the Basin Plan for DAU 235, are municipal and domestic water supply, agricultural supply, industrial service supply, industrial process supply, non-contact water recreation, and wildlife habitat.

GROUNDWATER AND UNSATURATED ZONE MONITORING

33. The existing groundwater monitoring network for the landfill units consists of: five background monitoring wells BMW-1, BMW-2, and reclassified wells BMW-3, DMW-16, and DMW-17; three perimeter monitoring wells DMW-13, DMW-14, and DMW-15; and fifteen downgradient monitoring wells DMW-2, DMW-4, DMW-6, DMW-8, DMW-10 thru DMW-12, and DMW-18 thru DMW-25.
34. The Discharger's detection monitoring program for groundwater at the landfill satisfies the requirements contained in Title 27.
35. The vadose zone monitoring systems for Modules 1, 2, 3, and 4 of the Phase II area consists of two monitoring stations installed within the Module subgrade. One station is located near the middle of each module and one station is located beneath each module's leachate collection sump. Each station consists of two suction lysimeter/soil moisture block systems (16 lysimeters total) and ancillary extension lines and access riser pipes. Of these, one lysimeter (M3L-2, located beneath the center of Module 3) is not functioning properly. An additional suction lysimeter has been installed to provide for background unsaturated zone monitoring. Historically, the only lysimeters that produce sufficient liquid for sampling are M1L3 and M1L4, installed beneath the leachate sump of Module 1. The vadose zone monitoring systems for Modules 5 through 8 of Phase II and Modules 1 through 3 of Phase III are pan lysimeters. Each pan lysimeter consists of an underlying 60-mil HDPE liner on a prepared subgrade below the

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leachate sumps and the leachate collection and removal system troughs with ancillary drainage and access riser pipes. Monitoring has identified water in the Phase II and Phase III pan lysimeters, a technical memorandum demonstrated that the water was likely construction-related or rainwater captured during construction.

36. Volatile organic compounds (VOCs) are often detected in a release from a MSW landfill and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Title 27, sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with Title 27, sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
37. 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.
38. 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

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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)], tentatively indicates that a release of waste from a Unit has occurred. Following tentative indication of a release, verification testing must be conducted to determine whether there is measurably significant evidence of 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.

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

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

40. The Discharger submitted a 15 May 2002 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 the use of Interwell data analysis to calculate tolerance limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP No. R5-2012-XXXX.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

41. Volatile organic compounds (VOCs) were first detected in groundwater when the detection monitoring wells were installed in 1987. Several waste constituents were detected in 1987 at concentrations below primary water quality standards including: chloroethane; chloromethane; dichlorodifluoromethane; cis-1,3-dichloropropylene; tetrachloroethylene; 1,1,1-trichloroethane; trichloroethylene; and trichlorofluoromethane. These and other volatile organics continue to be detected sporadically in detection monitoring wells at concentrations below primary water quality standards.
42. The Discharger submitted an Addendum to the Evaluation Monitoring Program dated November 2009, to the original Evaluation Monitoring Program (1 February 2006), detailing the current release of waste constituents to groundwater, which are: 1,2,3-trichloropropane, 1,2-dichloropropane, dichlorodifluoromethane, trichlorofluoromethane, 1,1-dichloroethane, tetrachloroethene, and trichloroethene.
43. The Discharger completed an Evaluation Monitoring Program for the release of waste constituents to the groundwater. The nature of the release was demonstrated to be volatile organic compounds that originated from landfill gas. The extent of the release is a plume downgradient from the Phase I waste management unit approximately 2,400 feet to the eastern boundary of the facility.
44. The Discharger completed an Engineering Feasibility Study in accordance with Section 20425 (c) of Title 27. The Engineering Feasibility Study concluded that the most technically and economically feasible corrective action alternative is monitored natural attenuation in conjunction with landfill gas extraction.

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45. The Discharger submitted an Amended Report of Waste Discharge for Corrective Action in accordance with Section 20425(d) of Title 27. Corrective Action Program combines the in-place landfill-gas (LFG) recovery system as source control for non-methane organic compounds (NMOCs) in the LFG that potentially impact groundwater and monitored natural attenuation for trace levels of chlorinated volatile organic compounds (CVOCs) detected in groundwater. Near the waste management units, the LFG recovery operations will use best management practices to optimize controls on methane and NMOC migration during active landfill operations. The use of BMPs in operating the LFG recovery system should eliminate the sporadic detections of trace levels of CVOCs in groundwater. Downgradient of the waste management units, trace concentrations of CVOCs that reach the off-site water table aquifer will be influenced by natural attenuation processes, primarily dispersion and sorption, augmented by chemical and biological oxidation.
46. Periodic monitoring of the degraded groundwater will be performed at the point of compliance at the landfill property boundary using the Detection Monitoring Program monitoring wells. Data collected in the Detection Monitoring Program wells will be used to evaluate the effectiveness of the Corrective Action Plan and to determine whether that the extent of CVOCs in groundwater is expanding or that concentrations are increasing to levels of concern.
47. Monitoring and Reporting Program No. R5-2012-XXXX requires the Discharger to monitor the release of waste constituents and the progress of corrective action in accordance with a Corrective Action Plan approved by the Executive Officer.

LINER PERFORMANCE DEMONSTRATION

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

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

49. In accordance with the Executive Officer’s letter of 17 April 2001, the Discharger submitted a landfill liner design performance report for the proposed Phase III waste management unit to demonstrate that the proposed engineered alternative design would meet the performance standard contained in Section 20310(c) of Title 27 for a Class III landfill. The demonstration utilized a model to predict the performance of the proposed liner design and the fate and transport of a release of waste constituents from Phase III.

50. To ensure proper installation of the engineered alternative landfill liner system, the Discharger has agreed to perform an electronic leak detection survey (ELDS) over the entire base of the liner system subsequent to placement of the operations layer on the liner and leachate collection and removal system to detect and repair any liner defects

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prior to placing waste. In addition to performing the ELDS, the Discharger will place select waste over the operations layer to reduce the potential damage to the base liner during initial refuse filling operations.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

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

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

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protection against water quality impairment equivalent to the prescriptive standard in accordance with Title 27, section 20080(b)(2).

53. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.
54. The Discharger proposes a liner system which will be designed, constructed, and operated in accordance with the criteria set forth in Title 27, and the provisions in State Water Board Resolution 93-62 for municipal solid wastes.
55. In June 2004 the Discharger submitted a Liner Performance Demonstration Report requesting approval of an engineered alternative to the prescriptive standard for liner requirements for the 250-acre Phase III WMU. The engineered alternative liner proposed by the Discharger for the bottom liner of the future landfill modules consists of, in ascending order: subgrade; geosynthetic clay liner (GCL); 60-mil HDPE single sided textured geomembrane; geonet drainage layer, non-woven filter geotextile, two-foot thick soil operations layer, and an LCRS. The components for the side slope are proposed to be constructed of the same materials and in the same sequence and manner as the bottom liner system, with the exception of the subgrade. The subgrade for the side slopes will not be over excavated and replaced with an engineered fill. It will be prepared in an appropriate manner using accepted engineering and construction methods so as to provide a surface that is smooth and free from rocks, sticks, and other debris that could damage or otherwise limit the performance of the geosynthetic clay layers and/or geomembranes.

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56. The Discharger adequately demonstrated that construction of a Subtitle D prescriptive standard liner would be unreasonably and unnecessarily burdensome when compared to the proposed engineered alternative design. There is no clay source on-site or nearby and the cost of importing clay from off-site or mixing on-site soils with bentonite would be substantially greater than the alternative design. The Discharger has also demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.
57. The Leachate Collection and Removal system (LCRS) on the base of the modules consists of: a geonet/geotextile drainage layer acting as a blanket drain, and a perforated HDPE collector pipes sloped at 1.0 percent. Collection pipes will be placed within a 1.5-foot deep trench and encapsulated with permeable gravel. The 6-inch diameter, SDR 13.5 HDPE collection pipes will have holes arranged in three rows evenly spaced around the circumference of the pipe. The holes will have a maximum width of 0.25 inches. The holes will be uniformly spaced along the length of the pipe. The LCRS permeable material will provide a minimum hydraulic conductivity of 1.0 cm/s. The LCRS permeable material will be underlain by the geonet drainage layer. Leachate generation was estimated using the Hydrologic Evaluation of Landfill Performance (HELP) computer model. The estimate was based on a 15-foot waste thickness with intermediate cover and a 10-year modeling period (conservative estimate). The estimated peak daily leachate generation was 331 gallons per acre per day. Leachate collected from the sumps will be pumped to storage tanks fitted with secondary containment systems.
58. An unsaturated zone monitoring sump will be excavated into the subgrade below the LCRS sump at the lowest point of the floor. The unsaturated zone monitoring sump

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will be installed to depths of 3 feet beneath the LCRS sumps at an elevation of 136.5 feet MSL. Access to the unsaturated zone monitoring sump will be via an 10-inch diameter, SDR 13.5 HDPE slope riser pipe. The liquid (if any) in the unsaturated zone monitoring sump will be manually monitored on a periodic basis. Any liquids in the unsaturated zone monitoring sump will be removed with a pump via the slope riser pipe, with the appropriate type and size pump.

59. The December 2004 (revised January 2006) ROWD includes a stability analysis for Phase III pursuant to Title 27, section 21750(f)(5). The Discharger's stability analysis includes 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. The stability analysis demonstrates that the structural components of modules will withstand the forces of the Maximum Credible Earthquake (MCE) without failure of the containment systems or environmental controls.
60. This Order approves the Discharger's proposed liner system for future modules as described in Finding 4 and requires that the Discharger submit design plans and construction quality assurance (CQA) plans for each new module or modules for review and approval at least 180 days prior to construction.
61. The Discharger proposes to excavate the existing inactive unlined waste management unit (Phase I) and place the excavated waste into a composite lined landfill cell. Excavation of the unlined unit will continue until all wastes within the unlined waste cell are removed. The Discharger proposes to construct a composite liner system in the place of the former unlined waste management unit contiguous with existing Phase II

and future Phase III modules, once the unlined unit has been excavated and the area is prepared for operations.

FINANCIAL ASSURANCES

62. 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 2011 *Preliminary Closure and Post Closure Maintenance Plan* includes a cost estimate for landfill closure. The lump sum estimate is for the cost to close largest future area needing closure at any one time. The total amount of the closure cost estimate in 2011 dollars is \$48,246,108 million. This Order requires that the Discharger maintain financial assurance with the California Department of Resources Recycling and Recovery (CalRecycle) in at least the amount of the closure cost estimate.
63. Title 27, sections 21840 and 22211 requires a cost estimate for landfill post-closure maintenance. The Discharger's 2011 *Preliminary 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 2011 dollars is \$13,074,959 million. This Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the post-closure maintenance cost estimate adjusted annually for inflation.
64. Title 27, section 22221 requires a cost estimate for corrective action of all known or reasonably foreseeable releases. The Discharger submitted a 2011 cost estimate of \$1,990,000 for corrective action of all known or reasonably foreseeable releases. This

Order requires that the Discharger maintain financial assurance with CalRecycle in at least the amount of the cost estimate adjusted annually for inflation.

CEQA AND OTHER CONSIDERATIONS

65. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with Title 14, section 15301.

66. This order implements:

- a. *The Water Quality Control Plan for the Tulare Lake Basin, Second 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.

67. Based on the threat and complexity of the discharge, the facility is determined to be classified 2B 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."

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- 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."

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

69. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2012-XXXX" are necessary to assure compliance with these waste discharge requirements

PROCEDURAL REQUIREMENTS

70. 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.

71. 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.

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

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

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

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. R5-2005-0067 is rescinded except for purposes of enforcement, and that County of Fresno, 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:

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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 Title 27.
2. The Discharger shall comply with all Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated January 2012.

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 discharge treated wood wastes only to landfill units equipped with a composite liner system and a leachate collection and removal system. If a verified release is detected from the waste management unit where treated wood wastes are disposed of, the disposal of treated wood wastes shall be terminated at the unit with the verified release until corrective action ceases the release.
3. The Discharger shall manage treated wood waste in accordance with California Health and Safety Code sections 25143.1.5 and 250150.7 and shall comply with all prohibitions listed in Title 22, section 67386.3.
4. 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 has demonstrates it meets the requirements in Title 27, section 20705, and

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the Discharger has received approval from the Executive Officer that it may begin using the material as ADC.

5. The Discharger shall use approved ADC only in internal areas of the landfill that do not drain outside of the limits of the contiguous landfill units unless the Discharger demonstrates that runoff from the particular ADC is not a threat to surface water quality and the demonstration has been approved by the Executive Officer. This demonstration may take removal of sediment or suspended solids into account for landfills where surface water drains to a sedimentation basin.
6. The Discharger shall, 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.
7. Leachate may be returned only to Phase II, Phase III, and future composite lined modules listed in Finding 4 of this Order in accordance with Standard Discharge Specifications D.2 through D.4 of the SPRRs.
8. The Discharger shall comply with all Standard Discharge Specifications listed in Section D of the SPRRs dated January 2012.

C. FACILITY SPECIFICATIONS

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

D. CONSTRUCTION SPECIFICATIONS

1. The Discharger shall construct the base liner and side slope liner of new Class III landfill units as described in Finding 4 of this Order in accordance with the following approved engineered alternative liner design:
 - a. An engineered alternative composite **base liner system** that is comprised, in ascending order, of the following:
 - 1) An eight-inch thick engineered soil foundation layer that shall be constructed of select fine-grained soil materials with a maximum particle size of ½-inch and exhibiting rounded to subrounded clasts, and which shall be scarified and re-compacted to 95% of maximum dry density and within 2% of optimum moisture content, and which will either attain a hydraulic conductivity of 1×10^{-5} cm/sec or less or meet the following gradation criteria:
 - a) At least 30% of the material, by dry weight, passing the No. 200 U.S. Standard sieve, and
 - b) A gradation series (i.e., well-graded) that is amenable to compaction.
 - 2) A GCL that shall exhibit appropriate strength characteristics to accommodate stresses associated with specific landfill design parameters, with particular attention to interface, long-term creep shear, and bearing capacity.
 - 3) A 60-mil thick high density polyethylene (HDPE) single-textured geomembrane (textured side down).

- 4) A geonet drainage layer that shall be of sufficient strength and thickness to present collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the Unit, and that shall be designed to convey twice the maximum anticipated daily volume of leachate generated from the Unit, and that shall be designed to ensure that there is no buildup of hydraulic head on the liner
 - 5) A nonwoven filter geotextile.
 - 6) A two-foot thick soil operations layer.
- b. The side slope liner shall be comprised of the same components and constructed in the same order as that described for the base liner above. The subgrade for the bottom and the side slopes of the Unit shall be prepared in an appropriate manner using accepted engineering and construction methods 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.
2. The Discharger shall not proceed with construction until the construction plans, specifications, and all applicable construction quality assurance plans have been approved.
 3. The Discharger may propose changes to the liner system design prior to construction, provided that approved components are not eliminated, the engineering properties of the components are not substantially reduced, and the proposed liner system results in the protection of water quality equal to or greater than the design prescribed by Title 27 and this Order. The proposed changes may be made following approval by the Executive Officer. Substantive changes to the design require reevaluation as an

engineered alternative and approval by the Central Valley Water Board in revised WDRs.

4. After the operations layer is installed, the entire base liner system shall be tested for the presence of defects using the electrical leak detection survey method. All detected defects shall be repaired before waste is discharged to the unit. The location and nature of each detected defect shall be noted in the construction report.
5. The Discharger shall submit for review and approval by the Executive Officer a Workplan containing the methodology, scope of work, and a time schedule for excavating the waste from the Phase I Area (as described in Finding 61). The Discharger shall not proceed with excavation of the waste from the Phase I Area until the Workplan has been approved.
6. The Discharger shall comply with all Standard Construction Specifications listed in Section F of the SPRRs dated January 2012.
7. The Discharger shall comply with all Storm Water Provisions listed in Section L of the SPRRs dated January 2012.

E. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for closure and post-closure maintenance for the landfill in at least the amounts described in Findings 62 and 63, adjusted for inflation annually. A report regarding financial assurances for closure and post-closure maintenance shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then

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

2. The Discharger shall update the preliminary closure and post-closure maintenance plan (PCPCMP) any time there is a change that will increase the amount of the closure and/or post-closure maintenance cost estimate. The updated PCPCMP shall be submitted to the Central Valley Water Board, the Local Enforcement Agency, and CalRecycle. The PCPCMP shall meet the requirements of Title 27, section 21769(b), and include a lump sum estimate of the cost of carrying out all actions necessary to close each Unit, to prepare detailed design specifications, to develop the final closure and post-closure maintenance plan, and to carry out the first thirty years of post-closure maintenance. Reports regarding financial assurance required in E.1 above shall reflect the updated cost estimate.
3. The Discharger shall obtain and maintain assurances of financial responsibility with CalRecycle for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in at least the amount of the annual inflation-adjusted cost estimate described in Finding 64. A report regarding financial assurances for corrective action shall be submitted to the Central Valley Water Board by **1 June of each year**. This may be the same report that is submitted to CalRecycle for this purpose. If CalRecycle determines that either the amount of coverage or the mechanism is inadequate, then within 90 days of notification, the Discharger shall submit an acceptable mechanism to CalRecycle and the Central Valley Water Board for at least the amount of the approved cost estimate.

4. The Discharger shall comply with all Standard Financial Assurance Specifications listed in Section H of the SPRRs dated January 2012.

F. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2012-XXXX, and the Standard Monitoring Specifications listed in Section I of the SPRRs dated January 2012.
2. The Discharger shall, for any landfill unit in a corrective action monitoring program, comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2012-XXXX, and the Standard Monitoring Specifications listed in Section I of SPRRs dated January 2012.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2012-XXXX, and the SPRRs dated January 2012.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP No. R5-2012-XXXX.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2012-XXXX and the Standard Monitoring Specifications in Section I of the SPRRs dated January 2012.

6. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs dated January 2012.

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility, including the MRP No. R5-2012-XXXX and the SPRRs dated January 2012 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. R5-2012-XXXX, which is incorporated into and made part of this Order by reference.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Subtitle D and/or Title 27, dated January 2012.
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.

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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>
A. Construction Plans	
Submit construction and design plans for review and approval. (see all Construction Specifications in Section D, above and Section F of the SPRRs.)	90 days prior to proposed construction
B. Construction Report	
Submit a construction report for review and approval upon completion demonstrating construction was in accordance with approved construction plans (see Standard Construction Specification F.27 in the SPRRs).	60 days prior to proposed discharge
C. Financial Assurance Review	
1. Annual Review of Financial Assurance for Initiating and completing corrective action (see Provision E.3).	1 June each year
2. Annual Review of Financial Assurance for Closure and post-closure maintenance (see Provision E.1).	1 June each year

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

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 _____.

PAMELA C. CREEDON, Executive Officer

EAM:6/7/2012