CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2016-XXXX

WASTE DISCHARGE REQUIREMENTS
FOR
ANDERSON LANDILL, INC.
ANDERSON LANDFILL
CLASS III MUNICIPAL SOLID WASTE LANDFILL AND CLASS II SURFACE IMPOUNDMENTS
OPERATION AND PARTIAL CLOSURE
SHASTA COUNTY

TENTATIVE

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

1. Anderson Landfill, Inc., (hereinafter Discharger) a wholly owned subsidiary of USA Waste of California, Inc., owns and operates the Anderson Landfill (facility) about 3.5 miles southwest of Anderson, in Section 31, T30N, R4W, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order by reference. The facility is a Class III municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq.; California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.; and 40 Code of Federal Regulations section 258 (a.k.a, "Subtitle D") in accordance with State Water Resources Control Board (State Water Board) Resolution 93-62.

2. The following documents are attached to this Order and hereby incorporated into and made a part of this order by reference:

   a. Attachment A – Site Location Map

   b. Attachment B – Site Map

   c. Information Sheet

   d. December 2015 Standard Provisions and Reporting Requirements

3. The facility is ~~on a~~ 246-~~acre property~~ acres located at 18703 Cambridge Road, Anderson. The existing and future landfill area is approximately 130-acres of which approximately ~~100~~ 78 acres have been constructed. Existing landfill units, consist of three unlined units covering 53 acres and three existing compositely lined Units covering approximately ~~49~~ 39 acres, as shown in Attachment B, which is incorporated herein and made part of this Order. The facility also includes two existing surface impoundments covering 7 acres. The facility is comprised of Assessor Parcel Nos. 207-170-008, 207-170-009, 207-170-011, 207-170-012, 207-170-013, 207-170-014, 207-170-015, 207-170-016, 207-170 -042, and 270-390-009.

4. Planned or future features at the facility include:
   a. Composite liner for remaining areas of Class II land disposal unit, Unit 4C,
   b ~~a.~~ a new compositely-lined Class III land disposal unit, Unit 5,
   c ~~b.~~ a new sediment detention pond, SED-5,
   d ~~c.~~ an additional monitoring well MW-12, and,
   e ~~d.~~ construction and implementation of a recycling facility and recycling program.

5. On 14 July 2015, the Discharger submitted a revised Joint Technical Document (JTD) for the landfill. The information in the JTD has been used in updating these waste discharge requirements (WDRs). The JTD contains the applicable information required in Title 27. The JTD and supporting documents contain information related to this update of the WDRs including:

   a. Using bottom ash from forest-source, wood-fired cogeneration facilities as an alternative daily cover.

   b. A new engineered alternative liner design for future liner construction.

   c. Allowance of maximum permitted elevation increase to 769.5 ft MSL within an approximate 12-acre area of Unit 1.

   d. ~~Approximate 200-ft shift~~ Future adjustment of the Unit 5 eastern boundary to add approximately 6 acres, for a total landfill footprint of 130 acres.

   e. Partial final closure of Unit 1 (permitted) and Units 2B and 2Ba.

   f. Final closure of South Canyon Unit, ~~Unit 2B, Unit 2Ba,~~ and North of Cambridge Road Unit.

   g. Plan for filling, final grading and final closure of the Unit 1 northwest corner.

6. On 5 August 2005, the Central Valley Water Board issued Order No. R5-2005-0118 in which the landfill waste management units at the facility were classified as Class III landfills for the discharge of municipal solid waste and the surface impoundments at the facility were classified as Class II units. This Order continues to classify the landfill units as Class III units and the surface impoundments as Class II units in accordance with Title 27. The North of Cambridge Road Unit remains unclassified.

7. The existing and future land disposal units authorized by this Order are described as follows:

Unit	Area 6	Liner/LCRS[1] Components[2]	Unit Classification & Status
Unit 1	39.7 acres	Unlined	Class III, partial final closed
Unit 2A	4.7 acres	Unlined	Class III, inactive
Unit 2B	~~5.8~~ 6.8 acres	Unlined	Class III, partial final closed, overlain by Unit 2Ba
North of Cambridge Road Unit	2 acres	Unlined	Unclassified, closed
Unit 2Ba	~~6.8~~ 5.8 acres	• 1-ft thick foundation layer, • 1-ft thick low-permeability soil with a hydraulic conductivity of $1x10^{-6}$ cm/sec[3] or less, • geosynthetic clay liner, • 60-mil single-sided textured HDPE[4] geomembrane, • 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping, • 8 oz/sy[5] non-woven geotextile filter layer, and, • 1-ft thick operations layer.	Class III, closed Partial final
South Canyon	7 acres	• 2-ft thick foundation layer, • geosynthetic clay liner, • 60-mil single-sided textured HDPE geomembrane, • ~~1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and~~ 6 inch diameter HDPE perforated collection piping, wrapped with gravel (min. K of 0.3cm/s • ~~and~~ 8 oz/sy non-woven geotextile filter layer, and, • 1-ft thick select operations layer with a minimum hydraulic conductivity of 0.01 cm/sec	Class III, closed
Units 4A,4B,4C, 4C Extension	~~35.6~~ 26.5 acres	• 1-ft thick low permeability soil with hydraulic conductivity of $1x10^{-6}$ cm/sec or less, • geosynthetic clay liner, • 60-mil single-sided textured	Class III, active

Unit	Area	Liner/LCRS[1] Components[2]	Unit Classification & Status
		HDPE geomembrane, • 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping, • 8 oz/sy non-woven geotextile filter layer, and, • 1-ft thick operations layer	
Remainder of Unit 4	11.2 acres	• Prepared subgrade, • geosynthetic clay liner, • 80-mil double-sided textured HDPE geomembrane, • ~~1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping,~~ • ~~8 oz/sy non-woven geotextile filter layer, and,~~ • ~~1-ft thick operations layer~~	Class III, future
Unit 5	~~37.2~~ 48.7 acres	• Prepared subgrade, • geosynthetic clay liner, • 80-mil double-sided textured HDPE geomembrane, • 1-ft thick blanket granular layer with minimum hydraulic conductivity of 0.3 cm/sec and 6 inch diameter HDPE perforated collection piping, • 8 oz/sy non-woven geotextile filter layer, and, • ~~1~~ 1.5-ft thick operations layer	Class III, future
ELP	4.2 acres	• 1-ft low-permeability soil with a hydraulic conductivity of $1x10^{-6}$ cm/sec or less, • secondary 60-mil double side textured HDPE geomembrane, • double sided geocomposite (leak detection layer), • geosynthetic clay liner, and, • primary 60-mil single side textured HDPE geomembrane	Class II Surface Impoundment, active
LSI-2	3.2	• 1-ft low-permeability soil with a hydraulic conductivity of $1x10^{-6}$	Class II Surface

Unit	Area[6]	Liner/LCRS[1] Components[2]	Unit Classification & Status
		cm/sec or less, • secondary 60-mil double side textured HDPE geomembrane, • double sided geocomposite (leak detection layer), • geosynthetic clay liner, • primary 60-mil single side textured HDPE geomembrane, and, • sacrificial 40-mil HDPE geomembrane on side slopes	Impoundment, active

[1] LCRS – Leachate collection and removal system
[2] All liner systems are composite liner systems unless otherwise noted
[3] cm/sec – Centimeter per second
[4] HDPE- High Density Polyethylene
[5] oz/sy – ounces per square yard

6. Areas include overlaps (e.g., Unit 2Ba overlies Unit 2B). Therefore the sum of all unit areas is greater than the actual total plan footprint of the landfill (ie, 130 acres)

8. On-site facilities at the Anderson Landfill include: an active landfill gas extraction system, a landfill gas flare, scales and scalehouse, public drop-off and recycling sorting area, administrative/maintenance building, diesel fuel shed and hazardous materials storage area. The Discharger has obtained approval from Shasta County Planning Division to implement a recycling operation at the Anderson Landfill. Approximately 20 to 25 tons per day of materials are anticipated to be recycled during the landfill operating hours. This recycling facility will be implemented at an unknown date in the future.

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

10. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through H of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2016-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

34. Surface water drainage from the site is to an unnamed tributary of Cottonwood Creek thence to Cottonwood Creek.

35. The designated beneficial uses of Cottonwood Creek, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; warm fresh water habitat; cold freshwater habitat; cold water migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

36. Two groundwater-bearing zones are known to occur at the site. First encountered groundwater, referred to as the shallow zone, is found from 55 to 70 feet below native ground surface directly north, northwest, and east of Unit 1 and is thought to be perched and not laterally continuous. The shallow groundwater unit is not known to be used for production purposes. Confined, laterally continuous, groundwater, referred to as the deep zone, is encountered from 270 to 300 feet below ground surface (BGS) (approximately 150 to 200 feet below the deepest waste). The deep groundwater zone is regionally used for domestic, industrial and agricultural production. During construction of Units 4 and 5, the Discharger proposes to excavate soil to grades below the perched groundwater zone. If encountered, Perched groundwater will be collected in interceptor trenches on the west, north, and east sides of Units 4 and 5 as cell development occurs. The interceptor trench on the west side of Unit 4 adjacent to unlined Unit 1 will drain to a separate collection sump from the rest of the interceptor drain system so that liquids can be tested and managed appropriately.

37. Monitoring data indicate background groundwater quality the shallow groundwater zone has electrical conductivity (EC) ranging between 200 and 370 micromhos/cm, with total dissolved solids (TDS) ranging between 190 and 320 milligrams per liter (mg/L). Monitoring data indicate background groundwater quality for the deep groundwater zone has electrical conductivity (EC) ranging between 200 and 230 micromhos/cm, with total dissolved solids (TDS) ranging between 140 and 170 mg/L.

38. The direction of groundwater flow in the deep groundwater zone is northeast. The average groundwater gradient in the deep zone is approximately 0.03 feet per foot and the average velocity is approximately 0.14 feet per day. Groundwater flow in the shallow (perched) zone is also towards the northeast, except at the northwest corner of the site where a western flow direction is observed. The average groundwater gradient in the shallow zone is approximately 0.02 feet per foot and the average velocity is approximately 0.001 feet per day.

39. 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.

c. Future changes to the groundwater monitoring system may be proposed for Central Valley Water Board Executive Officer review and approval.

41. At the time this Order was adopted, the Discharger's detection monitoring program for groundwater at the landfill satisfied the requirements contained in Title 27.

42. The existing vadose zone monitoring system consists of pan lysimeters installed at strategic locations beneath or adjacent to existing Units.

a. Pan lysimeters/leak detection systems exist beneath the LCRS sumps in Unit 4 and the leak detection sumps of the Class II surface impoundments. Pan lysimeter VZM-4A was located beneath the LCRS sump in Unit 4A. Pan lysimeter VZM-4B was located beneath the LCRS sump in Unit 4B. As construction of Units 4A and 4B progressed, pan lysimeters VZM-4A and VZM-4B were decommissioned, and the respective LCRS sumps were piped to the LCRS sump in Unit 4C. Pan lysimeter VZM-4C is located beneath the LCRS sump in Unit 4C. Pan lysimeter EPOND-VZM is located beneath the leak detection sump of the Eastern Leachate Pond (ELP). Pan lysimeter WPOND-VZM is located beneath the leak detection sump (WLP-LD) of LSI-2.

b. Pan lysimeters/leak detection systems exist beneath the LCRS sumps in Unit 4 and the leak detection sumps of the Class II surface impoundments.

43. The Discharger proposes to install new pan lysimeters/leak detection systems below LCRS sumps in each cell constructed for ~~Units 4 and~~ 5.

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

45. 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.

46. 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

54. On 27 May 2014 the Discharger submitted an *Updated Liner Performance Evaluation* for a new proposed engineered alternative base liner system. The previously approved 3 June 2005 design was used to construct the base liner system for Units 4A, 4B and 4C. During construction of the base liner for Unit 4C, the Discharger exhausted most of its easily accessible on-site clay deposits. The Discharger has identified additional clay deposits at the site, but they occur under significant overburden. Due to the difficulty and cost of mining the clay, the Discharger proposed a new engineered alternative base liner design for future Unit expansions. The new engineered alternative base liner design consists of a(n) (in ascending order):

Base Liner Design

- prepared subgrade of compacted general fill,
- geosynthetic clay liner,
- 80-mil double textured HDPE geomembrane liner,
- 1-foot thick LCRS granular layer (floor only),
- 8-oz/sy geotextile filter fabric, and,
- 1.5 foot thick operations layer on the floor and a 1.5 foot thick select operations layer on the side slopes.

The Discharger used the HELP model to determine the leakage rate for the proposed liner system. The calculated average annual infiltration rate through the proposed sideslope and floor liner system is 0.052 cubic feet per acre per year (cf/ac/yr) and 0.067 cf/ac/yr, respectively. The calculated average annual leakage rate for the newly proposed liner system is less than the calculated average annual leakage rate of the previous liner system and the Title 27 prescriptive liner system. The proposed liner system was also assessed for puncture resistance. The proposed liner system was found to have superior puncture resistance as compared to the previous liner design. Additionally, a cost analysis was performed to evaluate alternative liner designs utilizing double and triple geomembranes, imported clay and amending available soils with bentonite. The proposed liner system was found to be the least expensive design. Central Valley Water Board staff approved the proposed design on 6 June 2014.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

55. On 17 June 1993, the State Water Board adopted Resolution 93-62 implementing a State Policy for the construction, monitoring, and operation of MSW landfills that is consistent with the federal MSW 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 MSW 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.

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

57. 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.

58. 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 MSW.

59. On 14 July 2015, the Discharger submitted a Joint Technical Document requesting approval of an engineered alternative to the prescriptive standard for liner requirements for the remainder of Unit 4 and all future landfill modules at the facility. The engineered alternative liner proposed by the Discharger for the bottom liner of the future landfill modules consists of a(n) (in ascending order):

Floor
~~Bottom~~ Liner

- prepared subgrade of compacted general fill,
- geosynthetic clay liner,
- 80-mil double textured HDPE geomembrane liner,
- 1-foot thick LCRS granular layer (floor only),
- 8-oz/sy geotextile filter fabric, and,
- 1.5 foot thick operations layer.

Side Slope Liner

- prepared subgrade of compacted general fill,
- geosynthetic clay liner,
- 80-mil double textured HDPE geomembrane liner, and,
- 1.5 foot thick select operations layer.

60. During construction of the base liner for Unit 4C, the Discharger exhausted most of its easily accessible on-site clay deposits. The Discharger has identified additional clay

deposits at the site, but they occur under significant overburden. Due to the difficulty and cost of mining the onsite clay, importing clay, or amending available on-site soils with bentonite, the Discharger proposed a new engineered alternative base liner design for future Unit expansions. The 27 May 2014 *Updated Liner Performance Evaluation* submitted by the Discharger substantiates that the proposed base liner design is the most cost-effective engineered alternative for the facility.

61. 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. The Discharger demonstrated that the proposed engineered alternative is consistent with the performance goals of the prescriptive standard and affords at least equivalent protection against water quality impairment.

62. The existing Class II surface impoundments (ELP and LSI-2) have a base liner system consisting of a (in ascending order):

    - 1-ft low-permeability soil with a hydraulic conductivity of $1x10^{-6}$ cm/sec or less,
    - secondary 60-mil double side textured HDPE geomembrane,
    - double sided geocomposite (leak detection layer),
    - geosynthetic clay liner, and,
    - primary 60-mil single side textured HDPE geomembrane.

63. Any new Class II surface impoundment(s) needed for additional storage of leachate will be designed and constructed in accordance with the prescriptive and performance standards of Title 27. Engineered alternative liner designs meeting the performance standards of Title 27 may be proposed for Central Valley Water Board Executive Officer review and approval.

64. All compositely lined units at the facility have LCRSs. Leachate from South Canyon Unit (Unit 1B) collects in a sump at the western edge of the Unit. From there, leachate is pumped into two 12,000-gallon intermediate plastic storage tanks. Leachate is currently trucked from the South Canyon Unit intermediate holding tanks to the Class II surface impoundments on an as needed basis in order to maintain sufficient storage capacity. Leachate from Unit 2Ba collects in a sump at the southeastern corner of the Unit ~~and~~ that is connected ~~pumped~~ to the Unit 4 LCRS sump. From there leachate is pumped to the Class II surface impoundments. Additionally, unlined Unit 1 has a toe drain system at the southern portion of the Unit that abuts the South Canyon Unit (Unit 1B). The Discharger monitors the toe drain system for liquids and transports any leachate that the system collects to the Class II surface impoundments.

65. All Units designed for containment of Class II wastes (leachate) have been or will be constructed to contain the 1,000-year, 24-hour storm event in addition to the 100-year wet season while still maintaining two feet of freeboard.

66. Any liquid detected between the primary and secondary liner of the Class II surface impoundment will be characterized to try and determine whether the primary liner is leaking. Liquid collected from between the liners will be returned to the surface impoundment. If it is determined that the primary liner is leaking, then the Discharger will be requested to immediately begin repairs.

67. A LCRS will be installed over the liner system described in Finding 61. The LCRS will consist of perforated HDPE pipes installed along the toes of slopes connected to a central perforated collection pipe that drains towards ~~a temporary collection~~ sump at the north ~~central portion of Unit 4A~~. ~~The~~ temporary LCRS sumps will be moved with each phase of construction, until such time ~~that a permanent~~ LCRS sump is ~~constructed in both~~ Unit 4C ~~and~~ Unit 5. Leachate collected from Unit 2Ba ~~will also be~~ conveyed to the LCRS for Unit 4, where it ~~will~~ flows ~~either~~ the ~~temporary or~~ permanent sump, ~~depending on cell development~~. Collected leachate will be pumped from the Unit LCRS sump to the Class II surface impoundments for storage and disposal. Peak daily leachate flow rates for the floor grades and sideslopes of Unit 4 are calculated to be 5,285 cubic feet per day (ft^3/day) per acre. Unit 2Ba will contribute up to an additional 200 ft^3/day to the Unit 4 LCRS. The pipe components of the Unit 4 LCRS have been designed to collect twice the peak daily leachate flow rate that was estimated using the HELP Model.

68. The LCRS design for future cells is as follows (in ascending order):

LCRS Design: ~~Base~~ Floor

- Base liner geomembrane
- LCRS collection pipes
- one-foot thick drainage layer consisting of rounded to sub-rounded clean 3/8-inch minus gravel with a hydraulic conductivity of 0.3 cm/sec
- Eight oz/sy geotextile
- 18 inch thick soil operations layer.

LCRS Design: Side Slopes

- Side slope geomembrane
- 18 inch thick select operations layer with a minimum hydraulic conductivity of ~~0.02~~ 0.3 cm/sec. where needed for drainage.

69. A pan lysimeter will be installed beneath the LCRS sump and a portion of the LCRS piping for each new landfill cell/module for the purpose of unsaturated zone monitoring.

70. The 14 July 2015 Joint Technical Document includes a stability analysis for Units 4 and 5 pursuant to Title 27, section 21750(f)(5). Slope stability analyses were performed for the earthfill embankment and waste fill slopes. Interim conditions were analyzed assuming static conditions only. Final conditions were analyzed for static and seismic conditions. Rapid drawdown analysis was also performed for the eastern berm where storm water will be allowed to pond behind the berm. Critical cross-sections were selected based on their representation of maximum fill height, maximum and minimum excavation depths, and

The select operations layer will provide sufficient thickness for protection of the underlying liner system as well as adequate drainage for twice the peak daily anticipated leachate generation.

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 and/or landfill gas condensate may be returned only to the South Canyon Unit, Unit 2Ba, Unit 4 and future composite lined modules listed in Finding 7 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 December 2015 which are attached hereto and made part of this Order by reference.

C. FACILITY SPECIFICATIONS

1. Class II surface impoundments shall be operated and maintained to ensure that sufficient freeboard exists to accommodate seasonal precipitation and the design storm listed in Title 27, Table 4.1. Two feet of freeboard or more shall be maintained at all times during the operational life of the landfill and throughout the post-closure maintenance period.

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

3. The Discharger shall comply with all applicable Storm Water Provisions listed in Section L of the SPRRs dated December 2015 which are attached hereto and made part of this Order by reference.

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 7 of this Order in accordance with the following approved engineered alternative liner design:

   a. An engineered alternative composite **base** (floor) **liner system** that is comprised, in ascending order, of the following:

      1) Prepared subgrade;

      2) Geosynthetic clay liner;

      3) 80-mil double-side textured HDPE geomembrane;

      4) 12-inch thick granular layer with minimum hydraulic conductivity of 0.3 cm/sec;

5) 1.5-foot thick operations layer

b. An engineered alternative composite **side slope liner system** that is comprised, in ascending order, of the following:

1) Prepared subgrade;

2) Geosynthetic clay liner;

3) 80-mil double-side textured HDPE geomembrane;

4) 1.5-foot thick select operations layer with minimum hydraulic conductivity of 0.3 cm/sec where needed for drainage.

2. Future Class II surface impoundments installed for the storage of leachate shall be designed and constructed to meet performance standards of Title 27, sections 20310 and 20375 and the Construction Standards listed in Title 27, Table 4.1.

3. Class II surface impoundment containment systems shall include a composite liner system with (1) an upper synthetic flexible membrane liner component (that's at least 60-mil thick for HDPE) installed in direct and uniform contact with a lower compacted soil component at least two-feet thick with a hydraulic conductivity of 1×10^{-7} cm/sec or less (Prescriptive Standard); or (2) a composite liner system with an engineered alternative design that meets the performance criteria for Class II Units and surface impoundments in accordance with Title 27. Liner systems utilizing an engineered alternative design shall comply with requirements of Title 27, section 20080(c) and (d). For double composite liner systems, a LCRS is required to be installed between the primary and secondary liners.

4. Class II surface impoundments shall include a pan lysimeter or other type of unsaturated zone monitoring device(s) installed beneath the lowest point of the base liner system to provide the earliest possible detection of a release from the Unit.

5. The Discharger shall not proceed with liner construction (other than earth moving and grading in preparation for liner construction) until the construction plans, specifications, and all applicable CQA plans have been approved.

6. The Discharger may propose changes to the liner system design prior to construction, provided that 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.

The select operations layer will provide sufficient thickness for protection of the underlying liner system as well as adequate drainage for twice the peak daily anticipated leachate generation.