

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2002-0218

WASTE DISCHARGE REQUIREMENTS
FOR
WESTERN PLACER WASTE MANAGEMENT AUTHORITY
FOR
OPERATION
WESTERN REGIONAL SANITARY LANDFILL FACILITY
CLASS II AND CLASS III LANDFILLS
PLACER COUNTY

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

1. Western Placer Waste Management Authority, (hereafter Discharger) owns the Western Regional Sanitary Landfill Facility (facility), a municipal solid waste landfill about 5.5 miles north-northeast of Roseville, in Section 6, T11N, R6E, MDB&M, as shown in Attachment A, which is incorporated herein and made part of this Order. The Discharger is a joint powers organization with members from Placer County, and the cities of Lincoln, Roseville, and Rocklin.
2. The Discharger contracts the operation of the facility to Madera Disposal, Inc. a wholly-owned subsidiary of Waste Connections Inc. Madera Disposal is responsible for all day-to-day operations of the landfill. The Discharger oversees the operations and performs all periodic monitoring and has staff located at the facility.
3. The facility covers approximately 291 acres at 3195 Athens Road, Lincoln, California 95648, of which, 231 acres are permitted for disposal activities. The facility consists of two waste management units – a Class II landfill and a Class III landfill. The Class III landfill has 6 modules; Modules 1, 2, 10, 11, 12, and 13. The Class II Landfill has 8 modules; Modules 5, 6, 7, 8, 9, 14, 15, and 16. These waste management units and modules are shown in Attachment B, which is incorporated herein and made part of this Order. Landfill modules are not separate waste management units, but are designations for operations planning. The facility is located on Assessor's Parcel Number (APN) 017-061-074.
4. Effective 18 July 1997, the water quality regulations for Class II and Class III disposal facilities formerly contained in Titles 23 and 27 of the California Code of Regulations (CCR) were re-codified into Chapters 1 through 7, Subdivision 1, Division 2, Title 27, CCR (Title 27). Chapter 15 was therefore no longer applicable to this facility and Order No. 99-126 implemented the requirements of Title 27 and Resolution No. 93-200.

5. The Discharger submitted a revised Joint Technical Document in support of the Supplemental and Final Environmental Impact Report (EIR) proposing changes to the configuration of the landfill. The Discharger proposes to expand the Unit for the discharge of municipal solid waste by lowering the permitted depth of excavation grades from a maximum of 42 feet below pre-development grades to a maximum of 60 feet below pre-development grades and increasing the fill height and final cover elevation (finish-grade contours) from elevation 180 feet above mean sea level (MSL) to elevation 295 feet MSL. The existing permitted horizontal limits of the landfill will not change. Therefore, Order No. 99-126 is being revised to reflect these changes.

FACILITY DESCRIPTION

6. The facility is located on gently rolling terrain at the base of the Sierra Nevada foothills. Pre-landfill development elevations ranged from approximately 106 feet above MSL in the southwest corner of the facility to about 134 feet above MSL in the center portion of the facility.
7. Geologic units in the vicinity of the facility include the following from youngest to oldest: Holocene age alluvium and basin deposits; Pleistocene age Riverbank Formation; Pleistocene age Turlock Lake Formation; Pliocene age Laguna Formation; and Miocene-Pliocene age Mehrten Formation.
8. Subsurface sediments beneath the facility include unconsolidated to strongly indurated clays, silts, and sands, with lenses of gravel. The hydraulic conductivity of these sedimentary deposits range from 1×10^{-4} to 1×10^{-7} cm/sec. The sedimentary deposits extend to a depth of approximately 200 feet below ground surface (bgs) and are a part of the Victor and Fair Oaks Formations.
9. There are no known Holocene faults within 200 feet of the facility. The Spenceville fault and Mysterious Ridge Segment are the closest active faults to the facility, 13 miles to the east and 27 miles to the west, respectively. For purposes of developing a representative seismic hazard assessment of the facility a random source third near-field source was identified. The maximum credible earthquake (MCE) determined for the Spenceville fault, Mysterious Ridge Segment and the random source have moment magnitudes (M_w) of 6.5, 6.75 and 5.5, respectively. The estimated peak horizontal ground acceleration (PHGA) that could be expected at the site from a M_w 6.5 earthquake on the Spenceville Fault is 0.15g. The estimated PHGA that could be expected at the site from a M_w 6.75 earthquake on the Mysterious Ridge Segment is 0.10g. The random source event (M_w 5.5) produces a PHGA of 0.25g. Therefore, the ground acceleration associated with a MCE event on a random source located 3 miles from the facility was used in the design.

10. The mean annual rainfall for the facility is 17.24 inches as measured at the Sacramento International Airport weather station (1941 to 2000).
11. The average pan evaporation is 60.74 inches per year based on data from the Nicolaus, CA 3SE Station (1978 to 2001).
12. The 1000-year, 24-hour precipitation event is estimated to be 6.0 inches, based on the isohyetal map prepared by the Western Regional Climatic Center (WRCC, 2000).
13. The facility is not located within the estimated flood boundaries for the 100-year flood event based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map.
14. Land uses within 1,000 feet of the facility is used for agriculture, ranching and light industry.
15. There are 12 off-site water wells within 1 mile of the facility.

WASTE AND SITE CLASSIFICATION

16. The Discharger proposes to continue to discharge municipal solid waste and wastewater treatment sludge to the Class II landfill. These waste are classified as 'designated,' 'nonhazardous solid waste,' and 'inert waste' using criteria set forth in Title 27. Only 'nonhazardous solid waste,' 'inert waste,' dewatered sewage sludge, and water treatment sludge shall be discharged into the Class III landfill. Modules 12 and 13 are the only active Class III modules. Additional Class III waste will be placed on Modules 12 and 13 under the proposed vertical expansion.
17. The area served by the facility includes the cities of Roseville, Auburn, Lincoln, Rocklin, Town of Loomis and all the unincorporated areas of Placer County. These encompass the western and southern portions of Placer County.

SURFACE AND GROUND WATER CONDITIONS

18. The Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin, Fourth Edition (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.
19. Surface water in the area of the facility drains to the north to Orchard Creek and to the south to Pleasant Grove Creek. Both of these streams eventually flow into the Sacramento River. These surface water bodies consist of intermittent streams that are primarily used for agricultural purposes. Storm water is the only surface water at the facility.

20. The designated beneficial uses of the Sacramento River, as specified in the Basin Plan, are municipal and domestic water supply, agricultural supply, industrial service supply, industrial power supply, recreation, freshwater habitat, migration, spawning, and wildlife habitat.
21. The first encountered groundwater varies from approximately 70 to 110 feet below the native ground surface.
22. The groundwater gradient is approximately 0.002 and flows primarily toward the southwest. The average groundwater velocity is 12 feet per year.
23. There are no known springs within the facility or within 1 mile of the facility.
24. The landfill is located on the eastern boundary of the Sacramento Valley groundwater basin. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are municipal and domestic water supply, agricultural supply, and industrial service supply and industrial process supply.

GROUNDWATER MONITORING

25. The groundwater in local domestic and agricultural wells in the vicinity of the landfill has been documented by the U.S. Geological Survey to be of good quality. The groundwater was shown to have generally low total dissolved solids (150 to 250 mg/L), with low chloride (generally 8 to 30 mg/L and low sulfate (2 to 10 mg/L) (USGS, 1977). Chloride concentrations measured in background monitoring wells near the landfill range from 25 to 45 mg/L.
26. The groundwater monitoring network consists of twenty-five (25) monitoring wells. Three (3) wells are associated with corrective action monitoring and sampled quarterly: MW-9, MW-10 and MW-11. Monitoring wells MW-5, MW-13 and MW-23 will be added to the corrective action monitoring program and monitored on a quarterly basis as specified in the Monitoring and Reporting Program.
27. The detection monitoring consists of wells MW-2, MW-3, MW-6 through MW-8, MW-12, MW-14 through MW-22 and MW-24. Monitoring wells LW-1 and MW-4 are the up-gradient background monitoring wells. Down-gradient detection monitoring wells Wells MW-19 and MW-20 are sampled quarterly. The remainder of the detection monitoring wells are sampled semiannually during the second and fourth quarters. MW-1 is used for water levels only.
28. Each well monitors the upper-most water-bearing zone and is equipped with a dedicated, variable speed, stainless steel submersible pump.

29. Volatile organic compounds (VOCs) are often detected in a release from a landfill and are the primary waste constituents detected in groundwater beneath a municipal solid waste landfill (see Finding No. 34). 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 Unit.
30. Sections 20415(e)(8) and (9) of Title 27 provide for the non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a Unit in accordance with §20415(b)(1)(B)2 of Title 27. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
31. The Board may specify a non-statistical data analysis method pursuant to Section 20080(a)(1) of Title 27. Section 13360(a)(1) of the California Water Code allows the Board to specify requirements to protect underground 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.
32. In order to provide the best assurance of the earliest possible detection of a release of **non-naturally occurring** waste constituents from a Unit, this Order specifies a non-statistical method for the evaluation of monitoring data.
33. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there is an indication of a release of **non-naturally occurring** waste constituents from a 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), indicates that a release of waste from a Unit may have occurred. Following an indication of a release, verification testing will be conducted at the same location to determine whether there has been a release from the Unit or the detection was a false detection. Although the detection of one non-naturally occurring waste constituent above its MDL is sufficient to provide for the earliest possible detection of a release, 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.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION PROGRAM

34. VOCs have historically been detected in monitoring well MW-9 located near the older, unlined modules. VOCs have also been detected sporadically in corrective action monitoring wells MW-10 and MW-11, which are down-gradient and up-gradient of well MW-9,

respectively. VOCs have also been detected in detection monitoring wells MW-5, MW-13 and background monitoring well MW-23 during several recent quarterly monitoring events. The detection of VOCs in these wells appears to be a result of significantly lower laboratory detection limits and the concomitant improved definition of the existing VOC plume associated with the older unlined modules which are under corrective action. The Monitoring and Reporting Program reclassifies wells MW-5, MW-13 and MW-23 as corrective action monitoring wells.

35. The Discharger has been implementing measures proposed in the 23 September 1997 Corrective Action Program and subsequent addendum. The CAP specifies the following actions: installation of 8 infill gas wells; closure of Modules 1, 2, 10, 11 and 12; quarterly monitoring of wells MW-9 through MW-11; and preparation of an aquifer characteristics report. All of the measures have been implemented with the exception of the closure of Module 12. Module 12 will be closed with Module 13 as one project no later than 18 months from the date of final receipt of waste.
36. During the fourth quarter 1998 monitoring event, chloride was detected in monitoring well MW-19 at concentrations exceeding the chloride concentration limit. Results from a retest conducted in December 1998 confirmed the exceedance. Board staff required an evaluation of groundwater quality directly up-gradient of well MW-19 to assess whether a landfill release had occurred. The investigation involved the advancement of four exploratory borings upgradient of Monitoring Well MW-19 to depths from 50 to 105.5 feet and the collection of grab groundwater samples for laboratory analysis. The investigation indicated that a small, potentially transient localized upper zone of saturated sand and clayey sand exists in the area. Monitoring data from the investigation and from ongoing quarterly monitoring data do not indicate evidence of a release. However these WDRs require that MW-19 and MW-20 continue to be monitored on a quarterly, as opposed to semi-annual, schedule.
37. The Discharger is conducting corrective action monitoring to demonstrate the effectiveness of the CAP per Title 27, Section 20430, as well as concurrent detection monitoring to provide the best assurance of the detection of potential subsequent releases per Title 27, Section 20385(a)(4)(c) and Section 20420. The Discharger must demonstrate that the facility is in compliance with its Water Quality Protection Standard, including any applicable concentration limits greater than background, before the facility can cease corrective action monitoring and return to facility-wide detection monitoring.

LINER PERFORMANCE DEMONSTRATION

38. On 15 September 2000 the 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 Board responded, in part, that “a single composite liner system continues to be an adequate minimum standard” however, the 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.”

39. 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.”
40. On 22 March 2002, the Discharger submitted a liner demonstration report and a design report for the proposed Module 15. The demonstration report was submitted to demonstrate that the proposed Module 15 Class II liner system would comply with the Title 27 performance standard. The proposed liner system consisted of a 10-acre double composite base liner and a 2.9-acre single composite side-slope liner on slopes having an inclination of 3H:1V. The report demonstrated that the proposed liner system would effectively prevent the migration of wastes from Module 15 and was approved by the Executive Officer on 17 May 2002.
41. All future modules (Modules 5, 6, 7, 8, 9 and 16) will be constructed with a double-composite liner system unless a site-specific demonstration is conducted and indicates that a different design, such as the prescriptive design or an engineered alternative design, complies with the Title 27 performance standards.

CONSTRUCTION AND ENGINEERED ALTERNATIVE

42. On 17 June 1993, the State Water Resources Control Board adopted Resolution No. 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 Title 40, Code of Federal Regulations, Part 258 (Subtitle D).
43. Resolution No. 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.
44. Resolution No. 93-62 also allows the Board to consider the approval of engineered alternatives to the prescriptive standard. Section III.A.b. of Resolution No. 93-62 requires that the engineered alternative liner systems be of a composite design similar to the prescriptive standard.

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45. Section 20080(b) of Title 27 allows the Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with §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 §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 §20080(b)(2) of Title 27.
46. Section 13360(a)(1) of the California Water Code allows the 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.
47. The Discharger proposes a liner system which will be designed, constructed, and operated to prevent migration of wastes from the Unit to adjacent natural geologic materials, groundwater, or surface water during disposal operations, closure, and the post-closure maintenance period in accordance with the criteria set forth in Title 27 for a Class II landfill, and the provisions in State Water Resources Control Board Resolution No. 93-62 for municipal solid wastes.
48. The existing and proposed modules at the facility are described in the following table.

Module	Waste Management Unit (Landfill Classification)	Description of Module	Status
1	Class III	Consists of compacted on-site soils with a hydraulic conductivity ranging from 1×10^{-4} to 1×10^{-7} cm/sec. Final cover consisting of the following: 1-foot thick soil vegetative layer, 1-foot thick compacted clay layer (3.4×10^{-7} cm/s to 6.8×10^{-8} cm/s), and a 2-foot soil foundation layer.	Closed
2	Class III	Consists of compacted on-site soils with a hydraulic conductivity ranging from 1×10^{-4} to 1×10^{-7} cm/sec. Final cover consisting of the following: 1-foot thick soil vegetative layer, 1-foot thick compacted clay layer (3.4×10^{-7} cm/s to 6.8×10^{-8} cm/s), and a 2-foot soil foundation layer. Intermediate cover on western side slope (1.6×10^{-5} to 1.6×10^{-6} cm/sec).	Closed
10	Class III	Consists of compacted on-site soils with a hydraulic conductivity ranging from 1×10^{-4} to 1×10^{-7} cm/sec. Final cover consisting of the following: 1-foot thick soil vegetative layer, 1-foot thick compacted clay layer (3.4×10^{-7} cm/s to 6.8×10^{-8} cm/s), and a 2-foot soil foundation layer. Intermediate cover on western side slope (1.6×10^{-5} to 1.6×10^{-6} cm/sec).	Closed

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11	Class III	<p>A portion of the module is lined with on-site soils with a hydraulic conductivity ranging from 1×10^{-4} to 1×10^{-7} cm/sec. The other portion contains a composite liner consisting of a compacted on-site soils overlain by a HDPE liner. The liners are overlain by a blanket LCRS.</p> <p>Final cover consisting of the following: 1-foot thick soil vegetative layer, 1-foot thick compacted clay layer (3.4×10^{-7} cm/s to 6.8×10^{-8} cm/s), and a 2-foot soil foundation layer. Intermediate cover on western side slope (1.6×10^{-5} to 1.6×10^{-6} cm/sec).</p>	Closed
12	Class III	Composite liner consisting of the following blanket LCRS, 60-mil HDPE liner, compacted on-site soils.	Active
13	Class III	Composite liner constructed to RCRA, Subtitle D specifications and consisting of the following: Blanket LCRS 60-mil HDPE liner, 2-foot compacted clay layer with a hydraulic conductivity of 7.9×10^{-5} cm/s.	Active
14	Class II	<p>Base composite liner system on the module floor consisting of the following: 1-foot thick compacted clay layer with a hydraulic conductivity of 1×10^{-7} cm/sec or less soil, GCL, and a smooth 60-mil thick HDPE geomembrane, overlain by a blanket LCRS.</p> <p>The side slope liner consists of a 2-foot thick compacted clay layer with a hydraulic conductivity of 1×10^{-7} cm/sec or less overlain by a textured 60-mil thick HDPE geomembrane overlain by a blanket LCRS.</p> <p>Base composite liner system on the module's south facing slope underlain by Module 13 refuse (Attachment D) consisting of the following: Minimum 1-foot thick operations layer, 60-mil HDPE liner, intermediate cover foundation soil layer.</p>	Active
15	Class II	<p>Base double composite liner on the base floor consisting of the following: prepared subgrade; GCL with maximum hydraulic conductivity of 5×10^{-9} cm/sec; 60-mil thick textured HDPE geomembrane; geonet leak detection layer; GCL with a hydraulic conductivity less than 5×10^{-9} cm/sec; 60-mil double-sided textured HDPE geomembrane; 12-inch thick LCRS; geotextile filter fabric; and 12-inch thick operations layer.</p> <p>The single composite side slope liner consists of the following: prepared subgrade; GCL with maximum hydraulic conductivity of 5×10^{-9} cm/sec; 60-mil thick textured HDPE geomembrane; geocomposite leachate drainage layer with heat bonded nonwoven geotextile on both sides and a temporary HDPE geomembrane ultraviolet (UV) protection layer. The UV protection layer will be removed and replaced with a 2-foot thick operations layer prior to the discharge of waste.</p>	Active
5, 6, 7, 8, 9 and 16	Class II	<p>Double composite base liner system consisting of the following: prepared subgrade; GCL with maximum hydraulic conductivity of 5×10^{-9} cm/sec; 60-mil thick textured HDPE geomembrane; geonet leak detection layer; GCL with a hydraulic conductivity less than 5×10^{-9} cm/sec; 60-mil double-sided textured HDPE geomembrane; 12-inch thick LCRS; geotextile filter fabric; and 12-inch thick operations layer. Side slope areas are similar to above except for the last three components which include 60-mil single-sided textured HDPE geomembrane; LCRS geocomposite; and 24-inch thick operations layer.</p> <p>Final cover system consisting of the following: 1-foot thick soil vegetative layer, geocomposite drainage net, 60-mil HDPE liner, GCL with a hydraulic conductivity less than 5×10^{-9} cm/sec, and a 2-foot soil foundation layer.</p>	Permitted. To be constructed as needed.

49. All containment structures shall be designed and constructed under the direct supervision of a California registered civil engineer or certified engineering geologist and shall be certified by that individual as meeting the prescriptive standards and performance goals of Title 27 prior to waste discharge.
50. The base grade elevations have been developed to provide a minimum of at least 10 feet of separation between groundwater (including capillary rise) and waste materials. The separation between current groundwater levels and waste, including capillary fringe, is in excess of 36 feet based on first quarter 2001 groundwater elevation data.
51. Final landfill slopes will be inclined no steeper than 3.5H:1V with intermediate, 15-foot wide benches every 50 vertical feet. Minimum final surface slopes will be 3 percent.
52. The LCRS in Module 13 and in all future modules will consist of a 12-inch thick gravel blanket drain sloping at 2 percent to a central perforated header pipe sloped at 1 percent to the LCRS sump. The central header collection pipes have been and will continue to be placed within the 12-inch thick gravel blanket drain. The pipes in existing Modules 13 and 14 are 4 and 6-in. diameter, HDPE SDR 17 with slotted perforations. The pipes for the future modules will be 6-in. diameter, HDPE SDR 11 with perforations. The LCRS gravel, or an equivalent drainage media, will provide a minimum hydraulic conductivity of 1 cm/sec. The LCRS gravel will be overlain by a filter geotextile.
53. Each future module will have a leachate sump. Each leachate sump will be accessed through two, 18-in. diameter, HDPE SDR 11 slope riser pipes. One of the riser pipes will house a dedicated leachate sump. The second riser will provide redundant access and a second pumping point if rapid withdrawal of leachate is ever needed. The existing Modules 13 and 14 have a single, 12-in. diameter, HDPE SDR 17 side slope riser pipe. A separate 2-in. diameter HDPE SDR 11 pipe will be constructed in each LCRS sump to provide access for annual LCRS testing and periodic cleanout, if necessary. Current leachate generation from Modules 11, 12, 13 and 14 is on the order of 44,500 gallons per month.
54. Using the Hydrologic Evaluation of Landfill Performance (HELP) Model, the maximum head on the liner for the active period simulation is 0.450 inch. The impingement rate is 2,362 gallons per acre per day (gpad). This value was doubled and used to design the LCRS.
55. Leachate extracted from the sumps is conveyed through a series of pipes to the City of Roseville sewer main via a manhole located north of the flare station. A new leachate discharge line will be constructed for the western modules as they are developed.
56. Each of the LCRS sumps in the future modules will be designed with a leak detection monitoring sump below the primary base liner system. The leak detection monitoring sump

will be excavated into the subgrade below the LCRS sump at the lowest point of the module floor. Access to the leak detection sump will be via a slope riser pipe. The leak detection side slope riser pipe will be 6-in. diameter, HDPE SDR 11 pipe. The liquid (if any) in the leak detection monitoring sump will be manually monitored on a monthly basis. Any liquids in the leak detection monitoring sump will be removed with a pump via the slope riser pipe.

57. The leak detection sump will consist of a 12-inch thick zone of gravel providing a minimum hydraulic conductivity of 1 cm/sec. The leak detection sump will be in between the primary and secondary composite liners of the double composite liner system.
58. The existing landfill gas extraction system consists of 36 operating interior vertical extraction wells, 2 interior horizontal extraction wells, 53 perimeter migration control extraction wells, PVC laterals, subheaders and HDPE header pipes, two pneumatic condensate sumps, and a flare station. The flare station consists of two centrifugal blowers, a compressor and an enclosed ground flare currently configured for 1,800 standard cubic feet per minutes (SCFM) of landfill gas. The current flare is permitted for 2,500 SCFM of landfill gas.
59. The landfill gas system will expand as the landfill expands. Additional vertical extraction wells, horizontal extraction wells, and support structures and facilities will be added as landfill expansion continues. The flare will be modified to accept the currently permitted 2,500 SCFM of landfill gas flow when the demands of the system exceed current flow capabilities. Calculations show that landfill gas generation will reach a maximum of approximately 4,500 SCFM.
60. The landfill gas condensate is tested at least annually. If testing indicates the condensate should be classified as hazardous waste, then the Discharger will contract with a licensed hazardous waste hauler to dispose of the condensate. Otherwise, the condensate is disposed of within the City of Roseville's sanitary sewer system. The amount of condensate disposed ranges from 10 to 800 gallons per day (gpd), with a mean of 200 gpd.

OPERATION OF THE FACILITY

61. One module is constructed and ready for waste placement at the time the current module reaches planned waste grades. As one module is being filled with waste, the adjacent module is being excavated for use as daily cover. Once the module is excavated, the base liner system is constructed near the time the current module receiving waste is near fill plan grades. The landfill sequencing plan is described as follows: Fill Modules 12, 13, 14 and 15; Excavate and construct Module 16; Fill Module 16 to interim grades; Excavate and construct Module 5; Fill Module 5 to interim grades; Excavate and construct Module 6; Fill Modules 5, 6, 12, 13, 14, and 15; Excavate and construct Module 7; Fill Module 7 to interim grades;

Excavate and construct Module 8; Fill Module 8 to interim grades; Excavate and construct Module 9; and Fill Module 9 and remaining modules to final permitted heights.

62. Each ten to twenty acre module is excavated below grade. Refuse is placed in lifts of ten feet and is spread in two foot thick layers on a 3:1 maximum slope working face 70 to 100 feet wide. The top of each lift is covered daily with a minimum six-inch soil layer or other approved alternative cover. One foot of soil is placed on any area that will not receive wastes for 180 days. Surface grading is maintained at all times to insure lateral runoff and prevent ponding over areas in which waste is buried.
63. Storm water runoff that has contacted landfill wastes and leachate collected by the LCRS are discharged to the City of Roseville sewer system.
64. The Discharger's current plans indicate that the Class II and Class III landfills will reach capacity by the year 2052. The gross total airspace associated with the revised landfill grades is estimated as 40 million cubic yards. This is the total airspace, including the base liner and final cover systems' volumes.

CEQA AND OTHER CONSIDERATIONS

65. In January 2000, a supplemental draft EIR was prepared to evaluate several proposed operational changes at the existing facility including increasing the permitted height of the landfill, increasing the excavation depth, extending the operational hours, and adding lighting to accommodate evening operations. A supplemental final Environmental Impact Report (SEIR) was prepared in July 2000 to address public comments and feedback from the previous Draft SEIR. The Western Placer Waste Management Authority Board of Directors certified the SEIR on 10 August 2000.
66. On 9 October 1991, the United States Environmental Protection Agency (EPA) promulgated regulations (Title 40, Code of Federal Regulations, Parts 257 and 258, "federal MSW regulations" or "Subtitle D") that apply, in California, to dischargers who own or operate landfills at which MSW is discharged. The majority of the federal MSW regulations became effective on the "Federal Deadline," 9 October 1993.
67. This order implements:
 - a. The Water Quality Control Plan for the Sacramento River Basin and the San Joaquin River Basin, Fourth Edition;
 - b. The prescriptive standards and performance goals of Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions;

- c. The prescriptive standards and performance criteria of RCRA Subtitle D, Part 258; and
- d. State Water Resources Control Board Resolution No. 93-62, *Policy for Regulation of Discharges of Municipal Solid Waste*, adopted 17 June 1993.

PROCEDURAL REQUIREMENTS

68. 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 facility for the discharges of waste to land stated herein.
69. The 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.
70. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.
71. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.swrcb.ca.gov/water_laws/index.html and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. 99-126 is rescinded, and that Western Placer Waste Management Authority, 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' is prohibited. The discharge of designated wastes to the Class III landfill is prohibited. For the purposes of this Order, the term 'hazardous waste' is as defined in Title 23, California Code of Regulations, Section 2510 et seq., and 'designated waste' is as defined in Title 27.
2. The discharge of wastes outside of a Unit or portions of a Unit specifically designed for their containment is prohibited.

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3. The discharge of waste to a closed Unit is prohibited.
4. The discharge to the landfill units of solid waste containing free liquid or moisture in excess of the waste's moisture holding capacity, is prohibited.
5. The discharge to landfill units of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids), except dewatered sewage or water treatment sludge as provided in Section 20220(c) of Title 27, is prohibited.
6. The disposal of containerized liquids at this facility is prohibited.
7. The discharge of wastes which have the potential to cause corrosion or decay, or otherwise reduce or impair the integrity of containment structures or which, if commingled with other wastes in the 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,
 - b. are restricted hazardous wastes, or
 - c. impair the integrity of containment structures,is prohibited.
8. The discharge shall not cause the release of pollutants, or waste constituents in a manner which could cause a condition of nuisance, degradation, contamination, or pollution of groundwater to occur, as indicated by the most appropriate statistical or nonstatistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
9. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
10. The discharge shall not cause any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State — in either the liquid or the gaseous phase — and cause a condition of nuisance, degradation, contamination, or pollution.

B. DISCHARGE SPECIFICATIONS

1. Wastes shall only be discharged into waste management units specifically designed for their containment and/or treatment, as described in this Order.

2. A minimum separation of 10 feet shall be maintained between wastes or leachate and the highest anticipated elevation of underlying groundwater including the capillary fringe.
3. Prior to the discharge of waste to a landfill, all wells within 500 feet of the unit shall have sanitary seals which meet the requirements of the Placer County Division of Environmental Health or shall be properly abandoned. A record of the sealing and/or abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.
4. Leachate generation by a landfill module LCRS shall not exceed 85% of the design capacity of the sump pumps. If leachate generation exceeds this value or if liquid is detected in the underlying leak detection layer then the Discharger shall immediately cease the discharge of sludges and other high-moisture wastes to the landfill module and shall notify the Board in writing within seven days. Notification shall include a time table for remedial or corrective action necessary to reduce leachate production.
5. The Discharger shall conduct the periodic load checking program as described in the August 2002 Load Checking Program report. The load checking program shall ensure that 'hazardous wastes' and 'designated wastes' are not discharged to any Class III Landfill at the facility and that 'hazardous wastes' are not discharged to any Class II Landfill at the facility. The program shall also ensure that wastes exceeding moisture limitations are not discharged to Landfill units.

C. FACILITY SPECIFICATIONS

1. Municipal solid waste shall be discharged to either (1) that portion of a module which received wastes prior to October 1993 (i.e., that active portion of the module which is within the boundaries of the Existing Footprint), or (2) to an area equipped with a containment system which meets the additional requirements for both liners and leachate collection systems specified below.
2. New landfill units and lateral expansions shall not be within jurisdictional waters of the United States (wetlands) unless the Discharger has successfully completed, and the Board has approved, all demonstrations required for such discharge under 40 CFR 258.12(a).
3. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
4. Dewatered sewage or water treatment sludge may be accepted for disposal at the Class III landfill if the sludge contains at least 20 percent solids (primary sludge) or 15 percent solids (secondary sludge), is mixed with refuse at a minimum solids-to-liquid ratio of 5:1 by weight, and does not exceed the initial moisture holding capacity of the solid waste.

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Any waste that contains liquid in excess of the moisture holding capacity of the waste in the Class II landfill or which contains liquid in excess of the moisture holding capacity as a result of waste management operations, compaction or settlement shall only be discharged to another Unit with containment features equivalent to a surface impoundment. Dewatered sewage or water treatment sludge may be used as alternative daily cover if it is blended with soil or other approved material, at a quarterly rate of 25% sludge to 75% soil or approved material.

5. The Discharger shall immediately notify the Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions which could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
6. Intermediate cover shall be applied to areas of the landfill where filling is not anticipated within 180 days. Intermediate cover shall consist of one foot of compacted soil with a permeability less than 1×10^{-5} cm/sec or an approved engineered alternative. On landfill modules that are expanding in height over single composite liners (Modules 12, 13 and 14) the operator shall place an additional 12 inches of intermediate cover over areas where filling has not occurred, or Discharger anticipates will not occur, for a period of two years. This requirement shall not be imposed on the eastern slopes of Modules 12, 13 and 14 if gas control, leachate or stormwater collection appurtenances or slope stability would be adversely impacted. The active disposal area shall be confined to the smallest area practical based on the anticipated quantity of waste discharge and other waste management facility operations.
7. Water used for facility maintenance shall be limited to the minimum amount necessary for dust control, and construction.
8. Landfill leachate shall be conveyed to an offsite wastewater treatment plant for disposal.
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. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
11. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.

12. Precipitation and drainage control systems shall be designed, constructed, and maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 1000-year, 24-hour precipitation conditions for Class II WMUs and 100-year, 24-hour precipitation conditions for Class III WMUs.
13. Annually, prior to the anticipated rainy season, any necessary erosion control measures shall be implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding and to prevent surface drainage from contacting or percolating through wastes.
14. The Class II Landfill shall be designed to withstand the maximum credible earthquake without damage to the foundation, or to the structures which control leachate, surface drainage, erosion, or gas.
15. The Discharger shall maintain a *Storm Water Pollution Prevention Plan and Monitoring Program and Reporting Requirements* in accordance with State Water Resources Control Board Order No. 97-03-DWQ, or retain all storm water on-site.
16. Gas control measures shall be implemented for a Class II landfill module upon the detection of methane and gas-phase concentrations of volatile organic compounds (VOCs) in the leak detection layer. The gas control measures shall be sufficient to prevent the gas-phase migration of VOCs from the Class II modules.

D. GENERAL CONSTRUCTION SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval **prior to** construction, design plans and specifications for new Units and modules of existing Units, that include the following:
 - a. A Construction Quality Assurance Plan meeting the requirements of §20324 of Title 27; and
 - b. A geotechnical evaluation of the area soils, evaluating their use as the base layer; and
 - c. An unsaturated zone monitoring system, which is demonstrated to remain effective throughout the active life, closure, and post-closure maintenance periods of the Unit, which shall be installed beneath the composite liner system in accordance with §20415(d) of Title 27.
2. 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 Board.

3. If the Discharger proposes to construct a liner system in which a GCL is placed on top of a subgrade, 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.
4. Construction shall proceed only after all applicable construction quality assurance plans have been approved by Executive Officer.
5. Following the completion of construction of a Unit or portion of a Unit, and prior to discharge onto the newly constructed liner system, the final documentation required in §20324(d)(1)(C) of Title 27 shall be submitted to the Executive Officer for review and approval. The report shall be certified by a registered civil engineer or a certified engineering geologist. It shall contain sufficient information and test results to verify that construction was in accordance with the design plans and specifications, and with the prescriptive standards and performance goals of Title 27.
6. A third party independent of both the Discharger and the construction contractor shall perform all of the construction quality assurance monitoring and testing during the construction of a liner system.
7. If monitoring reveals substantial or progressive increases of leachate generation above the design leachate flow volume of 2,362.26 gpad (see Finding No. 55) by the Unit or portion of the Unit, such that the depth of fluid on any portion of the LCRS (excluding the leachate removal pump sump) exceeds **30 cm**, the Discharger shall immediately notify the Board in writing within seven days. The notification shall include a timetable for remedial or corrective action necessary to achieve compliance with the leachate depth limitation.

E. CLASS II LANDFILL CONSTRUCTION SPECIFICATIONS

1. The engineered alternative for Module 15, and all future modules, is a double-composite liner system unless a site-specific demonstration is conducted and indicates that another design complies with the Title 27 performance standards. The double-composite liner system for base areas of the landfill will consist of the following components, from bottom to top: prepared subgrade; geosynthetic clay liner (GCL) with manufacturer

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guaranteed maximum hydraulic conductivity of 5×10^{-9} cm/sec; 60-mil thick high density polyethylene (HDPE) geomembrane; geonet leak detection layer with heat bonded non woven geotextile on both sides; a GCL providing a hydraulic conductivity of no greater than 5×10^{-9} cm/sec; 60-mil thick HDPE, double-sided textured membrane; 12-inch thick leachate collection and removal system (LCRS) gravel providing a minimum hydraulic conductivity of 1 cm/sec; geotextile filter; and 12-inch thick operations layer.

2. The containment system for side slope areas of the landfill will consist of the following components, from bottom to top: prepared subgrade; GCL with manufacturer guaranteed maximum hydraulic conductivity of 5×10^{-9} cm/sec; 60-mil HDPE geomembrane (textured both sides); geonet leak detection layer with heat bonded non woven geotextile on both sides; a GCL providing a hydraulic conductivity of no greater than 5×10^{-9} cm/sec; 60-mil thick HDPE, single-sided textured geomembrane, textured side down; LCRS geocomposite; and 24-inch thick operations layer.
3. The containment system for side slopes of the Class II landfill where it abuts the Class III landfill (transition area) shall vary as a function of the type of the existing Class III landfill liner system (Attachment E). Each module-specific continuation shall be analyzed during construction level design of each module. However, a minimum of a composite liner system shall be constructed at the interface between the Class II landfill and Modules 2, 10 and 11 which do not have composite liners. Class III Modules 12 and 13 were constructed with composite liners and have and LCRS system. Therefore, a minimum of a geomembrane may be employed to separate Class II waste from Class III waste in Modules 13 and 14.
4. At closure, each landfill unit shall receive a final cover which is designed and constructed to function with minimum maintenance and consist, at a minimum, of the following from top to bottom: A 1-foot thick vegetative layer; a drainage layer consisting of a geocomposite drainage net; a geomembrane primary barrier layer; a geosynthetic-clay liner layer providing a hydraulic conductivity of not more than $5(10)^{-9}$ cm/sec; and a 2-foot thick foundation layer. The permitted final cover elevations shown on Attachment F shall not be exceeded.
5. Closed landfill modules shall be graded to at least a three-percent (3%) grade and maintained to prevent ponding.

F. DETECTION MONITORING SPECIFICATIONS

1. The Discharger shall submit for Executive Officer review and approval a groundwater detection monitoring program demonstrating compliance with Title 27 for any Unit expansion.
2. 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 No. R5-2002-0218. A detection monitoring program for a new Unit shall be installed, operational, and one year of monitoring data collected prior to the discharge of wastes [27 CCR §20415(e)(6)].
3. The Discharger shall provide Board staff a minimum of **one week** notification prior to commencing any field activities related to the installation, repair, or abandonment of monitoring devices, and a minimum 48 hour notification prior to the collection of samples associated with a detection monitoring program, evaluation monitoring program, or corrective action program.
4. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2002-0218, and the Standard Provisions and Reporting Requirements, dated April 2000.
5. 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 (i.e., US-EPA methods 8260 and 8270). The presence of non-naturally occurring organic compounds in samples above the Water Quality Protection Standard from detection monitoring wells is evidence of a release from the Unit.
6. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed the concentration limits established pursuant to Monitoring and Reporting Program No. R5-2002-0218.
7. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in Monitoring and Reporting Program No. R5-2002-0218 and §20415(e) of Title 27.
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 the Executive Officer approves a longer time period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

9. 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.
10. If methods other than USEPA-approved methods or Standard Methods are used, the exact methodology shall be submitted for review and approval by the Executive Officer prior to use.
11. 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 method detection limit (MDL) shall be selected from among those methods which would provide valid results in light of any matrix effects or interferences.
12. **“Trace” results** - results falling between the MDL and the practical quantitation limit (PQL) - shall be reported as such, and shall be accompanied both by the estimated MDL and PQL values for that analytical run.
13. **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.
14. 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 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.

15. 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 qualifications of the person(s) performing the analyses. 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.
16. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
17. 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 §20415(e)(7) of Title 27 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 for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to §20415(e)(7) of Title 27, shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, 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 nonstatistical 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".
18. The Discharger may propose an alternate statistical method [to the methods listed under 27 CCR §20415(e)(8)(A-D)] in accordance with §20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer. Upon receiving written approval from the Executive Officer, 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). Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by Board staff.

19. The Discharger shall use the following nonstatistical method for the VOC_{water} and VOC_{spg} (Soil Pore Gas) Monitoring Parameters and for all Constituents of Concern which are not amenable to the statistical tests above (i.e., less than 10% of the data from background samples that equal or exceed their respective MDL). Each qualifying constituent at a monitoring point shall be determined based on either:
- The data from a single sample for that constituent, taken during that reporting period from that monitoring point; or
 - The data from the sample which contains the largest number of qualifying constituents, where several independent samples have been analyzed for that constituent at a given monitoring point.
 - 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). The Discharger may propose an alternate statistical method [to the methods listed under 27 CCR §20415(e)(8)(A-D)] in accordance with §20415(e)(8)(E) of Title 27, for review and approval by the Executive Officer.

20. The method shall be implemented as follows:

- For the Volatile Organic Compounds Monitoring Parameter For Water Samples [VOC_{water}]:* For any given monitoring point, the VOC_{water} Monitoring Parameter is a composite parameter addressing all “qualifying VOCs” (in this case, VOCs that are detected in less than 10% of background samples).

The Discharger shall conduct verification testing (see Detection Monitoring Specifications F.21. and F.23 below, as appropriate) to determine whether a release of VOC_{water} Monitoring Parameter has occurred if the data for any monitoring point meets either of the following triggering conditions:

- 1) The data contains two or more qualifying VOCs that equal or exceed their respective MDLs; or
 - 2) The data contains one qualifying VOC that equals or exceeds its PQL.
- For the Volatile Organic Compounds Monitoring Parameter For Soil Pore Gas Samples [VOC_{spg}]:* the VOC_{spg} Monitoring Parameter is a composite parameter for soil pore gas addressing all “qualifying VOCs” detectable using either GC or GC/MS analysis for at least a ten liter sample of soil pore gas (e.g., collected in a vacuum canister). It involves the same scope of VOCs as does the VOC_{water} Monitoring

Parameter. For the VOC_{spg} test, “qualifying VOCs” consist of all those VOCs which are detectable in less than 10% of background soil pore gas samples.

The Discharger shall conduct verification testing (see Detection Monitoring Specifications F.21. and F.23 below, as appropriate) to determine whether a release of VOC_{spg} Monitoring Parameter has occurred if the data for any monitoring point meets either of the following triggering conditions:

- 1) The data contains two or more qualifying VOCs that equal or exceed their respective MDLs; or
 - 2) The data contains one qualifying VOC that equals or exceeds its PQL.
- c. *For Constituents of Concern:* For five-yearly testing of all Constituents of Concern (COCs), the “qualifying constituents” consist of COCs that are detected in less than 10% of applicable background samples.

The Discharger shall conduct verification testing (see Detection Monitoring Specifications F.21. and F.23 below, as appropriate) to determine whether a release of COCs has occurred if the data for any monitoring point meets either of the following triggering conditions:

- 1) The data contains two or more qualifying constituents that equal or exceed their respective MDLs; or
 - 2) The data contains one qualifying constituent that equals or exceeds its PQL.
21. **Non-Statistical Method Retest.** A non-statistical test method may be used by the Discharger to analyze the monitoring data for which it is impractical to conduct a statistical analysis. A non-statistical test method shall include a procedure to verify that there is “measurably significant” evidence of a release from the Unit. For the VOC_{water} , VOC_{spg} , and nonstatistical COC test, the Discharger shall use a discrete retest consisting of two new samples from each indicating monitoring point. The Discharger shall conduct the retest for the standard non-statistical method as follows:
- a. **For VOC_{water} and VOC_{spg} .** Because the VOC composite Monitoring Parameter (for water or soil pore gas) is a single parameter which addresses an entire family of constituents likely to be present in any landfill release, **the scope of the laboratory analysis for each of the two retest samples shall include all VOCs detectable in that retest sample.** Therefore, a confirming retest, in accordance with Detection Monitoring Specification F.20.a. and b., above, for either triggering condition in either of the two retest samples, shall have validated the original indication even if

the detected constituents in the confirming retest sample(s) differs from those detected in the sample which initiated the retest.

- b. **For Constituents of Concern.** Because all Constituents of Concern that are jointly addressed in the non-statistical test above, remain as individual Constituents of Concern, **the scope of the laboratory analysis for the non-statistical retest of Constituents of Concern shall address only those constituents detected in the sample which initiated the retest.** Therefore, the list of “qualifying constituents” for use in the retest, under Detection Monitoring Specification F.20.c., shall consist of those constituents which provided the original indication at that monitoring point. If the retest meets either triggering condition in either of the two retest samples, the retest shall have validated the original indication.

22. **Response to Detection in Background of VOCs** (or any other constituent which is not naturally in the background and thus is not amenable to statistical analysis):

- a. Any time the laboratory analysis of a sample from a background monitoring point, sampled for VOCs, shows either:
- 1) Two or more VOCs at or above their respective MDL; or
 - 2) One VOC at or above its respective PQL.

Then the Discharger shall:

- a) **Immediately** notify the Board by phone;
 - b) Follow up with written notification by certified mail **within seven days**;
 - c) Obtain **two** new independent VOC samples from that background monitoring point; and
 - d) Send such samples for laboratory analysis of all detectable VOCs **within thirty days**.
- b. If either or both the new samples validates the presence of VOC(s), using the above criteria, the Discharger shall:
- 1) **Immediately** notify the Board about the VOC(s) verified to be present at that background monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and

- 2) If the Discharger believes that the VOC(s) in background is from a source other than the Unit, then:
 - a) **Within seven days** of determining “measurably significant” evidence of a release, submit to the Board by certified mail a Notification of Intent to make such a demonstration pursuant to §20420(k)(7) of Title 27; and
 - b) **Within 90 days** of determining “measurably significant” evidence of a release, submit a report to the Board that demonstrates that a source other than the Unit caused the evidence, or that the evidence resulted from error in sampling, analysis or evaluation, or from natural variation in groundwater, surface water, or the unsaturated zone.
 - c. If the Executive Officer determines, after reviewing the submitted report(s), that the VOC(s) detected originated from a source other than the Unit(s), the Executive Officer will make appropriate changes to the monitoring program.
23. If the Executive Officer determines, after reviewing the submitted report, that the detected VOC(s) most likely originated from the Unit(s), the Discharger shall **immediately** implement the requirements of XI. Response To A Release, C. Release Has Been Verified, contained in the Standard Provisions and Reporting Requirements.

G. CORRECTIVE ACTION MONITORING

1. The Corrective Action Monitoring Program shall be used to assess the nature and extent of the release from the landfill and to evaluate the effectiveness of the corrective action program and the landfill cover.
2. In accordance with the Corrective Action Monitoring Program, the Discharger shall collect and analyze all data necessary to assess the effectiveness of the Corrective Action in reducing the impacts of the release on groundwater quality. A sufficient number of monitoring wells shall be installed to delineate the release.

3. The Discharger shall comply with the monitoring provisions for the Corrective Action Program (CAP) as described in Section 20430(d) of Title 27. The program shall include the detection monitoring program as well as an annual report evaluating the ground water and unsaturated data of the past year(s) in an effort to demonstrate the effectiveness of the CAP

H. REPORTING REQUIREMENTS

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

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
 - b. Date, time, and manner of sampling;
 - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
 - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
 - e. Calculation of results; and
 - f. Results of analyses, and the MDL and PQL for each analysis.
3. 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.

4. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least:
 - a. For each monitoring point and background 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 (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
 - 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 Sampling and Analysis Plan.
 - b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
 - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
 - e. An evaluation of the effectiveness of the leachate monitoring and control facilities, and of the run-off/run-on control facilities.

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- f. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. The Standard Observations shall be performed on a weekly basis and shall include:
- 1) For the Unit:
 - a) Evidence of ponded water at any point on the facility (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
 - 2) Along the perimeter of the Unit:
 - a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
 - b) Evidence of odors - presence or absence, characterization, source, and distance of travel from source; and
 - c) Evidence of erosion and/or of day-lighted refuse.
 - 3) For receiving waters:
 - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
 - b) Discoloration and turbidity - description of color, source, and size of affected area;
 - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
 - d) Evidence of water uses - presence of water-associated wildlife;
 - e) Flow rate; and
 - f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation.

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- d. 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.
 - e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
 - f. An evaluation of the effectiveness of the leachate monitoring/control facilities.
7. The Discharger shall submit a closure and post-closure maintenance plan (or suitable modifications to a pre-existing plan) that complies with 40 CFR 258.60 and 258.61 and with Title 27 of the CCR.
 8. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources with regard to the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this Order or with MRP No. R5-2002-0218, as required by Section 13750 through 13755 of the California Water Code.
 9. The Discharger shall notify the Board in writing of any proposed change in ownership or responsibility for construction or operation of the landfill. 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 Board.
 10. The Board will review this Order periodically and will revise these requirements when necessary.

I. PROVISIONS

1. The Discharger shall maintain a copy of this Order at the facility 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 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.
3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2002-0218, which is incorporated into and made part of this Order.
4. The Discharger shall comply with the applicable portions of the Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid

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Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258 et seq.), dated April 2000, which are hereby incorporated into this Order.

5. 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 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.”
6. The Discharger shall maintain legible records of the volume and type of waste discharged at the landfill and the manner and location of discharge. Such records shall be maintained at the facility until the beginning of the post-closure maintenance period. These records shall be available for review by representatives of the Board and of the State Water Resources Control 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 Regional Board.

7. 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.
8. The Discharger shall provide proof to the Board **within sixty days after completing final closure** that the deed to the landfill facility property, or some other instrument that is normally examined during a title search, has been modified to include, in perpetuity, a notation to any potential purchaser of the property stating that:
 - a. the parcel has been used as a municipal solid waste landfill;
 - b. and use options for the parcel are restricted in accordance with the post-closure land uses set forth in the post-closure plan and in WDRs for the landfill; and
 - d. in the event that the Discharger defaults on carrying out either the post-closure maintenance plan or any corrective action needed to address a release, then the responsibility for carrying out such work falls to the property owner.
9. 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 Unit(s) and during subsequent use of the property for other purposes.
10. The Discharger shall maintain waste containment facilities and precipitation and drainage controls, and shall continue to monitor groundwater, leachate from the landfill unit, the vadose zone, and surface waters per MRP No. R5-2002-0218 throughout the post-closure maintenance period.
11. The post-closure maintenance period shall continue until the Board determines that remaining wastes in the landfill will not threaten water quality.
12. 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 the Order.
13. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Board requesting transfer of the Order within 14 days of

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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 Board, and a statement. The statement shall comply with the signatory requirements contained in Provision F.5. and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Board.

14. The Discharger shall establish cost estimates for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill, and submit these estimates to the Executive Officer for review and approval.
15. The Discharger shall obtain and maintain assurances of financial responsibility for initiating and completing corrective action for all known or reasonably foreseeable releases from the landfill in an amount approved by the Executive Officer, and shall submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board.
16. The Discharger is required to maintain financial assurance mechanisms for closure and post-closure maintenance costs as specified in Chapter 6 of Title 27. The Discharger is required to submit the financial assurance mechanism to the Financial Assurances Section of the California Integrated Waste Management Board, which determines if the mechanism meets the requirements of Chapter 6, Title 27, and if the amount of coverage is adequate.
17. The Discharger shall receive approval from the Executive Officer before discharging waste to containment areas or waste management units constructed after the effective date of this Order. The Discharger shall submit to the Board all documentation (i.e., reports, plans, designs) required by this Order for the review and approval by Board staff prior to implementation.
18. 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	
(1) Submit monitoring system and program	4 months prior to start of construction of any landfill expansion

- | | |
|--|--|
| (2) Submit liner performance demonstration report, design plans, specifications, construction schedule, and construction quality assurance plan | 2 months prior to start of construction of test pad and liner system |
| (3) Submit construction quality assurance report for test pad and any modifications to design plans, specification, construction schedule, and construction quality assurance plan | 2 weeks prior to beginning construction of liner system |
| (4) Submit as-built plans, construction quality assurance, and certification report | 2 weeks prior to discharge of wastes (for closure construction, within 2 months after completion) |

B. Construction Report

Submit a construction report upon completion demonstrating construction was in accordance with approved construction plans for Executive Officer review and approval.
(see Construction Specification D.5)

Prior to discharge

C. Annual Testing of Leachate Collection and Removal System

Present results of annual LCRS testing for the landfill

**15 September 2003
(annually thereafter)**

D. Corrective Action

Close Modules 12 and 13 as one project.

Within 18 months of final receipt of waste

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I, THOMAS R. PINKOS, 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 December 2002.

THOMAS R. PINKOS, Executive Officer

RDB: 12/6/2002

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2002-0218
FOR
WESTERN PLACER WASTE MANAGEMENT AUTHORITY
WESTERN REGIONAL SANITARY LANDFILL FACILITY
CLASS II AND CLASS III LANDFILLS
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Compliance with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, is ordered by Waste Discharge Requirements Order No. R5-2002-0218.

A. REQUIRED MONITORING REPORTS

<u>Report</u>	<u>Due</u>
1. Groundwater Monitoring (Section D.1)	See Table I
2. Annual Monitoring Summary Report (Order No. R5-2002-0218, H.6.)	Annually
3. Unsaturated Zone Monitoring (Section D.2)	See Table II
4. Leachate Monitoring (Section D.3)	See Table III
5. Leak Detection Monitoring (Section D.4)	See Section D.4.
6. Surface Water Monitoring (Section D.4)	See Table IV
7. Facility Monitoring (Section D.6)	As necessary
8. Response to a Release (Standard Provisions and Reporting Requirements)	As necessary

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2002-0218 and the Standard Provisions and Reporting Requirements. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements. In reporting the monitoring data

required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in H. Reporting Requirements, of Order No. R5-2002-0218.

Field and laboratory tests shall be reported in each monitoring report. Monthly, quarterly, semiannual, and annual monitoring reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Monthly	Quarterly	Last Day of Month	by Semiannual Schedule
Quarterly	Quarterly	31 March	30 April
		30 June	31 July
		30 September	31 October
		31 December	31 January
Semiannually	Semiannually	30 June	31 July
		31 December	31 January
Annually	Annually	31 December	31 January

The Discharger shall submit an **Annual Monitoring Summary Report** to the Board covering the previous monitoring year. The annual report shall contain the information specified in H. Reporting Requirements, of Order No. R5-2002-0218, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

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

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all constituents of concern, the concentration limit for each constituent of concern, the point of compliance, and all water quality monitoring points.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the constituents of concern, the concentration limits, and the point of compliance and all monitoring points. The Executive Officer shall review and approve the Water Quality Protection Standard, or any modification thereto, for each monitored medium.

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

2. Constituents of Concern

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables I through IV for the specified monitored medium, and Table VI. The Discharger shall monitor all constituents of concern every five years, or more frequently as required in accordance with a Corrective Action Program.

a. Monitoring Parameters

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

3. Concentration Limits

For a naturally occurring constituent of concern, the concentration limit for each constituent of concern shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415 of Title 27; or

- b. By an alternate statistical method acceptable to the Executive Officer in accordance with §20415 of Title 27.

The established concentration limits for naturally occurring constituents of concern are listed in Tables VII through IX.

4. Point of Compliance

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically down-gradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

5. Compliance Period

The compliance period for each 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 Unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program.

D. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Detection Monitoring Specification F.2 and F.4 of Waste Discharge Requirements, Order No. R5-2002-0218. Detection monitoring for a new Unit shall be installed, operational, and one year of monitoring data collected **prior to** the discharge of wastes. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that is acceptable to the Executive Officer.

All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All detection monitoring program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables I through IV.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those which cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table VI.

The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program.

1. Groundwater

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a Detection Monitoring Program approved by the Executive Officer. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the approved Groundwater Monitoring Procedures Plan.

The monitoring well network (Attachment B) shall consist of background monitoring wells MW-4 and LW-1; detection monitoring wells MW-2, MW-3, MW-6, MW-7, MW-8, MW-12, MW-14 through MW-22 and MW-24 and; corrective action monitoring wells MW-5, MW-9, MW-10, MW-11, MW-13 and MW-23. Any additional monitoring wells constructed at the site as new modules are constructed shall be added to the monitoring network.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results quarterly, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted 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.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table I.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schueller plot. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

For groundwater, the last 5-year Constituent-of-Concern (COC) monitoring event for wells MW-2 through MW-12 was conducted during the second quarter of 2000; therefore, the next COC event is scheduled to take place in the second quarter of the year 2005 for these wells. The 5-year COC monitoring event for wells MW-13 through MW-23 was performed in the first quarter of 2002. Therefore, the next COC event for these wells and recently installed well MW-24 will be in the first quarter of the 2007.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of §20415 and §20420 of Title 27 in accordance with a detection monitoring plan approved by the Executive Officer. The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan.

Unsaturated zone samples shall be collected from the monitoring devices and background monitoring devices of the approved unsaturated zone monitoring system (Attachment C). The vadose zone monitoring points consist of suction lysimeters BG-A/B, S10-A/B, S11-A/B, S12-A/B, S13-A/B and S14-A/B and any pan lysimeters or other unsaturated zone monitoring points installed as the additional landfill modules are constructed. The collected samples shall be analyzed for the listed constituents in accordance with the methods and frequency specified in Table II. All monitoring parameters shall be graphed so as to show historical trends at each monitoring point. Samples for the constituents of concern specified in Table II shall be collected and analyzed in accordance with the methods listed in Table VI every five years.

Pan lysimeters shall be checked monthly for liquid and monitoring shall also include the total volume of liquid removed from the system. Unsaturated zone monitoring reports shall be included with the corresponding semiannual groundwater monitoring and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

Beginning with the first quarter of 2007, the Discharger shall sample all unsaturated zone Monitoring Points for the COC listed in Table IV which have a five year sampling frequency. Subsequent monitoring of five year COC shall be completed every fifth year after the year 2007.

3. Leachate Monitoring

All Unit leachate collection and removal system sumps shall be inspected weekly for leachate generation. Upon detection of leachate in a previously dry leachate collection and removal system, leachate shall be sampled **immediately** and analyzed for the constituents listed in Table III. Leachate shall then be sampled and analyzed annually during the fourth quarter thereafter, with a retest during the following second quarter if constituents are detected that have not been previously detected. Leachate samples shall be collected and analyzed for the listed constituents in accordance with the methods and frequency specified in Table III. The constituents of concern list shall include all constituents listed in Table VI. The quantity of leachate pumped from each sump shall be measured and reported monthly as Leachate Flow Rate (in gallons).

4. Leak Detection Monitoring

Leak detection layer sumps in the double liner systems shall be checked monthly for the presence of leachate and the Discharger shall notify the Board within one week if leachate has been observed. The presence or absence of leachate shall be reported in the operations record and in the quarterly monitoring reports. Gas samples shall be obtained from the leak detection layer on a semi-annual (winter and summer) basis and analyzed for volatile organic compounds using EPA Method TO14 and for methane. The results of the gas sampling shall be reported in the second quarter and annual monitoring reports.

5. Surface Water Monitoring

The Discharger shall install and operate a surface water detection monitoring system where appropriate that complies with the applicable provisions of §20415 and §20420 of Title 27 and has been approved by the Executive Officer.

For all monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the methods and frequency specified in Table IV. The surface water monitoring points shall consist of SW-1, SW-2 and SW-3 (Attachment C). Due to the relatively flat local topography and the location of the landfill at the top of the local drainage, the only surface water in the area is storm water runoff from the landfill, adjacent roads, and agricultural fields. Therefore, an appropriate background sample location is not available and surface water monitoring data from sample locations SW-1, SW-2 and SW-3 shall be compared to established water quality goals (Table VIII) to determine whether the landfill has impacted surface water. Sample location SW-1 monitors the discharge from the northeast sedimentation basin, which collects runoff from the northern and eastern sides of closed Modules 1, 2 and 10. Sample location SW-2 monitors the runoff from the

western slopes of closed Modules 1 and 2. Sample location SW-3 monitors runoff from the southwestern wetlands area which collects runoff from closed Modules 10 through 15.

All surface water monitoring samples shall be collected and analyzed for the constituents of concern specified in Table IV every five years. All monitoring parameters shall be graphed so as to show historical trends at each sample location.

Beginning with the first quarter of 2005, the Discharger shall sample all surface water Monitoring Points for the COC listed in Table III which have a five year sampling frequency. Subsequent monitoring of five year COC shall be completed every fifth year after the year 2005.

6. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in section H.4.f. of Order No. R5-2002-0218. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 7 days** following *major storm events*. Necessary interim repairs shall be completed **within 10 days** of the inspection and permanent repairs shall be completed when feasible. The Discharger shall report any damage and subsequent repairs within 45 days of completion of the repairs, including photographs of the problem and the repairs.

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

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Ordered by: _____
THOMAS R. PINKOS, Executive Officer

_____ 6 December 2002

(Date)

RDB:12/6/02

TABLE I
GROUNDWATER MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u> *
Field Parameters		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	°C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

* The following wells shall be monitored for field parameters and monitoring parameters on a **quarterly** basis: MW-5, MW-9, MW-10, MW-11, MW-13, MW-19, MW-20 and MW-23. The remaining wells shall be monitored on a semi-annual basis.

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semiannual
Chloride	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Semiannual
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE III
LEACHATE DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Total Flow	Gallons	Weekly
Flow Rate	Gallons/Day	Weekly
Electrical Conductivity	µmhos/cm	Weekly
pH	pH units	Weekly
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Chloride	mg/L	Annually
Carbonate	mg/L	Annually
Bicarbonate	mg/L	Annually
Nitrate - Nitrogen	mg/L	Annually
Sulfate	mg/L	Annually
Calcium	mg/L	Annually
Magnesium	mg/L	Annually
Potassium	mg/L	Annually
Sodium	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually
Constituents of Concern (see Table VI)		
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

TABLE IV
SURFACE WATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u> *
Field Parameters		
Temperature	°C	Annually
Electrical Conductivity	µmhos/cm	Annually
pH	pH units	Annually
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Annually
Bicarbonate Alkalinity	mg/L	Annually
Chloride	mg/L	Annually
Nitrate as Nitrogen	mg/L	Annually
Volatile Organic Compounds (USEPA Method 8260B, see Table V)	µg/L	Annually
Constituents of Concern (see Table VI)		
Inorganics (dissolved)	mg/L	5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	5 years

* Surface water samples shall be collected during the first storm that produces runoff and when leachate seeps are observed that may have impacted surface water quality. If leachate seeps are identified extending out of the disposal area or that potentially impact on-site drainages, those drainage shall be sampled as close to the leachate seep as possible.

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Constituents included in VOC:

USEPA Method 8260B

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

TABLE V

MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Ethylbenzene
2-Hexanone (Methyl butyl ketone)
Hexachlorobutadiene
Hexachloroethane
di-Isopropyl ether
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
2-Nitropropane
n-Propylbenzene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Vinyl acetate
Vinyl chloride
Xylenes

TABLE VI
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds:

USEPA Method 8260

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromobenzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
1,4-Dioxane
Ethanol
Ethyltertiary butyl ether
di-Isopropyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
Hexachloroethane
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

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

2-Nitropropane
n-Propylbenzene
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
1,1,1 -Trichloroethane, Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270 - 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

TABLE VI
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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)
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

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene
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

TABLE VI

CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

Continued

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
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 8141A

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

TABLE VII – GROUNDWATER CONCENTRATION LIMITS

<u>Constituent</u>	<u>Units</u>	<u>Concentration Limit*</u>
Electrical conductivity, field	µmhos/cm	380
pH	pH Units	6.4-8.0
Turbidity	Turbidity units	940 NTU
Total Dissolved Solids (TDS)	mg/L	309
Chloride	mg/L	39
Sulfate	mg/L	15
Nitrate-nitrite as N	mg/L	4.3
Total Organic Carbon	mg/L	7.1
Carbonate Alkalinity	mg/L	PQL
Bicarbonate	mg/L	158
Total Alkalinity	mg/L	158
VOCs (EPA 8260B)	µg/L	MDL
SVOCs (EPA 8270C)	µg/L	MDL
Chlorophenoxy Herbicides (EPA 8151A)	µg/L	MDL
Organophosphorus Compounds (EPA 8141A)	µg/L	MDL
Aluminum, dissolved	mg/L	0.09
Antimony, dissolved	mg/L	PQL
Arsenic, dissolved	mg/L	0.043
Barium, dissolved	mg/L	0.365
Beryllium, dissolved	mg/L	PQL
Cadmium, dissolved	mg/L	PQL
Chromium, dissolved	mg/L	0.016
Chromium VI+, dissolved	mg/L	0.016
Cobalt, dissolved	mg/L	PQL
Copper, dissolved	mg/L	0.006
Cyanide, dissolved	mg/L	PQL
Iron, dissolved	mg/L	0.186
Lead, dissolved	mg/L	PQL
Manganese, dissolved	mg/L	0.008
Mercury, dissolved	mg/L	PQL
Nickel, dissolved	mg/L	PQL
Selenium, dissolved	mg/L	PQL
Silver, dissolved	mg/L	PQL
Sulfide, dissolved	mg/L	PQL
Thallium, dissolved	mg/L	PQL
Tin, dissolved	mg/L	PQL
Vanadium, dissolved	mg/L	0.049
Zinc, dissolved	mg/L	PQL

Notes:

MDL = Laboratory Method Detection Limit
 PQL = Laboratory Practical Quantitate ion Limit

- * Intrawell statistical methods shall be applied to determine tolerance limits for well MW-19.
- * Concentration limits shall be updated as additional data is obtained.
- * Concentration limits are not required for calcium, magnesium, potassium and sodium. They will be evaluated each reporting period with regards to the cation/anion balance and the results shall be graphically presented using a stiff diagram, a Piper diagram or a Schueller plot.

TABLE VIII - SURFACE WATER CONCENTRATION LIMITS

<u>Constituent</u>	<u>Units</u>	<u>Concentration Limit</u>
Electrical Conductivity	µmhos/cm	700
pH	pH Units	6.5-8.5
Total Dissolved Solids (TDS)	mg/L	450
Chloride	mg/L	106
Nitrate-nitrogen as N	mg/L	10
Bicarbonate Alkalinity	mg/L	200
Antimony, dissolved	mg/L	0.006
Arsenic, dissolved	ug/L	0.018
Barium, dissolved	mg/L	0.490
Beryllium, dissolved	mg/L	0.004
Cadmium, dissolved	mg/L	0.070
Chromium, dissolved	mg/L	*
Chromium VI+, dissolved	mg/L	0.011
Cobalt, dissolved	mg/L	0.050
Copper, dissolved	mg/L	0.200
Lead, dissolved	mg/L	
Manganese, dissolved	mg/L	0.015
Mercury, dissolved	ug/L	0.050
Nickel, dissolved	mg/L	0.050
Selenium, dissolved	mg/L	**
Silver, dissolved	mg/L	0.005
Thallium, dissolved	mg/L	**
Vanadium, dissolved	mg/L	0.0017
Zinc, dissolved	mg/L	0.050
VOCs (EPA 8270C)	µg/L	2.0
SVOCs (EPA 8270C)	µg/L	MDL
Chlorophenoxy Herbicides (EPA 8151A)	µg/L	MDL
Organophosphorous Compounds (EPA 8141A)	µg/L	MDL

Notes:
 * = Concentration limit to be based on National Toxics Rule (USEPA)- aquatic life.
 ** = Concentration limit to be based on California Toxics Rule (USEPA)- aquatic life.
 MDL = Laboratory Method Detection Limit (MDL)

TABLE IX - UNSATURATED ZONE CONCENTRATION LIMITS

<u>Constituent</u>	<u>Units</u>	<u>Concentration Limit</u>
Electrical Conductivity	µmhos/cm	821
pH	pH Units	6.2-8.6
Total Dissolved Solids (TDS)	mg/L	590
Chloride	mg/L	34
Sulfate	mg/L	117
Nitrate-nitrite as N	mg/L	9
Total Organic Carbon	mg/L	*
Carbonate	mg/L	*
Bicarbonate	mg/L	*
VOCs (EPA 8260B)	µg/L	MDL
SVOCs (EPA 8270C)	µg/L	MDL
Chlorophenoxy Herbicides (EPA 8151A)	µg/L	MDL
Organophosphorus Compounds (EPA 8141A)	µg/L	MDL
Aluminum, dissolved	µg/L	MDL
Antimony, dissolved	mg/L	*
Arsenic, dissolved	mg/L	*
Barium, dissolved	mg/L	*
Beryllium, dissolved	mg/L	*
Cadmium, dissolved	mg/L	*
Chromium, dissolved	mg/L	*
Chromium VI+, dissolved	mg/L	*
Cobalt, dissolved	mg/L	*
Copper, dissolved	mg/L	*
Cyanide, dissolved	mg/L	*
Iron, dissolved	mg/L	*
Lead, dissolved	mg/L	*
Manganese, dissolved	mg/L	*
Mercury, dissolved	mg/L	*
Nickel, dissolved	mg/L	*
Selenium, dissolved	mg/L	*
Silver, dissolved	mg/L	*
Sulfide, dissolved	mg/L	*
Thallium, dissolved	mg/L	*
Tin, dissolved	mg/L	*
Vanadium, dissolved	mg/L	*
Zinc, dissolved	mg/L	*

Notes:

* = A sufficient number of samples shall be obtained to establish a concentration limit by the Fourth Quarter 2003 monitoring event.

MDL = Laboratory Method Detection Limit (MDL)

* Concentration limits are not required for calcium, magnesium, potassium and sodium. They will be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a stiff diagram, a Piper diagram or a Schueller plot.