

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0039

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF SACRAMENTO
28TH STREET LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
SACRAMENTO COUNTY

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

1. The City of Sacramento (hereafter referred to as Discharger) owns and operates the 28th Street Landfill, a closed Class III landfill at the northern end of 28th Street in downtown Sacramento, as shown in Attachment A, which is incorporated herein and made part of this Order. The 172-acre facility is in Section 32, T9N, R5E, MDB&M, corresponding to Assessor's parcel Numbers 001-0170-018, 001-0170-021, and 001-0170-026.
2. The facility consists of two classified landfill units covering 107 acres east of 28th Street (WMUs A and B), and two older, unclassified fill areas west (22.5 acres) and north (16 acres) of 28th Street. WMU A is a 79.5-acre unlined unit in the northern part of the site and WMU B is a 27.5-acre clay-lined expansion unit immediately south of WMU A, as shown on Attachment B, which is incorporated and made a part of this Order. The unclassified fill areas are unlined.
3. The landfill was used for disposal of non-hazardous residential, commercial and industrial wastes, primarily collected by the City of Sacramento waste collection services. Refuse filling in the unclassified fill areas took place from approximately 1963 to 1971, while refuse filling in WMU A was from 1971 to 1986, and in WMU B from 1986 until 1994. WMUs A and B were closed with a low permeability clay cover in 1997, while the unclassified fill areas were previously capped with asphalt and/or compacted soil.
4. The facility was previously regulated by Waste Discharge Requirements (WDRs) Order No. 96-286, which was issued prior to landfill closure. The landfill has since been closed and the previous WDRs no longer adequately describe the facility. These updated/revised WDRs describe the closed landfill and prescribe requirements for post-closure maintenance and monitoring.
5. Effective 18 July 1997, the water quality regulations for Class II and Class III disposal facilities formerly contained in Chapter 15, Title 23, California Code of Regulations (CCR), and the solid waste regulations formerly in Title 14, CCR, were consolidated into Chapters 1 through 7, Subdivision 1, Division 2, Title 27, CCR (Title 27). These WDRs reference Title 27 regulations.

6. On 9 October 1991, the United States Environmental Protection Agency (USEPA) promulgated regulations (Title 40, Code of Federal Regulations, Parts 257 and 258, "federal municipal solid waste (MSW) regulations" or "Subtitle D") that apply, in California, to dischargers who own or operate Class II or Class III landfill units at which MSW is discharged. This landfill is subject to all Subtitle D regulations since it accepted MSW after 9 October 1991 and did not meet the applicable federal deadline for cessation of waste acceptance (9 October 1993).

WASTES AND UNIT CLASSIFICATION

7. The landfills accepted wastes defined as "inert" and "nonhazardous" under Sections 20230 and 20220 of Title 27, respectively.
8. Hazardous wastes and liquid wastes have never been knowingly accepted at the landfill. However, typical early (pre-1980s) disposal procedures did not routinely check incoming wastes closely for liquids and/or hazardous wastes. In addition, all municipal wastes contain some portion of household hazardous wastes, mixed in with the non-hazardous garbage, including used oils, paints, lead-acid batteries, pesticides, etc. An assessment conducted in 1985 of the types and quantities of household hazardous waste in materials accepted at the facility found that less than 0.12% of the total waste stream was categorized as household hazardous waste.
9. WMU A is an existing, reclassified Class III waste management unit under Section 20080(d) of Title 27, since it operated prior to 27 November 1984. WMU B is a new Class III waste management unit under Section 20080(d) because it did not receive all of its permits and did not operate until after 27 November 1984.
10. Wastes were initially placed in WMU A in a cut and fill operation to an elevation of about 15 feet above MSL. WDRs order No. 75-155 prohibited discharge of waste below an elevation of 20 feet above MSL after June 1975. About 20 to 25 feet of fill was placed from a southwest to northeast direction across the site. In 1984, the initial lift was completed and the direction of filling changed to southwesterly with an average seven-foot lift placed over the entire WMU A. Additional waste was placed in phases over the site to achieve final grades between 3 and 10 percent in preparation for closure construction. WMU A reached final design elevation in November 1991.
11. At the time of closure, the landfill was permitted to accept up to 1,200 tons of waste per day. It was estimated that actual waste acceptance was approximately 600 tons of waste per day with the facility operating 5 ½ days per week. The total capacity of the landfill, at final closure, was estimated to be 6,514,000 cubic yards. It is assumed that this applies only to the known waste disposal operations in WMUs A and B.

SITE DESCRIPTION

12. The site is bounded by the American River to the north, Business Interstate 80 to the south, Southern Pacific Railroad tracks to the east, and industrial properties to the west.
13. Land within 1,000 feet of the facility is used for domestic housing, industry, agriculture, recreation, and open space.

14. Significant acreage, including the Dellar Property (the name is that of the current owner, Mr. Lincoln Dellar), has been landfilled to the west of the current 28th Street Landfill. This area is privately owned and the Discharger did not include this acreage in the permitted site closure schedule. However, the existing network of 19 groundwater quality monitoring well does encompass the area to the west of the Discharger-owned property.
15. The topography surrounding the landfill is basically flat with elevations ranging from 25 to 40 feet above MSL with about 45 feet of local topographic relief due to landfill construction. Other man-made features in the area include flood control levees and highway and railway embankments.

GEOLOGY

16. The site is underlain by 200 to 300 feet of Holocene age alluvial stream channel deposits consisting primarily of sandy silt, fine to medium grained sand, silty sand, silty clay, and clay. The upper water-bearing unit beneath the landfill is within the more permeable of these materials. Sand and sandy silt acting as aquifer material has hydraulic conductivities reported to range from approximately 1×10^{-4} to 1×10^{-2} cm/s.
17. Underlying the stream channel deposits, in order of depth, are the Laguna, Fair Oaks, and Mehrten formations.

WASTE MANAGEMENT UNIT DESIGN

18. WMU A is unlined and has no leachate collection and recovery system (LCRS).
19. WMU B was constructed in 1985 with a 1.5-foot thick clay liner with a maximum permeability of 1×10^{-7} centimeters per second (cm/s) overlain by an additional 1.5 feet of compacted soil with a maximum permeability of 1×10^{-5} cm/s. The clay liner extends up the sides of the containment berms to an elevation varying from 27 feet above MSL at the west end of the unit to 30 feet above MSL at the northeast end. The disposal area was excavated prior to construction so that the maximum depth of waste would be 15 feet above mean sea level (MSL).
20. A dendritic LCRS was installed over WMU B's compacted liner. The LCRS layer consists of a gravel blanket and perforated leachate collection piping. The collection piping drains to a collection sump/pump station at the west end of WMU B which is equipped with two 150-gallon per minute (gpm) pumps (one serving as back-up). The leachate pumps operate using a float control system, which ensures the sump is emptied when liquids accumulate to pre-set level. Leachate is pumped out into the City of Sacramento's combined storm water/sanitary sewer system. The Discharger monitors leachate quality on a regular basis.
21. A subdrain consisting of a gravel blanket with perforated pipe laterals was constructed underlying WMU B's base liner to help protect the liner from uplift due to high groundwater. The collection piping tied into a series of three dewatering pump stations located between WMU A and WMU B. The system was intended for use during WMU B's cell construction and early filling and has not been operated since 1989.

CLOSURE AND POST-CLOSURE

22. The Discharger submitted A *Final Closure Plan* on 18 June 1991. Several amendments and related technical reports followed before closure construction was implemented, including:
- Final Closure and Postclosure Plan Amendment No. 2*, dated 18 December 1995, by Harding Lawson Associates;
 - Slope Stability Report*, dated 20 December 1995, by Harding Lawson Associates;
 - Special Provisions & Plans (90% Design) for Construction of the 28th Street Landfill Closure*, dated 16 February 1996 by Harding Lawson Associates; and
 - Sacramento Metropolitan Air Quality Management District Permit to Construct the Landfill Gas Collection and Flare System* dated 24 September 1996.
 - Construction Quality Assurance/Completion Report for Landfill Closure*, 9 February 1998, prepared by Harding Lawson Associates. The report documents the installation of the final cover for waste management units (WMU) A and B.

The above documents were reviewed and approved by Regional Board staff, Sacramento County Solid Waste Local Enforcement Agency (LEA), and the California Integrated Waste Management Board (CIWMB).

23. A final cover for both WMUs consists of, described from top to bottom as, one-foot of soil cover, one-foot of low permeability clay, two-feet of concrete and asphalt rubble, and one-foot of intermediate soil cover.
24. The *1991 Final Closure and Post-Closure Maintenance Plan* for the facility increased the final cover elevations of WMU A from 72 feet above MSL to 86 feet above MSL to ensure that positive surface drainage would be maintained during the post-closure period. This change increased the fill capacity of this unit from 5,309,000 cubic yards to 6,514,000 cubic yards. The capacity of WMU B was also slightly increased (by 134,000 cubic yards) as a result of a change in the surface drainage design to “V” ditches. As a result of the increased capacity, the active life of the landfill was extended to September 1994 when the landfill ceased accepting municipal solid wastes. The final cover elevation of WMU B was 63 feet above MSL. Both units were vegetated with native grass.
25. As part of closure, the landfill was graded to prevent ponding water and a drainage system was installed. Collected storm water is routed through concrete V-ditches that discharge into the American River, or into one of two detention basins in the southwest and southeast corners of the site, respectively. Detention basin locations are shown in Attachment B. The cover and drainage improvements act to prevent or minimize the infiltration of water into waste.
26. A 10-acre portion of the older fill area west of 28th Street and the 16-acre former fill area north of 28th Street (described in Finding 2) were covered with, from top to bottom, 3 inches of asphalt concrete (to provide an all weather surface and prevent infiltration of water), 6 inches of asphalt street grindings, two-feet of concrete and asphalt rubble, and one-foot of soil paved with asphalt concrete. The remaining 12.5-acres of the fill area south of the compost facility was graded to a minimum 3% slope and covered with, from top to bottom, two-feet of soil cover, 6 inches of asphalt street grindings, two-feet of concrete and asphalt rubble, and 6 inches of soil cover.

Post-Closure

27. The crest areas of both WMUs have settled since landfill closure, as indicated by the first five-year aerial topographic survey of the site conducted on 12 March 2002. The measured crest elevation at WMU A was 83 feet indicating that it had settled about two feet since last repaired. The measured crest elevation at WMU B was 62 feet above MSL, indicating that the unit cover has settled about 1.5 feet since closure in 1997 (no cover repairs have been previously performed at this unit).
28. The covered area north of 28th Street is now the City's corporation yard and is used for storage, vehicle parking and facility offices. The City Department of Parks and Recreation has also developed small portions of this area as the Sutter's Landing Park, including pedestrian/bike trails, paved parking, picnic areas and a skate-park area. The former compost area and uncovered area west of 28th Street are not currently being used. These areas are now controlled by the City Department of Parks and Recreation, which is considering the areas for incorporation into Sutter's Landing Park.
29. Landfill access roads along the landfill unit perimeter were slurry sealed with an asphalt emulsion to maintain an impermeable surface.

Landfill Gas Collection System

30. Migration of landfill gas from the active site was also identified in 1987. The effects of landfill gas migration include distressed vegetation along the American River and south of the landfill near Interstate Business 80. Elevated levels of ammonia in soil were also found in these areas. As such, the Discharger constructed a passive landfill gas collection trench east of the active site to intercept any landfill gas migrating in that direction.
31. A landfill gas (LFG) collection system was installed in 1990 and has been upgraded in phases. In addition to controlling migration of combustible gases, the system serves as a corrective action measure to help prevent migration of gas-borne contaminants, principally volatile organic compounds (VOCs) that could otherwise migrate to groundwater. The system includes 100 interior extraction wells, including 82 interior extraction wells at WMU A and 18 at WMU B. These wells extend into the refuse mass to depths ranging from approximately 40 to 60 feet below ground surface (bgs). Under a lease agreement with the Discharger, Gas Recovery Systems, Incorporated (GRS) captures the LFG for use as an alternate energy source. GRS operates the WMU A wells and the Discharger operates the WMU B wells. Collected landfill gas is sold as fuel to fire a small process boiler at an off-site industrial location. Excess recovered landfill gas that is not sold as fuel is combusted in one of two ground flares maintained by GRS and the Discharger.
32. The LFG collection system also includes 66 perimeter extraction wells operated by the Discharger for migration control purposes. The wells are installed in a soil levee/berm along the southern fill perimeter. LFG extracted from the perimeter system is combined with excess LFG from WMU A and WMU B (i.e. LFG that is not used for cogeneration) and combusted in one of two flares. Gas extraction well and collection header piping layout for the landfill gas system are shown in Attachment D, which is incorporated herein and made part of this Order.

SURFACE AND STORM WATER

33. The site is in the Lower American Hydrologic Sub-Area, Coon-American Hydrologic Area of the Valley-American Hydrologic Unit in the Sacramento Hydrologic Basin Planning Area (as depicted on the interagency hydrologic maps prepared by the Department of Water Resources in August 1986).
34. The American River, which is tributary to the Sacramento River, flows along the north side of the site. The beneficial uses of these surface waters are municipal and domestic supply; agricultural irrigation; industrial service and power supply; recreation; freshwater habitat; migration; spawning; and wildlife habitat.
35. The facility receives an average of 18 inches of precipitation per year.
36. The average annual precipitation at the facility is 17.6 inches and the 100-year, 24-hour precipitation event for the facility is 4.4 inches, as calculated from Rainfall, Intensity, Duration and Frequency for the Sacramento Station based on the period 1903-2002, Plate No. 2. The calculated precipitation at this station for a wet season with a 100-year return period is 31.9 inches.
37. The facility's containment levees and other embankments are designed to prevent inundation or washout of waste management units due to floods with a 100-year return period. The facility is not within a 100-year flood plain.
38. Landfill runoff drains by sheet flow over the side slopes and is collected in perimeter "V" ditches. Areas of differential settlement are periodically graded to prevent ponding of storm water and maintain proper drainage. Drainage ditches are lined with low permeability clay and extends to detention basins before the surface runoff leaves the site.
39. Most landfill runoff is discharged into the American River at two points along the north side of the facility. The Discharger has obtained coverage under the General Industrial Storm Water Permit for these discharges. The remaining surface water runoff is discharged to the City of Sacramento's sanitary sewer system, which flows to and is treated at the Sacramento Regional Wastewater Treatment Plant. An industrial sewer use permit for the landfill was obtained from the County of Sacramento.

GROUNDWATER

40. Groundwater elevations at the landfill vary seasonally and correspond to fluctuations in water levels in the American River. Groundwater elevations in monitoring wells at the landfill are typically in the range of 2 to 20 feet above MSL. At 20 feet above MSL, groundwater elevations are up to five feet above the base of the WMUs. During the winter of 1986 and the spring of 1995, groundwater elevations greater than 25 feet above MSL were measured at the landfill. Therefore, a portion of the waste in the unlined WMU A was inundated by groundwater in 1986 and 1995.

41. Groundwater gradients are south to southwesterly in the winter during high river stages. Northerly groundwater gradients occur between the central portion of the landfill and the river during the late spring, summer, and fall months when river flow is low. The net hydraulic gradient is to the southwest and net groundwater flow is about 30 to 50 feet per year. Due to the seasonal changes in groundwater flow direction in areas of the facility adjacent to the river, monitoring wells used at this site for background water quality data are not necessarily up-gradient from the landfill at all times.
42. Monitoring well data also indicate a significant vertical hydraulic gradient can occur in the area south of Interstate Business 80. This downward gradient is associated with pumping of a nearby agricultural supply well.
43. The beneficial uses of the groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

Groundwater Monitoring

44. In October 1985, the Discharger installed seven (7) monitoring wells around the active portions of the landfill (WMUs A and B). These wells were numbered B-1, B-3, B-4, C-7, C-8, C-9, and C-10. The Discharger performed monitoring of the wells during 1985 and 1986 and concluded that the shallow groundwater beneath the site had been impacted with VOCs of which the predominant compound was vinyl chloride.
45. In November and December 1986, the Discharger installed seven (7) more wells to comply with the Solid Waste Assessment Test (SWAT) Report requirements (B-6, C-11D, C-11S, C-12, C-13, C-14 and C-15). Four of these wells (C-12 through C-15) were located around the inactive disposal areas west of WMU A. Well B-6 was installed north of WMU-A and wells C-11D and C-11S were installed south of WMU B. The last two wells are a shallow and deep pair intended to assess vertical groundwater gradients in the area.
46. The SWAT Report was produced in June 1987. A total of twenty (20) VOCs were detected in the wells tested, with vinyl chloride being detected in five wells (B-3, B-6, C-7, C-13, C-14), including detections of vinyl chloride in the same wells on different sampling dates. Concentrations of vinyl chloride reported in the SWAT Report ranged from 0.22 to 19 µg/L, and in wells B-6 and C-7 vinyl chloride concentrations exceeded the California Department of Health Services action level of 0.5 µg/L.
47. After the SWAT Report and tests were completed, the Discharger expanded the groundwater monitoring network to include five (5) more wells, bringing the total to nineteen (19). Monitoring well locations are shown in Attachment C, which is incorporated herein and made part of this Order.
48. In June 1999, the Regional Board conducted an inspection of the landfill facility and prepared an inspection report dated 11 June 1999. The report stated that the Discharger needed to prepare a *Corrective Action Plan* for the landfill due to a release of VOCs indicated by the groundwater monitoring data. The Discharger submitted a *Corrective Action Plan* (CAP) in March 2000,

prepared by Phase Three Environmental Management in response to the inspection. The March 2000 CAP identified three release mechanisms that may have caused the VOC impact, including: the migration of landfill leachate to groundwater; the direct contact of wastes in the unlined landfill areas with groundwater; and impacts from landfill gas. The report also identified the following corrective actions measures that had already been implemented:

- a. Closure of WMUs A and B;
- b. Capping/covering the City-owned unclassified fill areas north and west of 28th Street, including the former compost area, as described in Finding 26;
- c. Installation of additional storm water controls, including concrete-lined V ditches at WMUs A and B;
- d. Installation of an LFG extraction system at WMUs A and B; and
- e. Removal of leachate from the LCRS sump at WMU B.

The Discharger proposed to continue monitoring the effectiveness of these corrective action measures and consider additional corrective action measures as necessary based on the results of post-closure corrective action monitoring. Reporting Requirement D.8 of the MRP requires that the Discharger submit semiannual reports as to the effectiveness of corrective action.

49. Since completion of landfill closure in 1997, concentrations of VOCs, including vinyl chloride, in compliance wells at the site have declined to low to trace levels.
50. In a 30 May 2003 report *Cost Estimate and Financial Assurance for Corrective Action for Known or Reasonably Foreseeable Releases to Groundwater*, the Discharger requested that the Regional Board review their proposal for new corrective action concentration limits (concentration limits greater than background or CLGB) proposed in the *Corrective Action Plan* dated March 2000. In a letter dated 5 June 2003, the Regional Board did not approve the request for CLGB because the Discharger did not justify that groundwater clean-up to background levels is technologically or economically infeasible to achieve.

FINANCIAL ASSURANCES

51. In a 14 October 2003 revision to the above report, the Discharger evaluated reasonably foreseeable release (RFR) scenarios for the landfill. The report concluded that VOC impacts from a complete or partial failure of the LFG controls and/or groundwater impacts from intrusion of high groundwater into landfill waste were the most likely release scenarios. The report provided cost estimates for remediation of the RFR impacts as follows:

<u>RFR Scenario</u>	<u>Estimated Cost to Remediate, \$</u>			Total
	<u>Evaluation Monitoring</u>	<u>Capital</u>	<u>O&M</u>	
Complete or partial failure of LFG controls	---	209,300	52,500	261,800
Intrusion of groundwater into landfill waste	15,200	154,100	120,000	289,300
				551,100

In a 6 November 2003 letter to the Discharger, the Executive Officer approved of the \$551,100 (2003 dollars) total RFR cost estimate for the site. The CIWMB has not yet approved of the amount or established a financial assurances mechanism, however.

52. The Discharger has provided \$1,898,892 in 2003 dollars to cover the estimated costs of post-closure maintenance of the landfill over the post-closure period. The CIWMB has approved a Pledge of Revenue as the funding mechanism.

CEQA AND OTHER CONSIDERATIONS

53. This action to revise WDRs for this facility is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21000, et seq.), in accordance with Title 14, CCR, Section 15301.
54. 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 (MSW) landfills that is consistent with the federal MSW regulations promulgated under Title 40, Code of Federal Regulations, Part 258 (Subtitle D). Title 27 incorporates *State Water Resources Control Board (SWRCB) Resolution No. 93-62*.
55. This order implements:
- a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*;
 - b. The prescriptive standards and performance goals of 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.
56. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the Board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports." The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program Order No. R5-2004-0039 are necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharged the waste subject to this Order.

PROCEDURAL REQUIREMENTS

57. All local agencies with jurisdiction to regulate land use, solid waste disposal, air pollution, and to protect public health have approved the use of this site for the discharges of waste to land stated herein.
58. The Regional 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.
59. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
60. 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. 96-286 is rescinded, and that the City of Sacramento, and its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted there under, shall comply with the following:

A. PROHIBITIONS

1. The discharge of any additional waste at this site is prohibited.
2. 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.
3. 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 non-statistical data analysis method and retest method listed in this Order, the Monitoring and Reporting Program, or the Standard Provisions and Reporting Requirements.
4. The ponding of any liquid on any landfill module is prohibited.
5. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

6. The discharge of groundwater or wastewater to surface water or any surface water drainage courses is prohibited without an NPDES permit authorizing the discharge.
7. The discharge of waste within 100 feet of surface waters is prohibited.

B. FACILITY SPECIFICATIONS

General Specifications

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
2. The Discharger shall immediately notify the Regional 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.
3. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
4. All wells within 500 feet of a waste management unit shall be sealed or abandoned to the satisfaction of the Sacramento County Department of Environmental Health. A record of the sealing and/or abandonment of such wells shall be sent to the Regional Board and to the State Department of Water Resources.

Protection from Storm Events

5. 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 100-year, 24-hour precipitation conditions.
6. Closed landfill units shall be maintained to promote runoff and to prevent ponding.
7. Surface drainage from on-site and off-site tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes.
8. Surface drainage within the waste management facility shall either be contained on-site or be discharged in accordance with applicable storm water regulations.
9. 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-DWG, NPDES No. CAS000001 or retain all storm water on-site.

Landfill Specifications

10. The unclassified fill areas north and west of 28th Street ceased accepting wastes prior to the revision of Chapter 15 in November 1984. Therefore, these areas were not required to close with prescriptive cover materials. However, this does not relieve the Discharger from any more stringent requirements of the CIWMB, nor from the responsibility to take corrective action to prevent or clean up groundwater and/or surface water contamination related to this landfill unit in accordance with Section 20080(g) of Title 27.
11. Methane and other landfill gases shall be adequately vented, removed from the landfill units, 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.
12. Condensate from the landfill gas collection system shall be discharged to an approved off-site facility capable of receiving these wastes or equivalent treatment system. Any other treatment alternative proposed shall be submitted to the Regional Board for approval.
13. The depth of fluid in any LCRS sump shall be kept at or below six (6) inches, or the minimum needed to ensure efficient pump operation.
14. Vegetation shall be planted and maintained over each closed landfill unit. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness.
15. Closed landfill units shall be graded to at least a three percent (3%) slope and maintained to prevent ponding.
16. Areas with slopes greater than ten percent (10%), surface drainage courses, and areas subject to erosion by wind or water shall be designed, constructed, and maintained to prevent such erosion.
17. Repair of existing closure construction must, at a minimum, comply with the existing approved *Final Closure Plan* and construction quality assurance plans and specifications.

C. MONITORING SPECIFICATIONS

1. The Discharger shall conduct groundwater and surface water monitoring, as specified in Monitoring and Reporting Program (MRP) No. R5-2004-0039. Groundwater monitoring shall include background monitoring and corrective action monitoring. Background monitoring shall be conducted for the purpose of monitoring water quality upgradient of the landfill and updating concentration limits, as necessary, as part of the Water Quality Protection Standard per Section 20400(a) of Title 27. Corrective action monitoring shall be conducted for the purpose of monitoring the nature and extent of the release (Section 20425(a)(2)), assessing the

progress of corrective action measures (Section 20430(d)), and designing any necessary additional corrective action measures (Section 20425(a)(2)).

2. The Discharger shall provide Regional 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.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, Monitoring and Reporting Program No. R5-2004-0039, and the Standard Provisions and Reporting Requirements, dated April 2000.
4. 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 repeated detection of one or more 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.
5. 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. R5-2004-0039. 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. R5-2004-0039 and Title 27 CCR Section 20415(e).
6. The Discharger shall have a Sample Collection and Analysis Plan (sampling plan) which includes the following:
 - a. Sample collection procedures describing purging techniques, sampling equipment, and decontamination of sampling equipment;
 - b. Sample preservation information and shipment procedures;
 - c. Sample analytical methods and procedures; Sample quality assurance/quality control (QA/QC) procedures; and
 - d. Chain of Custody control.

The sampling plan shall further comply with Monitoring Specifications E.7 through E.14 herein.

7. 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. 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.

8. 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.
9. 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.
10. **“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.
11. **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.
12. 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.
13. 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.

14. Unknown chromatographic peaks shall be reported, flagged, and tracked for potential comparison to subsequent unknown peaks that may be observed in future sampling events. Identification of unknown chromatographic peaks that recur in subsequent sampling events may be required.
15. The statistical method shall account for data below the PQL with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to Title 27 CCR Section 20415(e)(7) that is used in the statistical method shall be **the lowest concentration (or value) that can be reliably achieved** within limits of precision and accuracy specified in the WDRs for routine laboratory operating conditions that are available to the facility. The Discharger's technical report, pursuant to Title 27 CCR Section 20415(e)(7), shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, CCR, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or down-gradient 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".
16. Background for water 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 Title 27 CCR Section 20415(e)(8)(A-D)] in accordance with Title 27 CCR Section 20415(e)(8)(E), for review and approval by the Executive Officer.
17. The Discharger shall use the following trigger for analytes that are detected in 10% or more of the background samples (i.e. naturally occurring constituents):
 - a. From the constituent of concern or monitoring parameter list, identify each analyte in the current sample that exceeds its PQL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provides measurably significant evidence] of a release (i.e. new release or a change in the nature or extent of the existing release) at that monitoring point, if the data contains an analyte that exceeds its concentration limit.

Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

18. The Discharger shall use the following trigger for all analytes that are detected in less than 10% of the background samples:
 - a. From the constituent of concern or monitoring parameter list, identify each analyte in the current sample that exceeds either its respective MDL or PQL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provides

measurably significant evidence] of a release (i.e. new release or a change in the nature or extent of the existing release) at that monitoring point, if *either*:

- 1) The data contains two or more analytes that equal or exceed their respective MDLs; or
- 2) The data contains one analyte that equals or exceeds its PQL.

Any analyte that triggers a discrete retest per this method shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event.

Discrete Retest

19. If the above statistical or non-statistical trigger procedures used for groundwater monitoring data analysis provide a preliminary indication of a release (i.e. a new release or a change in the nature or extent of the existing release), then the Discharger shall immediately notify Regional Board staff by phone or e-mail and, within 30 days of such indication, shall collect **two** new (retest) samples from the monitoring point where the release is preliminarily indicated.
 - a. For any given retest sample, the Discharger shall include, in the retest analysis, only the laboratory analytical results for those analytes detected in the original sample. As soon as the retest data are available, the Discharger shall apply the same tests [i.e. 17.a for statistical constituents, 18.a for non-statistical constituents], to separately analyze each of the two suites of retest data at the monitoring point where the release is preliminarily indicated.
 - b. If either (or both) of the retest samples trips either of the above triggers (17.a or 18.a), then the Discharger shall conclude that there is measurably significant evidence of a release at that monitoring point for the analyte(s) indicated in the validating retest sample(s) and shall:
 - 1) **Immediately** notify the Regional Board about the constituent verified to be present at the monitoring point, and follow up with written notification submitted by certified mail **within seven days** of validation; and
 - 2) Comply with 20, below.

Constituents that have been previously detected at a given monitoring point due to seasonality or fluctuations in the extent of the groundwater plume or migration of landfill gas shall be considered confirmed without retesting and therefore shall not trigger notification or a retest.

20. If the Discharger determines that there is measurably significant evidence of a new release from the Unit at any monitoring point, the Discharger shall **immediately** implement the requirements of **Response To A Release**, contained in the Standard Provisions and Reporting Requirements.

D. REPORTING REQUIREMENTS

1. The Discharger shall comply with the reporting requirements specified in this Order, in Monitoring and Reporting Program Order No. R5-2004-0039 and in the Standard Provisions and Reporting Requirements dated April 2000.
2. 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 Regional 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.
3. 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.
4. 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.

5. 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.
 - 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 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.
- g. The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.
6. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Regional Board **within seven days**, containing at least the following information:
- a. A map showing the location(s) of seepage;
 - b. An estimate of the flow rate;
 - c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d. Verification that samples have been submitted for analyses of the Constituents of Concern and Monitoring Parameters, and an estimated date that the results will be submitted to the Regional Board; and
 - e. Corrective measures underway or proposed, and corresponding time schedule.

7. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Board covering the reporting period of the previous monitoring year. This report shall contain:
 - a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot down-gradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b. Unless otherwise exempted by the Executive Officer, all monitoring analytical data obtained during the previous two six-month reporting periods, shall be submitted in tabular form as well as in a digital file format acceptable to the Executive Officer. The Regional Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [§20420(h)], in that this facilitates periodic review by the Regional Board.
 - c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - d. A map showing the area and elevations in which filling or cover remediation 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.
8. The Discharger shall submit a report on the effectiveness of the corrective action program in accordance with Title 27 CCR Section 20430(h) to the Regional Board **semiannually**. This report may be included in the Semi-Annual or Annual Monitoring Report submitted under Monitoring and Reporting Program No. R5-2004-0039.
9. The Discharger shall submit a status report regarding the financial assurances for corrective action and post-closure maintenance **annually** after the date of adoption of these requirements that either validates the ongoing viability of the financial instrument or proposes and substantiates any needed changes.
10. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Board requesting transfer of the Order within 14 days of assuming ownership or operation of this facility. The request must contain the requesting

entity's full legal name, the State of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Board, and a statement. The statement shall comply with the signatory requirements contained in Reporting Requirement D.11 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 Regional Board.

11. 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 Regional Board.

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."

E. 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 CCR 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. R5-2004-0039, which is incorporated into and made part of this Order.
4. The Discharger shall comply with the *Standard Provisions and Reporting Requirements for Title 27 (27 CCR 20005, et seq.) and Part 258 (40 CFR 258)*, dated April 2000, which are hereby incorporated into this Order.
5. The Discharger shall 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.
6. 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.
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 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 post-closure maintenance period of the Unit(s) as long as the wastes pose a threat to water quality.
9. 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.
10. The Regional Board will review this Order periodically and may revise requirements when necessary.

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 19 March 2004.

THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0039

MONITORING AND REPORTING PROGRAM
FOR
CITY OF SACRAMENTO
28TH STREET LANDFILL FACILITY
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
SACRAMENTO COUNTY

The City of Sacramento (Discharger) shall maintain water quality monitoring systems that are appropriate for background, detection (surface water only), and corrective action monitoring, and that comply with the provisions of Title 27, California Code of Regulations (CCR), Division 2, Subdivision 1, Chapter 3, Subchapter 3.

Compliance with this Monitoring and Reporting Program, with Title 27 CCR, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Title 27 (27 CCR 20005, et seq.) and Part 258 (40 CFR 258)*, dated April 2000, is ordered by Waste Discharge Requirements (WDRs) Order No. R5-2004-0039. Failure to comply with this Program, or with the Standard Provisions and Reporting Requirements, constitutes non-compliance with the WDRs and with the California Water Code, which can result in the imposition of civil monetary liability.

A. REQUIRED MONITORING PROGRAMS

<u>Program</u>	<u>Section</u>	<u>Frequency</u>
1. Groundwater Monitoring	Section D.1	See Table I
2. Leachate Monitoring	Section D.2	See Table II
3. Surface Water Monitoring	Section D.3	See Table III
4. Standard Observations	Section D.4.c	Weekly
5. Facility Monitoring		Per Section D.4
6. Response to a Release		Per Standard Provisions and Reporting Requirements

B. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. R5-2004-0039 and the Standard Provisions and Reporting Requirements, April 2000.

Semiannual Report

Reports shall be submitted **semiannually** and shall include the following information:

1. A compliance evaluation summary for the monitoring period.
2. A tabular summary of well information from the installation logs, including well name, top-of-casing elevation, total depth, depths/elevations of screened interval, aquifer or zone (i.e. uppermost), and soil type(s) over the screened interval.
3. The results of groundwater elevation monitoring.
4. Tabular summaries of corrective action monitoring data for each unit showing sampling dates, well, constituents, concentrations, and concentration limits. The table shall also clearly show whether new monitoring data exceedances occurred during the monitoring period (i.e. highlight or check exceedances).
5. Plots, graphical summaries and a narrative discussion of the results of correction action monitoring, indicating constituent trends and any changes in the nature or extent of the plume, as specified in Section D.3 herein.
6. Contaminant contour maps of representative corrective action monitoring data, showing the estimated extent of the contaminant plume.
7. Tables of historical monitoring data for each unit showing well, sampling dates, constituents, concentrations, and concentration limits. The data shall be presented so as to clearly show historical concentrations at each well.
8. Field and laboratory tests sheets.

Each semiannual report shall include an evaluation of the effectiveness of the corrective action program in accordance with Title 27 CCR Section 20430(h).

Annual Report

The Discharger shall also submit an Annual Monitoring Summary Report (Annual Report) to the Regional Board covering the previous monitoring year. The annual report shall contain the information specified under Reporting Requirements D.7, WDRs Order No. R5-2004-0039 and a discussion of compliance with the WDRs and the Water Quality Protection Standard.

The data shall be summarized in such a manner so as to illustrate clearly the compliance with WDRs or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer. Reports which do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the WDRs Order No. R5-2004-0039.

The Semiannual and Annual monitoring reports shall be submitted to the Regional Board in accordance with the following schedule for the calendar period in which samples were taken or observations made.

<u>Report</u>	<u>End of Period</u>	<u>Report Due</u>
First Semiannual	30 June	31 July
Second Semiannual	31 December	31 January
Annual	31 December	31 January

The results of **all monitoring** conducted at the site shall be reported to the Regional 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

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.

1. Constituents of Concern

The constituents of concern (COC) 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 III for the specified monitored medium, and Table IV. The Discharger shall monitor all constituents of concern every five years, or more frequently as required. The COC Report may be combined with a Detection Monitoring Report or an Annual Summary Report having a Reporting Period that ends at the same time.

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 III for the specified monitored medium.

2. Concentration Limits

a. Groundwater

- i. Statistical Method - For inorganic (i.e. naturally occurring) COCs for which at least 10% of the data from background samples equal or exceed their respective MDL, concentration limits shall be determined by the Tolerance Interval Procedure using pooled historical background data from wells C-9 and C-10. Except for pH, which will have both an upper and lower limit, the concentration limit shall be the upper control limit, equal to the mean plus three standard deviations. For pH, the concentration limit shall be both the upper and lower control limits (i.e. the mean plus/minus three standard deviations).

Statistically-based concentration limits may also be determined by an alternate statistical method acceptable to the Executive Officer in accordance with Title 27 CCR Section 20415.

- ii. Non-Statistical Method – For organic (i.e. non-naturally occurring) COCs and inorganic COCs for which less than 10% of the data from background samples equal or exceed their respective MDL, concentration limits shall be determined by a non-statistical procedure as follows:
 - 1) The concentration limit for organic compounds (i.e. VOCs) shall be the MDL.
 - 2) The concentration limit for inorganic COCs for which less than 10% of the data from background samples equal or exceed their respective MDL (i.e. certain dissolved metals) shall be the PQL.

The concentration limits for groundwater monitoring parameters and COCs shall be updated at least every five years.

b. Surface Water

With the exception of VOCs (for which a non-statistical method is used to determine concentration limits), the concentration limits for surface water monitoring shall be based on historical water quality data at each upstream monitoring point, but shall take into consideration seasonality. The concentration limits shall be updated semi-annually to provide ongoing definition of background surface water quality.

3. Point of Compliance

The point of compliance for the water standard at each Unit or portion of a Unit is a vertical surface located at the hydraulically down-gradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. All point of compliance monitoring wells established for the detection monitoring program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. The Point of Compliance wells for WMUs A and B are: B-1, B-4, B-6, C-7, and C-8.

4. Compliance Period

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the post-closure period. The monitoring program shall continue throughout the post-closure maintenance period and shall extend as long as the wastes pose a threat to water quality.

5. Water Quality Protection Standard Report

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard. The Executive Officer shall review and approve any changes to the Water Quality Protection Standard for each monitored medium.

D. MONITORING

The Discharger shall comply with the monitoring program provisions of Title 27 CCR for groundwater and surface water, in accordance with Monitoring Specification C.1 of WDR Order No. R5-2004-0039. For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis

requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible. 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. The Discharger may, with the approval of the Executive Officer, use alternative analytical test methods, including new United States Environmental Protection Agency's (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.

All leachate, groundwater, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and COCs as indicated and listed in Tables I through III. Metals shall be analyzed in accordance with the methods listed in Table IV.

1. **Groundwater**

a. Elevation Monitoring

The groundwater surface elevation in all wells and piezometers shall be measured on a **quarterly** basis per Table I. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters may be used to fulfill this requirement.

Groundwater elevations for all upgradient and down gradient wells for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. The results of groundwater elevation monitoring shall be displayed on a water table contour map and/or groundwater flow net for the site and included in each monitoring report. The Discharger shall use the groundwater elevation monitoring data to determine the following:

- i. The groundwater flow velocity
- ii. The gradient direction in the upper aquifer, and in any additional zone of saturation monitored pursuant to this MRP
- iii. Times of highest and lowest elevations of the water levels in the wells
- iv. Separation of groundwater from the lowest point of the unit

b. Sampling

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. All new wells shall be monitored quarterly until at least four quarters of data have been collected to determine a concentration limit. Samples shall be collected and analyzed for the monitoring parameters in accordance with the frequency specified in Table I and methods specified in Table IV. All monitoring parameters shall be graphed so as to show historical trends at each well.

The monitoring network shall consist of 19 wells including background monitoring wells C-9 and C-10 and corrective action monitoring wells B-1, B-3, B-4, B-6, C-7, C-8, C-11D, C-11S, C-12, C-13, C-14, C-15, D-16, D-17, D-18, D-19, and D-20.

2. Leachate Monitoring

Leachate samples shall be collected and analyzed in accordance with Table II and the methods specified in Table IV. The leachate monitoring locations (shown in Attachment B) are as follows:

- i. Lined leachate collection and recovery system (LCRS) sump at WMU B
- ii. Well DW-1 at WMU B

If there is no flow or discharge at the monitoring points during the monitoring period, or the Discharger is not able to obtain samples of the flow or discharge, the Discharger shall state such facts and circumstances in the monitoring report.

The landfill shall also be monitored for seeps as part of Standard Observations. Any seeps to the surface from the Unit shall be sampled and analyzed for the constituents listed in Table II upon detection and recorded in Standard Observations. The quantity of the leachate seep(s) shall be estimated and reported as Leachate Flow Rate (in gallons/day). Notification and repairs shall be made in accordance with the Standard Provisions and Reporting Requirements. See also Section D.3.b below.

3. Surface Water Monitoring

The Discharger shall maintain a surface water monitoring system that complies with the General Industrial Storm Water Permit and applicable provisions of Title 27 CCR Sections 20415 and 20420. For all monitoring points assigned to surface water detection monitoring, samples shall be collected and analyzed for the monitoring parameters in accordance with the frequency specified in Table III and methods specified in Table IV. All monitoring parameters shall be graphed so as to show historical trends at each sample location.

a. Storm Water

Storm water monitoring shall be performed at the landfill's northern detention basin outfall to the American River (SW-1), and the existing 18-inch corrugated metal pipe (SW-2), which drains about 20% of the landfill area to the American River. Storm water samples shall be collected after the first storm of the rainy season that produces significant flow and one other time during the season. Sampling shall be conducted during or shortly after storm events or when water is flowing in the drains. The storm water sampling results shall be included in the semiannual report submitted under this Order for the period in which sampling was conducted. If there is no flow or discharge at the monitoring points during the monitoring period, or the Discharger is not able to obtain samples of the flow or discharge, the Discharger shall state such facts and circumstances in the monitoring report.

b. Surface Water

Surface water samples shall be collected from the American River at two locations, R1 and R2. R1 is slightly northeast and upstream of the landfill. R2 is located slightly northwest and downstream of the landfill. The locations of all surface water sampling points are shown in Attachment B.

Surface water samples shall also be collected 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 drainages shall be sampled as close to the leachate as possible.

4. Facility Monitoring

a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **15 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system and groundwater monitoring equipment (including wells, etc.). By **1 October of each year**, the Discharger shall submit to the Regional Board the Inspection Report describing measures planned to prepare the site for the wet season.

Any necessary erosion control measures shall be implemented, and any construction, maintenance, or repairs of precipitation and drainage control facilities to necessary prevent erosion or flooding of the facility and to prevent surface drainage from contacting or percolating through wastes shall be completed by **15 November**.

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.

c. Standard Observations

Each monitoring report shall include a summary and certification of completion of all Standard Observations for the Units, for the perimeter of the landfill module, and for the receiving waters. Standard observations shall be performed weekly and shall include all elements identified in the Standard Provisions and Reporting Requirements.

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

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

_____ 19 March 2004

(Date)

Attachments
SJY/JDM

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	Semi-Annual
Electrical Conductivity	µmhos/cm	Semi-Annual
pH	pH units	Semi-Annual
Turbidity	Turbidity units	Semi-Annual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semi-Annual
Chloride	mg/L	Semi-Annual
Sulfate	mg/L	Semi-Annual
Nitrate as Nitrogen	mg/L	Semi-Annual
Bicarbonate	mg/L	Semi-Annual
Chemical Oxygen Demand	mg/L	Semi-Annual
Iron, Total	mg/L	Semi-Annual
Volatile Organic Compounds ¹	µg/L	Semi-Annual
Constituents of Concern		
Carbonate	mg/L	5 years
Total Alkalinity	mg/L	5 years
Total Organic Carbon	mg/L	5 years
Inorganics (dissolved) ¹	mg/L	5 years
Semi-Volatile Organic Compounds ¹	µg/L	5 years
Organochlorine Pesticides ¹	µg/L	5 years
Polychlorinated Biphenyls (PCBs) ¹	µg/L	5 years
Organophosphorus Compounds ¹	µg/L	5 years

1. See Table IV.

TABLE II
LEACHATE MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Total Flow (LCRS sump/seeps only)	gallons	Monthly
Flow Rate (LCRS sump/seeps only)	gallons/day	Monthly
Depth (DW-1 only)	feet/inches	Semi-Annual
Elevation (DW-1 only)	feet MSL	Semi-Annual
Electrical Conductivity	µmhos/cm	Semi-Annual
pH	pH units	Semi-Annual
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L	Semi-Annual
Chloride	mg/L	Semi-Annual
Sulfate	mg/L	Semi-Annual
Nitrate as Nitrogen	mg/L	Semi-Annual
Bicarbonate	mg/L	Semi-Annual
Chemical Oxygen Demand	mg/L	Semi-Annual
Iron, Total	mg/L	Semi-Annual
Constituents of Concern		
Carbonate	mg/L	Annual
Total Alkalinity	mg/L	Annual
Total Organic Carbon	mg/L	Annual
Inorganics (dissolved) ¹	mg/L	Annual
Volatile Organic Compounds ¹	µg/L	Annual
Semi-Volatile Organic Compounds ¹	µg/L	Annual
Organochlorine Pesticides ¹	µg/L	Annual
Polychlorinated Biphenyls (PCBs) ¹	µg/L	Annual
Organophosphorus Compounds ¹	µg/L	Annual

1. See Table IV.

TABLE III
SURFACE WATER MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Field Parameters		
Temperature	°C	Twice each winter ¹
Electrical Conductivity	µmhos/cm	Twice each winter ¹
pH	pH units	Twice each winter ¹
Turbidity	Turbidity units	Twice each winter ¹
Monitoring Parameters		
Total Suspended Solids	mg/L	Twice each winter ¹
Total Dissolved Solids (TDS)	mg/L	Twice each winter ¹
Chloride	mg/L	Twice each winter ¹
Sulfate	mg/L	Twice each winter ¹
Nitrate as Nitrogen	mg/L	Twice each winter ¹
Bicarbonate Alkalinity	mg/L	Twice each winter ¹
Constituents of Concern		
Carbonate	mg/L	Annual
Chemical Oxygen Demand	mg/L	Annual
Total Organic Carbon	mg/L	Annual
Total Alkalinity	mg/L	Annual
Dissolved Oxygen	mg/L	Annual
Oil and Grease	mg/L	Annual
Inorganics (dissolved) ²	mg/L	Annual

-
1. The Discharger shall collect surface water samples after the first storm of the rainy season that produces significant flow and during at least one other storm event in the wet season.
 2. See Table IV

TABLE IV
CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS

<u>Field Parameters</u>	<u>Method</u>
pH	150.1
Electrical Conductivity	2510
<u>General Minerals</u>	<u>Method</u>
Bicarbonate	2310B
Chloride	300 (anion scan)
Nitrate – Nitrogen	300 (anion scan)
Sulfate	300 (anion scan)
Total Dissolved Solids (TDS)	2540C
<u>Inorganics (dissolved):</u>	<u>Method</u>
Aluminum	200.7/6010
Antimony	200.7/7041
Barium	200.7/6010
Beryllium	200.7/6010
Cadmium	200.7/7131A
Chromium	200.7/6010
Chromium VI ⁺	7199/1636
Cobalt	200.7/6010
Copper	200.7/6010
Silver	200.7/6010
Tin	200.7/6010
Vanadium	200.7/6010
Zinc	200.7/6010
Iron	200.7/6010
Manganese	200.7/6010
Arsenic	200.9/200.8
Lead	200.9/200.8
Mercury	7470A
Nickel	200.9/200.8
Selenium	200.9/200.8
Thallium	200.9/200.8
Cyanide	9010
Sulfide	9030
<u>Other Parameters</u>	<u>Method</u>
Total Organic Carbon	415.1
Total Alkalinity	310.1
Total Suspended Solids	160.1
Bicarbonate Alkalinity	130.2
Chemical Oxygen Demand	410.4
Dissolved Oxygen	360.1/360.2
Oil and Grease	5520/1664

Volatile Organic Compounds (Method 8260B):

Acetone
Acetonitrile
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Tert-Amyl ethyl ether
Tert-Amyl methyl ether
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform (Tribromomethane)
Tert-Butyl alcohol
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
tert-Butyl ethyl ether
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)
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
2,2-Dichloropropene
1,1-Dichloropropene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
Hexachloroethane
2-Hexanone (Methyl butyl ketone)
Iodomethane (Methyl iodide)
Isobutyl alcohol
di-Isopropyl ether
Methacrylonitrile

Methyl bromide (Bromomethene)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
4-Methyl-2-pentanone (Methyl isobutylketone)
Methyl tert-butyl ether (MtBE)
Naphthalene
2-Nitropropane
n-Propylbenzene
Propionitrile
Styrene
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 chloride
Xylenes (total)

Semi-Volatile Organic Compounds (Method 8270 - base, neutral, & acid extractables):

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
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)
p-Chloroaniline
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)
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
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
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isophorone
Isosafrole
Kepone
Methapyrilene
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
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
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

Organochlorine Pesticides (Method 8081A):

Aldrin
 α -BHC
 β -BHC
 γ -BHC (Lindane)
 δ -BHC
Chlorobenzilate
 α -Chlordane
 γ -Chlordane
Chlordane – not otherwise specified
DBCP
4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dieldrin
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Endrin ketone
Heptachlor
Heptachlor epoxide
Hexachlorocyclopentadiene
Isodrin
Methoxychlor
Toxaphene

Polychlorinated Biphenyls (PCBs) (Method 8082):

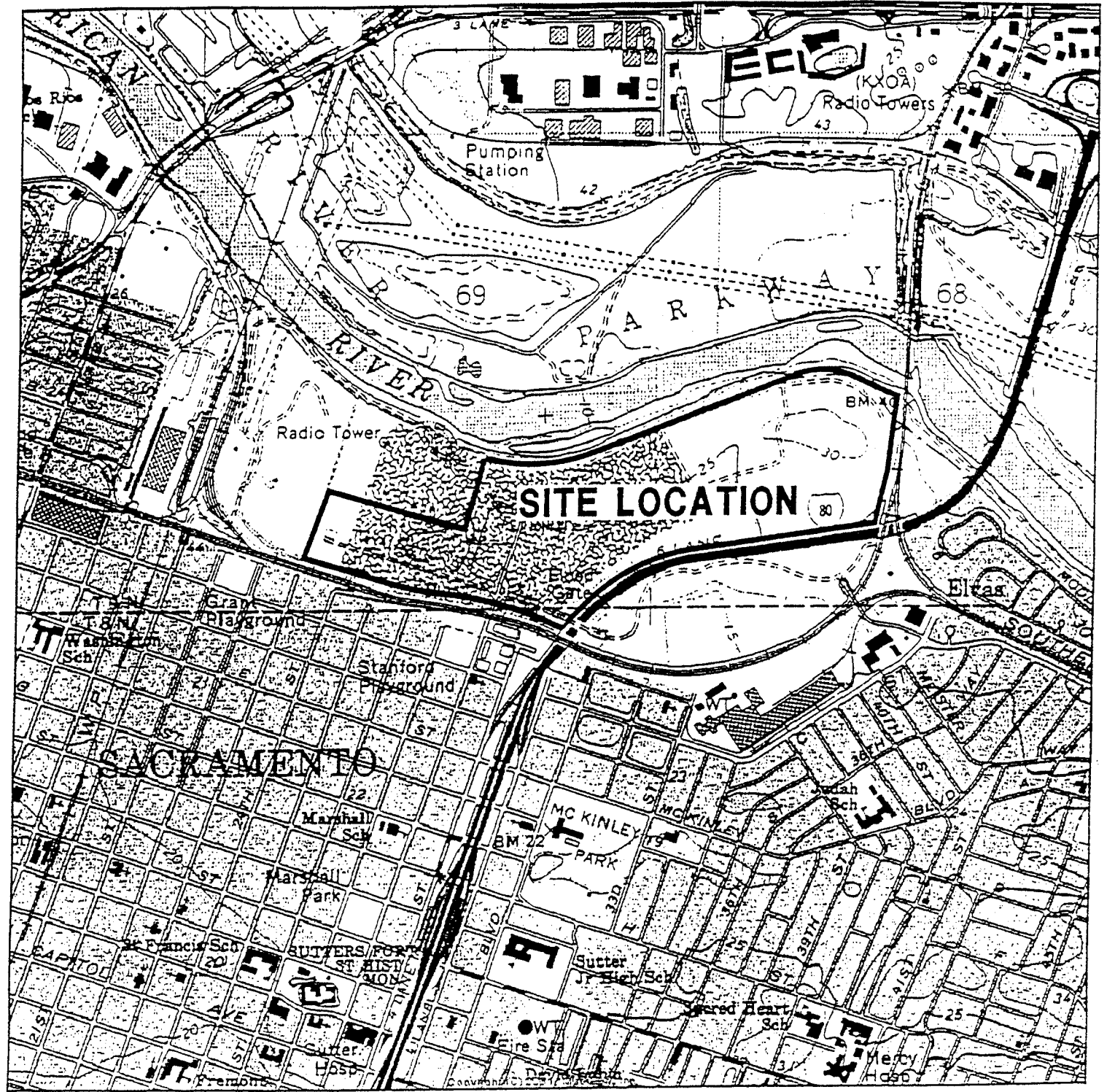
Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260

Organophosphorus Compounds (Method 8141A):

Chlorpyrifos
Diazinon
Dimethoate
Disulfoton
Ethion
Famphur
Malathion
Parathion
Parathion-ethyl
Parathion-methyl
Phorate

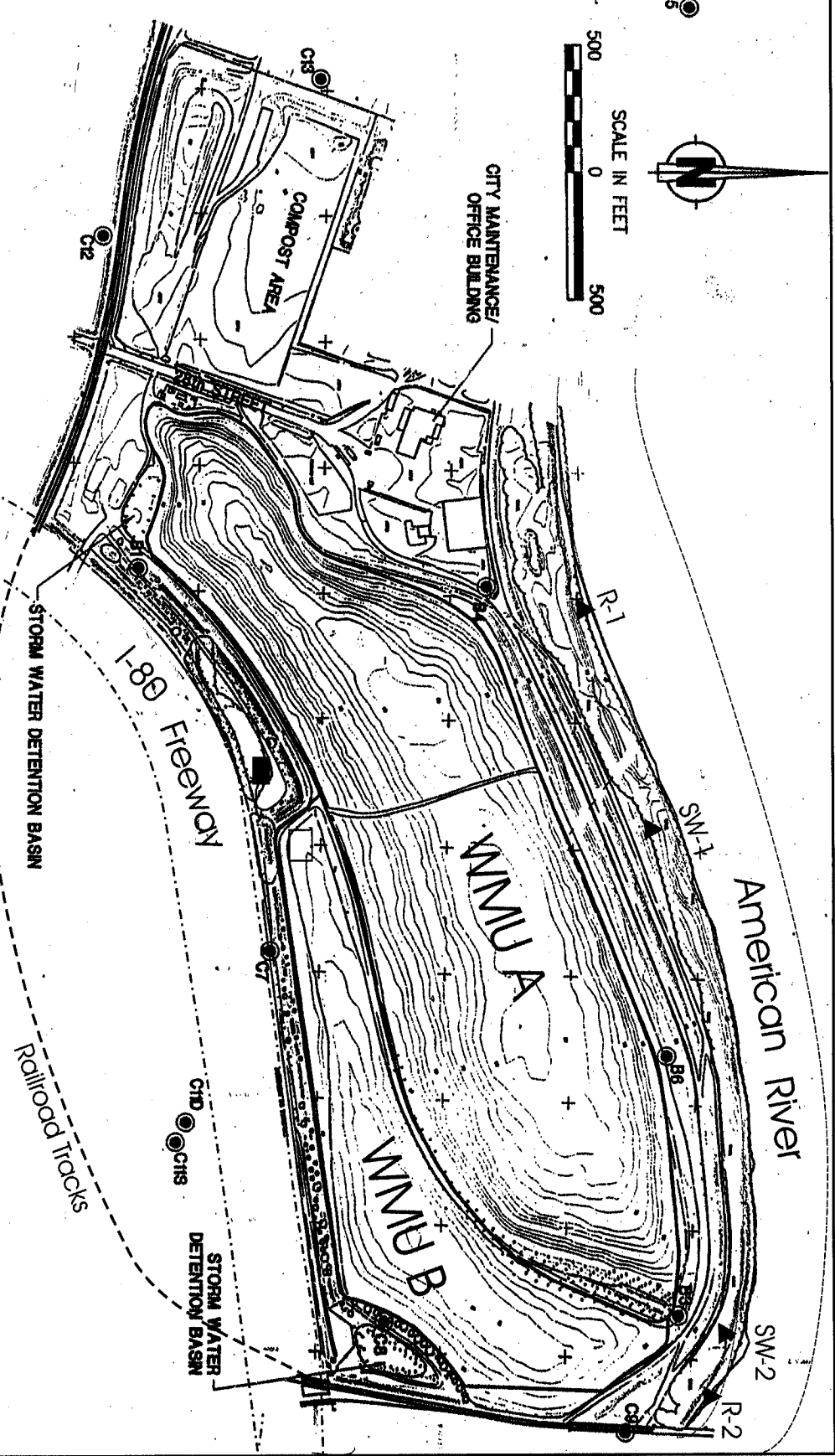
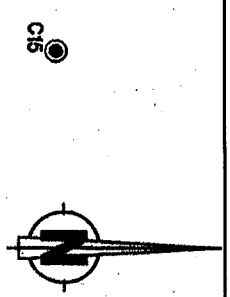
Chlorinated Herbicides (USEPA Method 8151A):

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



Attachment A: Site Location Map
City of Sacramento
28th Street Landfill
Sacramento County
Section 32, T9N, R5E, MDB&M

WDR Order No. R5-2004-0039



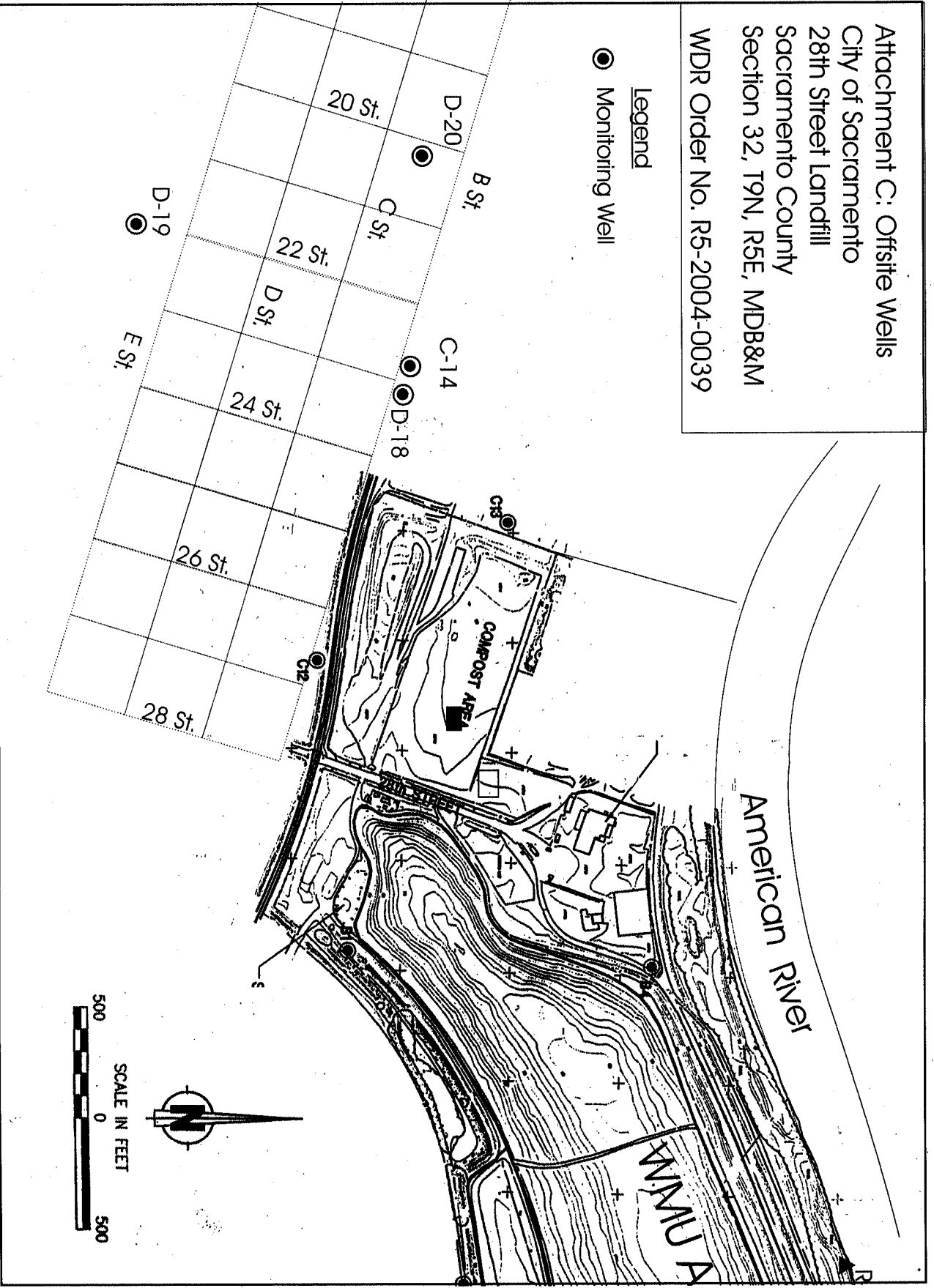
NOTE
 MONITORING WELLS D19 AND D20 NOT
 SHOWN (OFF-SITE LOCATIONS)

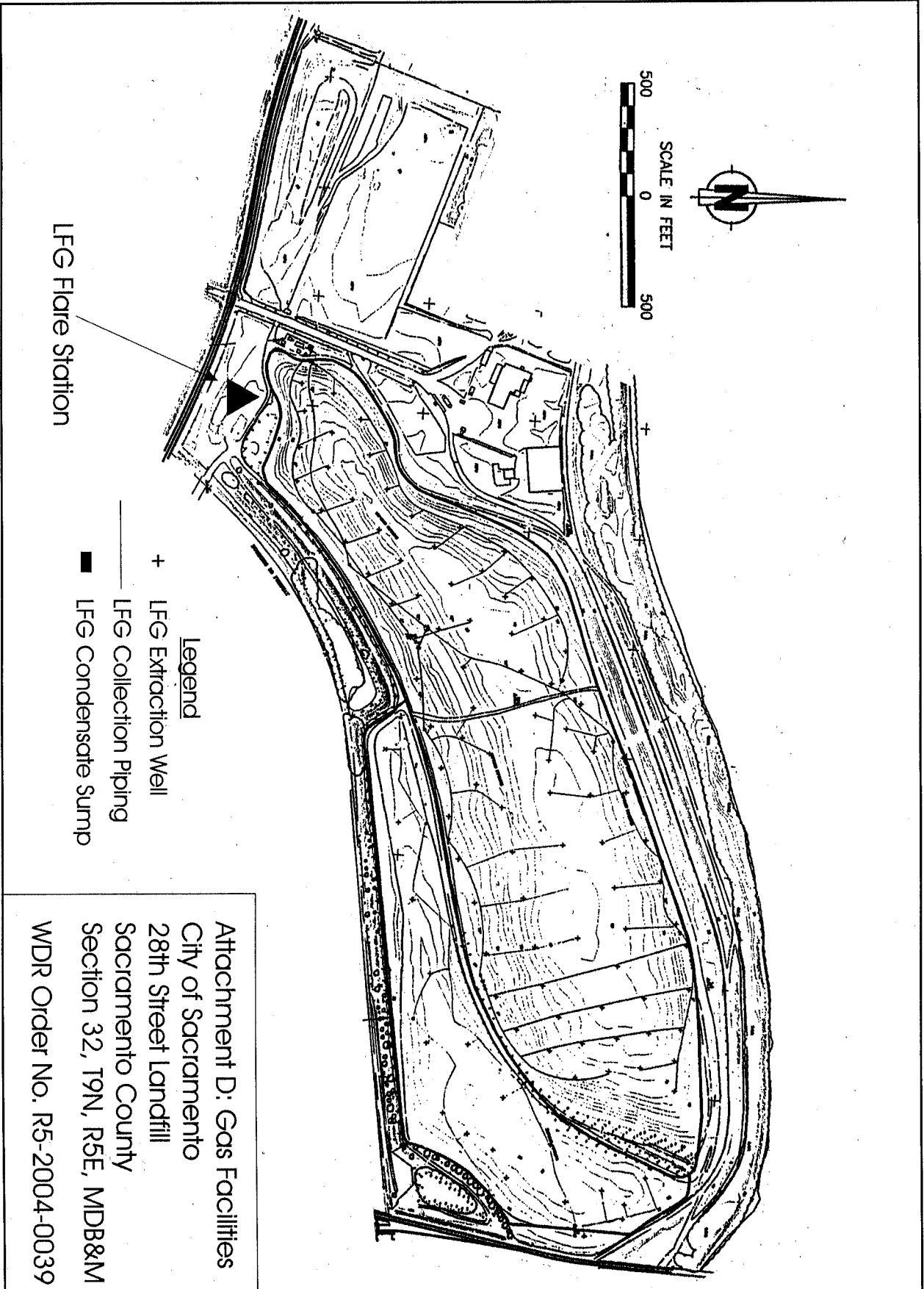
- Legend**
- ▲ Surface Water
 - Monitoring Point
 - LCRS Sump

Attachment B: Facility Map
 City of Sacramento
 28th Street Landfill
 Sacramento County
 Section 32, T9N, R5E, MDB&M
 WDR Order No. R5-2004-0039

Attachment C: Offsite Wells
City of Sacramento
28th Street Landfill
Sacramento County
Section 32, T9N, R5E, MDB&M
WDR Order No. R5-2004-0039

Legend
● Monitoring Well





LFG Flare Station

Legend

- + LFG Extraction Well
- LFG Collection Piping
- LFG Condensate Sump

Attachment D: Gas Facilities
 City of Sacramento
 28th Street Landfill
 Sacramento County
 Section 32, T9N, R5E, MDB&M
 WDR Order No. R5-2004-0039

INFORMATION SHEET

ORDER NO. R5-2004-0039
CITY OF SACRAMENTO
28TH STREET LANDFILL FACILITY
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE AND CORRECTIVE ACTION
SACRAMENTO COUNTY

The City of Sacramento owns and has operated the 28th Street Landfill since 1973. The site is located at the northern end of 28th Street, in the northeast area of downtown Sacramento. The landfill is bordered by the American River to the north, Business Interstate 80 to the south, Southern Pacific Railroad tracks to the east, and industrial properties to the west.

Waste Disposal Areas

The Class III landfill was used for the disposal of non-hazardous residential, commercial and industrial municipal solid wastes. Refuse filling took place from the early 1960's until September 1994. The facility includes two classified landfill units and two older, unclassified disposal areas, as follows:

Classified Units

- A 79.5-acre area known as WMU A. This area was filled from 1971 until 1986. This cell was constructed without a base liner or leachate collection system, which were not required by regulations at the time. A final cover system was installed in phases and was completed in 1997. The cover consists of one foot of intermediate cover soil over the waste materials, overlain by two feet of concrete and asphalt rubble, overlain by one foot of low-permeability clay, overlain by a one-foot vegetative soil layer.
- A 27.5-acre area, known as WMU B. This area was filled from 1986 until 1994. This cell was constructed with a base liner and leachate collection and removal system. The base liner consists of 1.5 feet of compacted soil/bentonite mix with a maximum permeability of 1×10^{-7} cm/s, overlain by an additional 1.5 feet of native compacted soil with permeability ranging between 1×10^{-5} and 1×10^{-7} cm/s. A final cover system was completed at WMU B in September 1997. The final cover profile is identical to that described above for WMU A.

Unclassified Disposal Areas (filled during the period 1963 through 1971)

- Approximately 12.5 unpaved acres west of 28th Street
- Approximately 10 paved acres west of 28th Street
- Approximately 16 paved acres north of 28th Street .

The site also includes approximately 18 acres of non-filled areas including levees and a buffer area between the landfill and the American River, a storm water detention area east of the landfill, buffer areas adjacent to the Southern Pacific Railroad tracks east of the landfill.

Offsite Acreage

Significant acreage was historically landfilled west of the facility. This acreage, including the Dellar Property (the name is that of the current owner, Mr. Lincoln Dellar), is privately owned and was not included in the facility closure. Several offsite monitoring wells for the facility are located in this area, however.

Closure

The Discharger submitted the 9 February 1998 *Construction Quality Assurance/Completion Report for Landfill Closure*, prepared by Harding Lawson Associates. The report documents the installation of the final cover for waste management units (WMU) A and B in accordance with the Final Closure Plan. The Regional Board approved the report in a letter dated 3 June 1998. A final cover for both WMUs consist of, described from top to bottom as, one-foot of soil cover, one-foot of low permeability clay, two-feet of concrete and asphalt rubble, and one-foot of intermediate soil cover. Construction activities were completed and reported in the *Construction Quality Assurance/Completion Report for Landfill Closure*, dated 9 February 1998.

The 16-acre unclassified disposal area north of 28th Street and northern 10-acres of the unclassified disposal area west of 28th Street were closed with, as described from top to bottom, 3 inches of asphalt concrete (to provide an all weather surface and prevent infiltration of water), 6 inches of asphalt street grinding, two-feet of concrete and asphalt rubble, and one-foot of soil cover. The remaining 12.5-acres of the unclassified disposal area west of 28th Street was graded to drain (3% slope or greater) and received a cover consisting of, from top to bottom, two-feet of soil, 6 inches of asphalt street grinding, two-feet of concrete and asphalt rubble, and 6 inches of foundation soil. The landfill access roads at the site were paved with chip seal, which is reapplied where necessary as part of post-closure maintenance to maintain an impermeable surface.

Post-Closure Uses

WMUs A and B are vegetated with native grass and are currently used only for facility access and LFG collection facilities. The paved disposal area north of 28th Street is now the City's corporation yard and is used for storage, vehicle parking and facility offices. The City Department of Parks and Recreation has also developed small portions of this area as the Sutter's Landing Park, including pedestrian/bike trails, paved parking, picnic areas and a skate-park area. The paved portion of the unclassified area west of 28th Street (10 acres) was used for composting operations until 2001. This area and the remaining unpaved 12.5 acres are now vacant and controlled by the City Department of Parks and Recreation, which is considering the areas for incorporation into Sutter's Landing Park.

Groundwater

SWAT Investigation

An initial Solid Waste Assessment Test (SWAT) investigation conducted in 1985 showed the presence of vinyl chloride and elevated concentrations of inorganic constituents/parameters including electrical conductivity and chloride in groundwater at the facility and south and west of the landfill.

In October 1985, the Discharger installed seven groundwater monitoring wells (B-1, B-3, B-4, C-7, C-8, C-9, and C-10) around WMUs A and B and subsequently confirmed that the shallow groundwater beneath the site had been impacted with volatile organic compounds (VOCs) of which the predominant compound was vinyl chloride. In November and December 1986, the Discharger installed seven (7) more wells to comply with the SWAT Report requirements (B-6, C-11D, C-11S, C-12, C-13, C-14 and C-15). Four of these wells (C-12 through C-15) were located around the inactive disposal areas west of WMU A. Well B-6 was installed north of WMU-A and wells C-11D and C-11S were installed south of WMU B. The last two wells are a shallow and deep pair intended to assess vertical groundwater gradients in the area.

A total of twenty (20) VOCs were detected in the wells tested, with vinyl chloride being detected in five wells (B-3, B-6, C-7, C-13, C-14), including detections of vinyl chloride in the same wells on different sampling dates. Concentrations of vinyl chloride reported in the SWAT Report ranged from 0.22 to 19 µg/L, and in wells B-6 and C-7 vinyl chloride concentrations exceeded the California Department of Health Services action level of 2.0 µg/L. The SWAT Report was produced in June 1987.

Current Monitoring System

After the SWAT Report and tests were completed, the Discharger expanded the groundwater monitoring network to include five (5) more wells, bringing the total to nineteen (19). Monitoring well locations are shown in Attachment D, which is incorporated herein and made part of this Order.

Landfill Gas

Migration of landfill gas from the active site was also identified in 1987. The effects of landfill gas migration include distressed vegetation along the American River and south of the landfill near Interstate Business 80. Elevated levels of ammonia in soil were also found in these areas. As such, the Discharger constructed a passive landfill gas collection trench east of the active site to intercept any landfill gas migrating in that direction.

In addition, a comprehensive landfill gas collection system was installed in 1990 and has been upgraded in phases. Landfill gas extraction helps prevent migration of gas-borne contaminants, principally VOCs that could otherwise migrate to groundwater.

Under a lease agreement with the Discharger, Gas Recovery Systems, Incorporated (GRS) captures the landfill gas generated at the landfill for use as an alternate energy source. GRS and the Discharger operate a series of 100 landfill gas extraction wells installed in refuse fill throughout WMU A and WMU B (WMU A – 82 landfill gas wells operated by GRS; WMU B – 18 landfill gas wells operated by the Discharger). Wells extend into the refuse mass to depths ranging from approximately 40 to 60 feet below ground surface (bgs). Collected landfill gas is sold as fuel to fire a small process boiler at an off-site industrial location. Excess recovered landfill gas that is not sold as fuel is combusted in one of two ground flares maintained by GRS and the Discharger.

The Discharger maintains a separate landfill gas collection system for migration control purposes. The system consist of 66 extraction wells installed in a soil levee/berm along the southern fill perimeter. Landfill gas extracted from the perimeter system is combined with excess landfill gas from WMU A and WMU B and combusted in one of two flares. Gas extraction well and collection header piping layout for the landfill gas system are shown in Attachment C, which is incorporated herein and made part of this Order.