CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. R2-2004-0029

UPDATED WASTE DISCHARGE REQUIREMENTS AND RECISSION OF ORDER NOS. 78-003, 78-017, 78-039, 86-096, 95-081, and 95-227 FOR:

EAST CANYON HOLDINGS, LLC

EAST CANYON LANDFILL
BENICIA, SOLANO COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Water Board), finds that:

PURPOSE OF ORDER

1. The purpose of this Order is to update waste discharge requirements (WDRs) to reflect a recent change in ownership of the East Canyon Landfill (herein referred to as the landfill or the site) and to clarify post-closure, maintenance and monitoring requirements. Specifically, this Order: (1) Updates landfill ownership and recent history, (2) Updates post-closure monitoring and maintenance compliance requirements for the landfill, (3) Revises the self monitoring program for the landfill, and (4) Rescinds Water Board Order Nos 78-003, 78-017, 78-039, 86-096, 95-081, and 95-227, which are described in detail in Table 1.

SITE DESCRIPTION AND LOCATION

2. The East Canyon Landfill is a closed, unlined, Class III landfill that is currently owned and maintained by East Canyon Holdings, LLC. The landfill was historically considered part of the former Braito Landfill, which was also known as the Solano County Sanitary Landfill. The landfill is currently being used as an open space park by the City of Benicia, and covers about 12.5 acres of land located north of Interstate 780 off the Columbus Parkway exit, approximately 400 feet east of the terminus of Palace Court (see Figures 1 and 2).

3. The landfill is situated in a westward draining canyon, referred to as the East Canyon. An unnamed, intermittent creek drains the East Canyon and flows to Southampton Bay located about one mile to the south. Single-family homes within the Southampton residential development overlook the landfill on three sides. Single-family homes are also located several hundred feet downhill from the mouth of the canyon along Palace Court.

4. For the purposes of this Order, the landfill is defined as including all areas within the East Canyon limit of refuse as depicted in Figure 2. The landfill also includes all appurtenant structures constructed within the East Canyon drainage area for containment, control, and discharge of groundwater, surface water, leachate, and landfill gas.

OWNERSHIP

5. From 1950 through 1977, Mr. Urban J. Braito owned and operated the Solano County Sanitary Landfill, which included two canyon fill areas known as the East Canyon and the North Canyon.

6. In 1977, a group (herein referred to as "Southampton et al.") purchased the property containing the East and North Canyon fill areas from Mr. Braito. At that time, the members of Southampton et al., included the following entities:

   (1) Southampton Company
   (2) Citizen Savings and Loan Association*
   (3) Alma Associates
   (4) Alma Associates DBA Southampton Company

   *Citizens Savings and Loan Association was later replaced with a subgroup consisting of:

   (a) Granite Savings Bank
   (b) First Nationwide Bank
   (c) FN Projects

7. On April 1, 2003, East Canyon Holdings, LLC, became the legal owner and operator of the East Canyon Landfill. Under an agreement with the City of Benicia, the City retains responsibility for maintaining site access and perimeter fencing related to use of the landfill as an open space park.

DISCHARGERS

8. As the current and sole owner of land occupied by the East Canyon Landfill, East Canyon Holdings, LLC, is hereinafter referred to as the Discharger.

9. The Water Board considers the Discharger to have continuing responsibility for correcting any problems which arise in the future as a result of this waste discharge or related operations for as long as the landfill poses a threat to water quality.

REGULATORY HISTORY

10. Prior to 1950, the land occupied by the site was used for ranching and open space. In 1975, the Water Board adopted WDRs for the operation of the Solano County Sanitary Landfill (see Table 1).

11. In 1977, a group (herein referred to as "Southampton et al.") purchased the property containing the East and North Canyon fill areas from Mr. Braito. At that time, the members of Southampton et al., included the following entities:

    (1) Southampton Company
    (2) Citizen Savings and Loan Association*
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12. After acquiring the Solano County Sanitary Landfill from Mr. Braito in 1977, Southampton, et al., began construction of a residential development, herein referred to as the "Southampton" residential development. The Southampton development consisted primarily of single-family homes. In 1978, the Water Board adopted four separate orders related to silt and sediment discharges from the development project and requiring implementation of adequate erosion control measures (see Table 1).

13. In September 1978, the landfill was closed to the public. However, Mr. Braito retained rights to operate on a reduced basis through June 1979. At that time, refuse thickness ranged from 35 to 45 feet.

14. In 1979, Southampton et al. submitted a closure plan for the Solano County Sanitary Landfill. The closure plan consisted of the following two documents: (1) ***Preliminary Site Closure Plan Report***, dated May 15, 1979, and (2) ***Addendum to the Site Closure Plan Report***, dated August 20, 1979. In accordance with the closure plan, all wastes were to be removed from the North Canyon fill area and relocated to the East Canyon fill area in preparation for residential development of the North Canyon area. Additionally, the plan included the following closure specifications:

    a. Constructing a landfill cover consisting of a minimum of two feet of clean soil compacted to achieve an infiltration rate of no more than 10^{-6} centimeters per second and sloped at 0.5 percent from the center of the landfill towards the sides of the canyon.

    b. Constructing grass or concrete-lined channels along the sides of the canyon, and routing runoff from the channels into an existing unnamed creek west of the landfill.

    c. Plugging existing concrete overflow pipes from two ponds known as the North and East Ponds located upslope from the landfill to eliminate water flow through the landfill, and raising of the pond embankments to contain 100-year peak storm event runoff.

    d. Installing methane gas monitoring probes between the landfill and existing homes.

15. In response to the closure plan, the Water Board adopted Order No. 79-146, which prescribed WDRs for the closure of the East Canyon fill area (see Table 1).

16. Between 1978 and 1981, about 30,000 cubic yards of refuse from the North Canyon fill area was deposited in the East Canyon Landfill. By the end of this period, the landfill was officially closed and the entire landfill was covered with a minimum three-foot thick compacted soil cover, in accordance with the 1979 closure plan.

17. Between 1980 and 1985, a leachate containment structure was installed at the toe of the landfill along with a drainpipe to discharge leachate to the City of Benicia sanitary sewer system. In November 1985, the overflow pipes from North and East Ponds were plugged as specified in the 1979 closure plan, and a new siphon and gravity drain were installed in the ponds. These activities are documented in a report titled ***Drainage and Leachate Control***, dated August 1986.

18. During a heavy rainfall event in February 1986, both the North Pond and East Pond overflowed onto the landfill. The cover and leachate containment system at the toe of the landfill were eroded, exposing waste and permitting water infiltration into the waste. Also in February 1986, the City of Benicia requested that the leachate line be disconnected from the sewer system because of the high discharge volumes entering the system. To decrease the pressure buildup within the landfill and satisfy the City's request, the 4-inch leachate line for the landfill was opened, causing the discharge of leachate into the unnamed creek at the toe of the landfill. Consequently, the Water Board adopted Cleanup and Abatement Order (CAO) No. 86-003 in March 1986, requiring mitigation measures for the current and future leachate discharges.

19. In response to CAO No. 86-003, Southampton et al. performed the following work:

    a. A minimum, one-foot-thick, compacted low permeability soil cover was placed on the exposed landfill then overlain with a one-foot-thick protective soil cover to repair the landfill cover.

    b. The landfill cover was re-graded to a minimum three percent slope and a "v"-ditch was constructed along the landfill perimeter to improve surface drainage. The v-ditch was underlain by a four-foot-thick clay layer then vegetated to minimize erosion.

    c. A new leachate collection and removal system (LCRS) was constructed at the base of the landfill across the western end of the canyon. The LCRS consisted of a low-permeability toe berm keyed into the native alluvial clay underlying the landfill. The LCRS allows leachate accumulating behind the toe berm to flow into a drainpipe and be discharged directly to the City of Benicia's sewer system.

    d. The East Pond was re-designed to serve as an engineered detention basin to improve surface water drainage. A 30-inch reinforced concrete pipe was installed along the southern perimeter of the landfill to drain the East Pond. A subsurface 18-inch corrugated metal pipe was installed along the northern perimeter of the landfill to drain the North Pond. Both lines were constructed to allow discharge to the unnamed creek located at the base of the toe berm, on the down-gradient side of the landfill.

20. In October 1986, Southampton et al., submitted a Report of Waste Discharge (ROWD). The ROWD consisted of the following two documents: (1) ***Drainage and Leachate Control, Solano County Sanitary Landfill***, EMCON Associates, August 1986, and (2) ***Supporting Site Information, Solano County Sanitary Landfill***, EMCON Associates, October 1986.

21. In response to the submittal of the 1986 ROWD, the Water Board adopted Order No. 86-096 on December 17, 1986, which prescribed WDRs for post-closure monitoring and

maintenance of the landfill.

22. During the mid 1980s and early 1990s, after construction of the Southampton residential development, wastes were discovered in isolated areas within the North Canyon fill area. The most significant of these areas was a small side canyon that became known as Blake Court. From the early 1990s through 2002, the Department of Toxic Substance Control oversaw the investigation and removal of the remaining North Canyon wastes. Although the North Canyon and Blake Court fill areas were once part of the Solano County Sanitary Landfill along with the East Canyon fill area, they are now considered separate from the East Canyon Landfill and as such are not included in the scope of this Order. The Water Board maintains a separate file documenting its regulatory involvement with the North Canyon and Blake Court areas.

23. The discovery of additional wastes within the North Canyon and Blake Court fill areas prompted questions about the existence of wastes located outside the established boundaries of the East Canyon Landfill. In response to this and other concerns, the Water Board adopted Order No. 95-081 on April 19, 1995, which amended the WDRs contained in Order No. 86-096 with the following requirements:

    a. Submittal of a Landfill Cover and Well Survey Report including (1) surveyed limits of the cover and waste, (2) a determination of the waste adjacent to and/or under the North Pond, (3) proof that the cap meets minimum post-closure grading requirements, and (4) a survey of all wells, and proposals for replacement and abandonment of non-functional wells. Southampton et al. met this requirement with submittal of the ***Monitoring System Survey Report*** and the ***Landfill Cover Report*** both dated August 17, 1995. The cover/earth fill overlying the landfill waste was found to be range 5.5 and 18 feet thick based on a drilling exploration program. A review of aerial photographs, historical information, and boring data showed that no refuse was present under the North Pond or the North pond embankment.

    b. Submittal of a Post Earthquake Inspection and Corrective Action Plan to be implemented in the event of any earthquake generating ground shaking of Richter Magnitude 7 or greater at or within 30 miles of the landfill. Southampton et al. met this requirement with submittal of the ***Interim Post-Earthquake Inspection and Corrective Action Plan*** dated July 18, 1995, and the ***Draft Post-Earthquake Inspection and Corrective Action Plan*** dated April 23, 1996.

    c. Submittal of a Contingency Plan to be instituted in the event of a leak or spill from the leachate facilities. Southampton et al. met this requirement with submittal of the ***Interim Leachate Contingency Plan*** dated July 18, 1995, and the ***Draft Leachate Contingency Plan*** dated April 23, 1996.

    d. Submittal of a Landfill Gas Monitoring System Plan, including proposals for additional wells and abandonment of non-functional wells, and a description of sampling and analytical methods. Southampton et al. met this requirement with submittal of the ***Landfill Gas Monitoring Plan*** dated August 17, 1995.

    e. Submittal of a Storm Water Pollution Prevention Plan. Southampton et al. met this

requirement with submittal of the ***Revised Storm Water Pollution Prevention and Monitoring Plan*** dated August 1, 1997.

f. Submittal of a Monitoring System Installation Report documenting the installation of additional landfill gas, leachate, and groundwater monitoring wells and abandonment of non-functioning wells. Southampton et al. met this requirement with submittal of the ***Monitoring System Installation Report*** dated November 17, 1995.

g. Submittal of proposed modifications to the list of contaminants of concern (COCs) and monitoring parameters following four quarters of monitoring and sampling in accordance with Order No. 95-081. Southampton et al. met this requirement in a letter dated June 6, 1997, to the Water Board. In accordance with an agreement stated in that letter, the monitoring parameters and sampling frequencies were modified again in a letter dated December 23, 1999, after eight additional quarters of monitoring.

24. On December 7, 1995, the Water Board issued CAO No. 95-227 for the removal of waste discovered at a drainage swale located along the south side of the landfill during installation of a landfill-gas monitoring probe. In response, Southampton et al. removed 4,382 tons of soil and waste, installed a drainage blanket, and backfilled the area. These activities are documented in the report titled ***Clean Closure Report, South Swale*** dated November 26, 1996.

25. From 1996 to 1999, two landfill leachate studies were undertaken and improvements were implemented by Southampton et al., including repair of the south and north perimeter drainage systems, monitoring system upgrades, drainage improvements at the Eastern Detention Basin, and installation of a leachate flowmeter. These activities are documented in the following reports: ***Leachate Generation Study*** dated April 30, 1997, and ***1999 Leachate Generation Study*** dated June 27, 2000.

26. Table 1 summarizes the history and status of all Water Board orders affecting the East Canyon Landfill.

Table 1 Previously Adopted Water Board Orders for the East Canyon Landfill

Order No.	Date	Purpose	Status
75-036	6/17/75	WDRs for Operation of Solano County Sanitary Landfill	Rescinded by Order No. 79-146
78-003	2/10/78	Cleanup and Abatement Order (CAO) for silt & sediment discharges from "Southampton" residential development project	Rescinded by this Order
78-009	5/10/78	CAO amending Order No. 78-003 for silt & sediment discharges from "Southampton" residential development project	Rescinded by Order No. 78-017
78-017	9/11/78	CAO amending Order No. 78-003 for silt & sediment discharges from "Southampton" residential development project; Rescinds Order No. 78-009	Rescinded by this Order
78-039	6/20/78	WDRs for silt & sediment discharges for "Southampton" residential development project; specifies erosion control measures	Rescinded by this Order
79-146	10/16/79	WDRs for closure of Solano County Sanitary Landfill, including North Canyon and East Canyon fill areas; Rescinds Order No. 75-036	Rescinded by Order No. 86-096
86-003	3/6/86	CAO for leachate discharges to creek; requires correction of future leachate buildup & discharge problems	Rescinded by Order No. 86-096
86-006	6/16/86	Administrative Civil Liability for leachate discharges in violation of Order Nos. 79-146 and 86-003	Settled June 30, 1986
86-096	12/7/86	WDRs for post-closure maintenance and monitoring of East Canyon Landfill according to the 1986 ROWD and new landfill regulations; Rescinds Order Nos. 79-146 and 86-003	Rescinded by this Order
95-081	4/19/95	WDRs to amend Order No. 86-096 and reflect changes in containment measures, monitoring programs, and information from recent investigations	Rescinded by this Order
95-227	12/7/95	CAO for removal of waste in "South Swale" area of the East Canyon Landfill, discovered during installation of gas probes	Rescinded by this Order

HYDROLOGY & HYDROGEOLOGY

27. Topography: The landfill is located north of the Carquinez Strait, in a westward draining canyon of the Coast Range physiographic province. East Canyon drains to North Canyon and into Southampton Bay, located approximately one mile south of the site. Canyon hillside slopes range from gentle to steep with many of the surrounding hilltops graded and developed with single-family housing.

28. Stratigraphy: The landfill is underlain by a relatively thin layer of alluvial sediments, which overlay the upper Cretaceous Panoche Formation. Alluvial sediments in East Canyon typically range from 0 to 25 feet in thickness and are comprised of clayey sands derived from the weathering of the underlying Panoche Formation. The alluvial sediments are thickest along the canyon axis and thin towards the canyon side slopes. Laboratory permeability values for the alluvial sediments range from 10^{-7} to 10^{-3} centimeters per second (cm/sec). The underlying Panoche Formation is comprised of interbedded fine-grained sandstone and shale. The upper 5 to 15 feet of the formation is heavily weathered and highly fractured, with larger fractures exhibiting clay infilling. Field permeability values for the weathered bedrock are significantly higher than the unweathered bedrock or the alluvial sediments. The unweathered Panoche Formation is less fractured with permeabilities ranging from 4.4×10^{-5} to 1.2×10^{-6} cm/sec. The Panoche Formation generally dips from 40 to 60 degrees toward the southwest in the vicinity of the landfill.

29. Faults: There are no faults mapped at the site. The nearest active fault is the Green Valley Fault located approximately 3 miles east of the landfill.

30. Surface Water: Springs located up-gradient from the landfill discharge into two ponds, North Pond and East Pond, also located up-gradient of the landfill (see Figures 2 and 3). The springs appear to flow continually throughout the year. In 1986, as part of modifications made to the drainage control system, surface runoff from the North and East Pond areas was diverted to the unnamed creek at the base of the toe berm, on the down-gradient side of the landfill. Also in 1986, the landfill cover was graded to a three percent minimum slope. Landfill surface runoff drains to a v-ditch along the landfill perimeter, which ultimately discharges into the unnamed creek downstream from the landfill.

31. Groundwater Occurrence: Groundwater at the landfill is first encountered between about 8 and 45 feet below the ground surface and occurs within three zones: 1) alluvial soils, 2) heavily weathered bedrock underlying the alluvial soils, and 3) fractured, moderately-weathered bedrock underlying the heavily-weathered bedrock. Up-gradient from the landfill, groundwater may be recharged by North Pond. Down-gradient from the landfill, the diverted surface water discharge to the unnamed creek may be a local source of groundwater recharge.

32. Groundwater Gradients and Flow: Laterally, the general groundwater flow direction parallels the axis of the canyon (see Figure 3) with a hydraulic gradient of approximately 0.05 and a flow rate of approximately 130 feet per year. Vertically, between the alluvial soils and the heavily-weathered bedrock, the hydraulic gradient ranges from approximately 0.13 (upward) to approximately 0.06 (downward) (see Figures 2 and 3).

MONITORING PROGRAMS

33. Surface Water: Surface water is monitored at two up-gradient locations (at the upstream ends of the North and East Pond discharge pipes) and two down-gradient locations (at the unnamed creek and a downstream storm drain; see Figure 2). Impacts to surface water quality from the landfill are evaluated by comparing analytical results at up-gradient and down-gradient locations.

34. Groundwater: Groundwater levels and quality data are available for the landfill since 1987. Fifteen locations are currently monitored (see Figure 2). Eight of the monitoring wells are constructed as four pairs such that each pair monitors both the alluvium and fractured bedrock zones at the same location.

35. Leachate: Leachate levels have been measured since 1985 to assess leachate buildup in the landfill. Eight locations are currently monitored (see Figure 2). Leachate levels have been stable since 1985, with depth-to-liquid measurements fluctuating only with variations in seasonal recharge. Leachate is collected at the toe of the landfill via a drainpipe and discharged to the City of Benicia sewer system. The discharge to the City's sewer system is sampled at location L-1 (see Figure 2).

36. Landfill Gas: Methane has been monitored in landfill gas probes at the site since 1982. The current landfill gas monitoring network consists of 22 probes (see Figure 2) located between the landfill and the surrounding residential areas. Methane has generally not been detected in these probes. Low concentrations (well below the lower explosive and regulatory reporting limits for methane) have occasionally been reported. The results indicate that methane gas is not migrating off site.

37. Stormwater: Chapter 40 of the Code of Federal Regulations (CFR), Parts 122, 123, and 124, require specific categories of industrial activities, including landfills, to obtain a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharges. The State Water Resources Control Board (SWRCB) has issued a General Permit for Storm Water Discharges Associated with Industrial Activities (NPDES Permit No. CAS000001). The landfill is subject to the requirements of the SWRCB's General Permit and as such is required to (1) submit a Notice of Intent for coverage under the General Permit, (2) prepare and implement a monitoring program, and (3) submit an annual report. To comply with the General Permit, stormwater is sampled at a single location designated SWO, located at the outlet of the stormwater discharge pipe just upstream of surface water sampling point CRD-3 shown on Figure 2. Stormwater is sampled twice yearly at this location.

WATER QUALITY IMPACTS AND CORRECTIVE ACTION

38. Surface Water: Results from recent surface water monitoring indicate that there is no down-gradient impact to surface water from the landfill.

39. Leachate: Since 1995, low levels (generally less than 600 micrograms per liter (ug/l), which is equivalent to parts per billion (ppb) of total petroleum hydrocarbons as diesel (TPH-d), low levels (less than 5 ppb) of benzene compounds, and low levels of naturally occurring

metals (below the maximum contaminant level, or MCL, permitted in drinking water by the California Department of Environmental Health) have been detected at monitoring location L-1 (see Figure 2). PCBs were detected in leachate sporadically from 1995 to 1998 at levels up to 2.8 ppb. Contaminant concentrations in leachate appear to be stable. Leachate is passively collected at the toe of the landfill via a drainpipe and discharged to the City of Benicia sanitary sewer system for treatment.

40. Groundwater: Since 1995, low levels (generally less than 1,000 ppb) of TPH-d have been detected in some wells, both in the shallow alluvium and weathered bedrock zones (wells E-5s, 5d, 6s, 7s, 7d, 8s, & E-10). On two occasions TPH-d has exceeded 1000 ppb in wells E-5s (5050 ppb in 1995) and E-5d (3300 ppb in 1996). Low levels (generally trace or less than 10 ppb) of several volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) have been detected sporadically in wells screened both in the shallow alluvium and weather bedrock zones. To date, groundwater impacts beneath the landfill and down-gradient from the landfill have been minor and have not caused significant degradation to groundwater quality. However, if the temporal or spatial occurrence of TPH-d, VOC and/or SVOC detections in groundwater changes, or if new contaminants are detected in groundwater, corrective action may be necessary to mitigate these impacts.

BASIN PLAN AND RESOLUTIONS

41. The Water Board adopted a revised Water Quality Plan for the San Francisco Bay Basin (Basin Plan) in June 21, 1995. This updated and consolidated plan represents the Water Board's master water quality control planning document. The State Water Resource Control Board and the Office of the Administrative Law approved the revised Basin Plan on July 20 and November 13, respectively, of 1995. A summary of regulatory provisions is contained in Section 3912, Title 23 of the California Code of Regulations. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface water and groundwater.

42. The Basin Plan provides that all groundwaters are considered suitable, or potentially suitable, for municipal or domestic water supply (MUN) and that, in making any exceptions, the Water Board will consider the criteria referenced in Water Board Resolution No. 89-39, "Sources of Drinking Water", where:

    (a) The total dissolved solids exceed 3,000 mg/l (5,000 µS/cm, electrical conductivity), and it is not reasonably expected by the Water Board that the groundwater could supply a public water system, or

    (b) There is contamination, either by natural processes or human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using best management practices or best economically achievable treatment practices, or

    (c) The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

BENEFICIAL USES OF SURFACE WATER AND GROUNDWATER

Groundwater

43. The site resides within the boundaries of the Suisun/Fairfield Valley Groundwater Basin, as defined in the Basin Plan. The existing and potential beneficial uses identified for groundwater in this basin, according to the Basin Plan, include:

    Municipal and Domestic Supply (MUN)
    Industrial Process Supply (PROC)
    Industrial Service Supply (IND)
    Agricultural Supply (AGR)

44. Based on the hydrogeologic characterization and water quality data for the site, groundwater underlying the site qualifies as a potential source of drinking water in accordance with Water Board Resolution No. 89-39. Therefore, all of the above current and potential beneficial uses apply to groundwater beneath the site. However, as groundwater at the site occurs within low-yield alluvial sediments, sandstone, and shale, with measured permeability values of 10^{-7} to 10^{-3} cm/s, the landfill is an unlikely site for future water supply wells.

Surface Water

45. Existing or potential beneficial uses identified for surface water in the Carquinez Strait, the surface water body to which the unnamed creek ultimately flows, according to the Basin Plan, include:

    Ocean Commercial and Sport Fishing (COMM)
    Estuarine Habitat (EST)
    Industrial Water Supply (IND)
    Navigation (NAV)
    Preservation of Rare and Endangered Species (RARE)
    Water Contact Recreation (REC1)
    Non-Water Contact Recreation (REC2)
    Fish Migration (MIGR)
    Fish Spawning (SPWN)
    Wildlife Habitat (WILD)

CALIFORNIA ENVIRONMENTAL QUALITY ACT

46. This action relates to permitting existing waste management units and is thus categorically exempt from the provision of the California Environmental Quality Act pursuant to Section 15301, Title 14 of the California Code of Regulations.

NOTIFICATION AND PUBLIC MEETING

47. The Water Board has notified the Discharger and interested agencies and persons of its intent to update waste discharge requirements and has provided them with an opportunity to

submit their written views and recommendations.

48. The Water Board in a public meeting heard and considered all comments pertaining to the proposed waste discharge requirements for the site.

IT IS HEREBY ORDERED pursuant to the authority in Division 7, Section 13263 of the California Water Code (CWC), Title 27, Division 2, Subdivision 1 of the California Code of Regulations (Title 27), that the Discharger, its agents, successors, and assigns shall meet the applicable provisions contained in Title 27 and Division 7 CWC, and shall comply with the following:

A. PROHIBITIONS

1. Wastes shall not be in contact with ponded water or any other surface waters.

2. Wastes shall not be exposed at the surface.

3. The relocation of wastes within the landfill shall not create a condition of pollution or nuisance as defined in Section 13050 (1) and (m) CWC. Any relocated waste shall not be placed in or allowed to contact ponded water from any source whatsoever. Wastes shall not be relocated to any location where they can be discharged into waters of the State or of the United States.

4. Excavation within or reconfiguration of any portion of the landfill is prohibited without prior concurrence of Water Board staff. Minor excavation or reconfiguration activities such as for installation of signs or landscaping, or for routine maintenance and repair do not require prior staff concurrence.

5. Any wastes discovered outside the current boundary of the landfill that are related to historic disposal activities at the site, shall be immediately removed.

6. Discing of landfill covers is prohibited without prior Water Board staff concurrence. Alternate methods of controlling vegetative growth, which do not affect the integrity of the landfill cap are preferred.

7. Surface drainage from tributary areas and internal site drainage from surface or subsurface sources shall not contact or percolate through wastes during the life of the site.

8. Leachate or ponded water containing leachate or in contact with waste shall not be discharged to waters of the State or of the United States unless specifically authorized under an NPDES permit.

9. The treatment, storage, or discharge of groundwater or leachate shall not create a condition of pollution or nuisance as defined in Section 13050(m) CWC, nor degrade the quality of waters of the State or of the United States.

10. Untreated or inadequately treated groundwater or leachate shall not create a condition of pollution or nuisance as defined in Section 13050(m) CWC, nor degrade the quality of waters of the State or of the United States.

11. The Discharger shall not cause the following conditions to exist in waters of the State or of the United States at any place outside the landfill boundary:

    a. Surface Waters:

        (1) Floating, suspended, or deposited macroscopic particulate matter or foam
        (2) Bottom deposits or aquatic growth
        (3) Adverse changes in temperature, turbidity, or apparent color beyond natural background levels
        (4) Visible, floating, suspended, or deposited oil or other products of petroleum origin
        (5) Toxic or other deleterious substances to exist in concentrations or quantities that may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or that render any of these unfit for human consumption either at levels created in the receiving waters, or as a results of biological concentrations

    b. Groundwater:

        (1) Further degradation of groundwater quality and/or substantial worsening of existing groundwater impacts
        (2) Further significant migration of pollutants through subsurface transport

B. SPECIFICATIONS

1. The Discharger shall conduct monitoring activities according to the Self Monitoring Program (SMP) attached to this Order, and as may be amended by the Executive Officer, to verify the effectiveness of landfill closure systems including groundwater, surface water, leachate, and landfill gas containment, collection, treatment, and removal.

2. The Discharger shall install any reasonable additional monitoring devices for groundwater, surface water, leachate, and landfill gas required to fulfill the terms of any future SMP issued by the Executive Officer for the landfill.

3. All monitoring and control devices for groundwater, surface water, leachate, and landfill gas shall be routinely inspected and repaired or replaced as necessary to comply with any SMP issued by the Executive Officer for the landfill.

4. Containment, collection, drainage, and monitoring systems for groundwater, surface water, and leachate, shall be maintained and operated as long as leachate is present and poses a threat to water quality.

5. The leachate discharge system shall be maintained and operated to minimize undue buildup of hydraulic head on the bottom of the landfill and ensure that accumulated fluid is being adequately removed from the landfill and appropriately contained and discharged.

6. Methane and other landfill gases shall be adequately vented, removed from the landfill, or otherwise controlled to minimize the danger of explosion, adverse health effects, nuisance conditions and the impairment of beneficial uses of water due to migration.

7. The site shall be protected from any washout or erosion of wastes from inundation which could occur as a result of a 100-year, 24-hour precipitation event, or as the result of flooding with a return frequency of 100 years.

8. The landfill foundation and structures or devices for erosion control and water, leachate, and gas containment and monitoring shall be constructed and maintained to withstand conditions generated during the maximum probable earthquake.

9. Final and interim covers for the landfill shall be graded and maintained to promote lateral runoff of precipitation and prevent ponding or infiltration of water on or within the landfill.

10. The Discharger shall implement a Detection Monitoring Program (DMP), pursuant to Title 27, Section 20420. The DMP shall be designed to identify any water quality impacts from the landfill and demonstrate compliance with the Water Quality Protection Standard (WQPS), which is required pursuant to Title 27, Section 20390. The SMP attached to this Order is intended to constitute the DMP for the landfill.

11. The WQPS for the East Canyon Landfill shall include the following:

    a. Constituents of Concern: The list of Constituents of Concern (COCs) for the East Canyon Landfill shall include, at a minimum, all metals, volatile and semi-volatile organic compounds (VOCs and SVOCs), total petroleum hydrocarbons as diesel (TPH-d), and polychlorinated biphenyls (PCBs) as identified in this Order and in the SMP attached to this Order, or any future amendments thereof.

    b. Concentration Limits: The Discharger shall propose concentration limits (CLs) for all COCs detected at the specified points of compliance. CLs shall be established for each COC based on evaluation of background concentrations, pursuant to Title 27, Section 20400. CLs may be calculated using statistical or non-statistical methods (e.g., concentration trend analyses and comparison to practical quantitation limits), as appropriate, and updated with each sampling event.

    c. Points of Compliance: A Point of Compliance (POC) exists at every location along the perimeter of the landfill where waste exists. The point of compliance extends vertically to the deepest aquifer or water-bearing zone beneath the landfill. At a minimum, each monitoring well and sampling point located along the landfill waste perimeter, specified in this Order or the attached SMP to this Order, or any future amendments thereof, shall represent a point of compliance.

12. Whenever there is "measurably significant" evidence, or significant physical evidence of a release, the Discharger shall be prepared to implement an Evaluation Monitoring Program (EMP) pursuant to Title 27, Section 20425, at the direction of the Water Board. In such a case, the Discharger shall continue implementing the DMP as prescribed in any SMP

attached to this Order. If required, the EMP shall be implemented to determine the nature and extent of any release detected by the DMP.

13. At any time, the Discharger may file a written request (including supporting documentation) with the Executive Officer, proposing modifications to the attached SMP. If the proposed modifications are acceptable, the Executive Officer may issue a letter of approval that incorporates the proposed revisions into the SMP.

14. The Discharger shall maintain all devices installed in accordance with this Order, such that they continue to operate as intended without interruption.

15. The Discharger shall provide and maintain a minimum of two surveyed permanent monuments near the landfill from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the operation and post-closure maintenance periods. These monuments shall be installed by a licensed land surveyor or registered civil engineer.

16. The Discharger shall notify the Water Board immediately of any failure occurring in the landfill. Any failure that threatens the integrity of containment or control features or structures at the landfill shall be promptly corrected after approval of the method and schedule by the Executive Officer.

17. When there are multiple landowners or lease holders involved, the Discharger shall provide reasonable access to any property they own or lease at the site to allow for installation, sampling, monitoring, etc., of all devices and equipment necessary for compliance with the requirements of this Order.

18. The Discharger must comply with all applicable provisions of Title 27 that are not specifically referred to in this Order.

19. All reports submitted pursuant to this Order shall be prepared under the supervision of and signed by appropriately licensed professionals, such as a California registered civil engineer, registered geologist, and/or certified engineering geologist.

C. PROVISIONS

1. **Self-Monitoring Program**: The Discharger shall comply with the Self-Monitoring Program (SMP) attached to this Order (Part A and Part B) and as may be amended by the Executive Officer. The attached SMP is intended to constitute a Detection Monitoring Program (DMP) pursuant to Title 27, Section 20420 and is designed to identify significant water quality impacts from the landfill and demonstrate compliance with the Water Quality Protection Standard (WQPS) established pursuant to Title 27, Section 20390. The attached SMP may be amended as necessary at the discretion of the Executive Officer.

COMPLIANCE DATE: Immediate

2. **Report of Waste Discharge:** The Discharger shall submit a technical report, acceptable to the Executive Officer, describing any proposed material change in the character, location, or

volume of a discharge, or in the event of a proposed change in use or development of the landfill [CWC Section 13260(c)]. The technical report shall describe the project, identify key changes to the design that may impact any portion of the landfill, and specify components of the design necessary to maintain integrity of the landfill cover and prevent water quality impacts. No material changes to any portion of the landfill shall be made without approval by the Executive Officer.

COMPLIANCE DATE: 120 days prior to any material change

3. **Financial Assurance:** The Discharger shall submit to this Board evidence of an Irrevocable Post-closure Fund acceptable to the Executive Officer, to ensure monitoring, maintenance, and any necessary remediation actions. Every five years, for the duration of the post-closure monitoring period, the Discharger shall submit a report that includes an outline of the financial assurance mechanism and verification that the fund has been created. Fund value should be supported by calculations, to be included with this submittal, providing cost estimates for all post-closure monitoring, maintenance, repair and replacement of landfill containment, cover, and monitoring systems. Additionally, cost estimates must be provided for any future corrective action measures that may be required at the facility. The fund value should be based on the sum of these estimates. The cost estimates and funding should be updated to reflect change to monitoring systems as they occur. The post-closure maintenance period shall extend as long as the landfill wastes pose a threat to water quality

COMPLIANCE DATE: September 30, 2004, then every five years thereafter

4. **Stormwater Control Plans:** For each grading or development project proposed greater than one acre in size, the Discharger shall submit a Notice of Intent to the State Water Resources Control Board, submit a Storm Water Pollution Prevention Plan acceptable to the Executive Officer, and implement Best Management Practices (BMPs) for the control of stormwater, in accordance with requirements specified in the State Water Resources Control Board General Permit for Storm Water Discharges Associated with Construction Activities (NPDES Permit No. CAS000002). The Discharger will be deemed in compliance with this provision if another party constructing improvements on property owned by the Discharger, pursuant to an easement granted by the Discharger, has obtained coverage under the General Permit.

COMPLIANCE DATE: 30 days prior to construction

5. **Availability**: A copy of these waste discharge requirements shall be maintained by the Discharger and shall be made available by the Discharger to all employees or contractors performing work (maintenance, monitoring, repair, construction, etc.) at the landfill. [CWC Section 132631]

6. **Change In Ownership**: The Discharger must notify the Executive Officer in writing at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new Discharger. The notice must include a written agreement between the existing Discharger and the new Discharger containing a specific date for the transfer of this Order's responsibility and coverage between the current Discharger and the new Discharger. This

agreement shall include an acknowledgment of which Discharger is liable for violations up to the transfer date and which Discharger is liable from the transfer date on. [CWC Sections 13267 and 13263]

7. **Revision**: These waste discharge requirements are subject to review and revision by the Water Board. [CCR Section 13263]

8. **Termination**: Where a Discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the Water Board, it shall promptly submit such facts or information. [CWC Sections 13260 and 13267]

9. **Vested Rights**: This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect the Discharger from liability under Federal, State or local laws, nor do they create a vested right for the Discharger to continue the waste discharge. [CWC Section 13263(g)]

10. **Severability**: Provisions of these waste discharge requirements are severable. If any provisions of these requirements are found invalid, the remainder of these requirements shall not be affected. [CWC 9213]

11. **Operation and Maintenance**: The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this order. [CWC Section 13263(f)]

12. **Reporting of Hazardous Substance Release**: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the Discharger shall report such discharge to the Water Board by calling (510) 622-2300 during regular office hours (Monday through Friday, 8:00 to 5:00). A written report shall be filed with the Water Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

13. **Entry and Inspection**: The Discharger shall allow the Water Board, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

    a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this order;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this order;
c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this order or as otherwise authorized by the California Water Code, any substances or parameters at any location. [CWC Section 13267]

14. **Discharges To Navigable Waters**: Any person discharging or proposing to discharge to navigable waters from a point source (except for discharge of dredged or fill material subject to Section 404 of the Clean Water Act and discharge subject to a general NPDES permit) must file an NPDES permit application with the Water Board. [CCR Title 2 Section 223571]

15. **Endangerment of Health or the Environment**: The Discharger shall report any noncompliance that may endanger health or the environment. Any such information shall be provided orally to the Executive Officer, or an authorized representative, within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission to the Water Board shall also be provided within five days of the time a Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

16. **Document Distribution**: Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the following agencies:

    a. San Francisco Bay Water Board
    b. City of Benicia
    c. Solano County Department of Environmental Management
    d. California Integrated Waste Management Board

    The Executive Officer may modify this distribution list as needed.

17. **Duty to Comply**: The Discharger shall comply immediately, or as prescribed by the time schedule below, with all Prohibitions, Specifications and Provisions of this Order. All required submittals must be acceptable to the Executive Officer. The Discharger must also comply with all conditions of these waste discharge requirements. Violations may result in enforcement actions, including Water Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Water Board. (CWC Section 13261, 13263, 13265, 13268, 13300, 13301, 13304, 13340, 13350).

18. **Requests for Technical Reports**: All technical and monitoring reports required by this Order are requested pursuant to Section 13267 of the California Water Code. Failure to

submit reports in accordance with schedules established by this Order or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to Section 13268 of the California Water Code. Evidence relating to the Discharger's past discharges is located in the Water Board files.

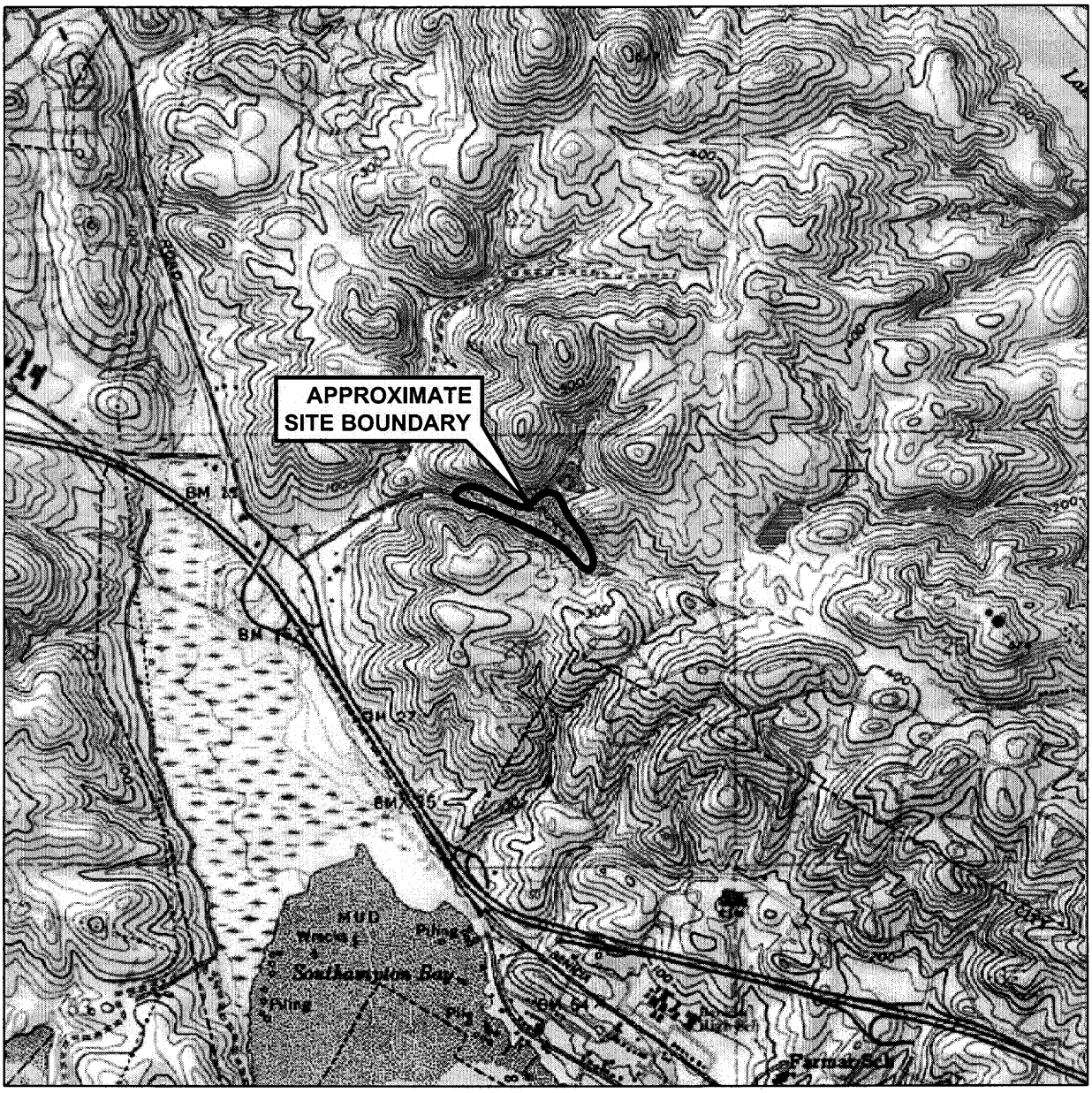
19. **Electronic Reporting Format**: In addition to print submittals, all reports submitted pursuant to this Order must be submitted as electronic files in PDF format. The Water Board has implemented a document imaging system, which is ultimately intended to reduce the need for printed report storage space and streamline the public file review process. Documents in the imaging system may be viewed, and print copies made, by the public, during file reviews conducted at the Water Board's office. PDF files can be created by converting the original electronic file format (e.g., Microsoft Word) and/or by scanning printed text, figures & tables. Data tables containing water level measurements, sample analytical results, coordinates, elevations, and other monitoring information shall also be provided electronically in Microsoft Excel® or similar spreadsheet format to provide an easy to review summary, and to facilitate data computations and/or plotting that Water Board staff may undertake during their review. Data tables submitted in electronic spreadsheet format will not be included in the case file for public review. All electronic files must be submitted on CD or diskette and included with the print report.

20. This Order supersedes and rescinds Order Nos. 78-003, 78-017, 78-039, 86-096, 95-081, and 95-227.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 19, 2004.

Bruce H. Wolfe
Executive Officer

Attachments:
Figure 1 - Vicinity Map
Figure 2 - Site Plan
Figure 3 - Groundwater Potentiometric Map
Self Monitoring Program (Part A and Part B)



1 MILE 3/4 1/2 1/4 0 1 MILE

SCALE 1 : 24,000

N

SOURCE:
United States Geological Survey
7.5 Minute Topographic Maps:
Benicia Quadrangle

VICINITY MAP

East Canyon Landfill
Benicia, California

TRC | **FIGURE 1**

LEGEND

- Landfill gas probe
- Landfill gas probe not currently monitored
- Leachate monitoring point
- Groundwater monitoring point
- Surface observation point (V=landfill; X=perimeter)
- Photographic observation point
- Permanent survey marker
- Surface–water sample location

N

SCALE (FEET)

0 500 1,000

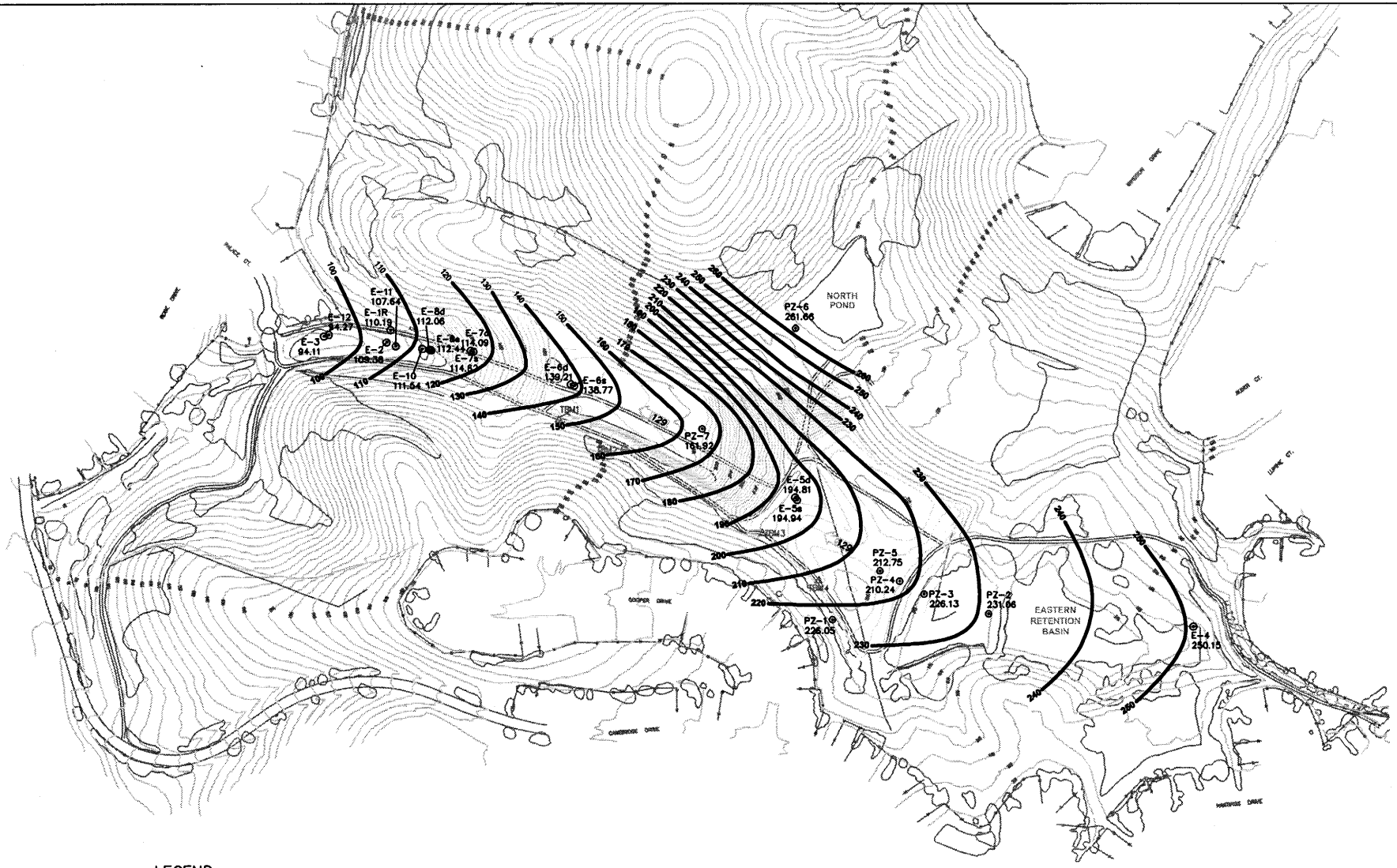
SOURCE: Topographic survey by Ronald Greenwell and Associates, October 23, 2003.

SITE PLAN

East Canyon Landfill
Benicia, California

TRC

FIGURE 2



LEGEND

⊙ Groundwater monitoring point measured on November 17, 2003

250.15 Groundwater elevation in feet above mean sea level

240 Groundwater elevation contour line

129 Approximate direction of groundwater flow and average groundwater velocity (feet/year) between wells E-1R and E-4, calculated from water levels measured on November 17, 2003

N

SCALE (FEET)

0 500 1,000

SOURCE: Topographic survey by Ronald Greenwell and Associates, October 23, 2003.

GROUNDWATER CONTOURS
November 17, 2003

East Canyon Landfill
Benicia, California

TRC

FIGURE 3

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

EAST CANYON HOLDINGS, LLC

EAST CANYON LANDFILL
BENICIA, SOLANO COUNTY

ORDER No. R2-2004-0029

CONSISTS OF

PART A

AND

PART B

PART A

A. AUTHORITY AND PURPOSE

For discharges of waste to land, water quality monitoring is required pursuant to the California Code of Regulations, Division 2, Title 27, Subdivision 1, Chapter 3, Subchapter 3, Sections 20380 through 20435. The principal purposes of a self-monitoring program (SMP) are: (1) to document compliance with waste discharge requirements and prohibitions established by the Water Board, (2) to facilitate self-policing by the waste Discharger in the prevention and abatement of pollution arising from the waste discharge, (3) to develop or assist in the development of effluent standards of performance, and toxicity standards, and (4) to assist the Discharger in complying with the requirements of Title 27.

B. MONITORING REQUIREMENTS

Monitoring refers to the measurement and sampling of environmental media, the making of standard observations in and around waste management units (WMUs), the inspection of containment and control facilities, and the monitoring of waste disposed in each WMU. Part B of this SMP indicates the specific types of monitoring required as well as the monitoring frequency and reporting schedule. The following defines the types of monitoring that may be required in Part B of this SMP.

Monitoring of Environmental Media

The Water Board may require monitoring of any of the following environmental media:

1. Groundwater
2. Surface water (streams, stormwater runoff, etc.)
3. Leachate
4. Landfill gas

Sample collection, storage, and analyses shall be performed according to the most recent version of EPA-approved methods or in accordance with an approved sampling and analysis plan. Water and waste analyses shall be performed by a California State approved laboratory for the required analyses. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Water Board.

All monitoring instruments and devices used to fulfill the prescribed SMP shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices.

Standard Observations

Standard observations refers to observations within the limits of each WMU, at their perimeter, and of the receiving waters beyond their limits. Standard observations include:

1. WMUs:

    a. Evidence of ponded water at any point on the WMU
    b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source
    c. Evidence of erosion and/or daylighted waste

2. Perimeter of WMUs:

    a. Evidence of liquid leaving or entering the WMU, estimated size of affected area and flow rate (show affected area on map)
    b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source
    c. Evidence of erosion and/or daylighted waste

3. Receiving Waters:

    a. Floating and suspended materials of waste origin: including their 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 form source
    d. Evidence of beneficial use: presence of water associated with wildlife
    e. Flow rate
    f. Weather conditions: wind direction and estimated velocity, total precipitation

Facilities Inspections

Facilities inspections refers to the inspection of all containment and control structures and devices associated with WMUs. Containment and control facilities may include the following:

1. Leachate Collection and Removal System(s)
2. Sedimentation Pond(s)
3. Leachate Collection Tank(s)
4. Perimeter diversion channels
5. Underdrain system.

Waste Monitoring

Waste monitoring includes recording the total volume (in cubic yards) and weight (in tons) of waste disposed in each WMU during each month, and the percentage of each waste type (e.g., residential, commercial, industrial, construction/demolition, etc.). Waste monitoring does not apply to closed WMUs.

C. REPORTING REQUIREMENTS

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Water Board's Resolution No.73-16. The monitoring frequency and reporting schedule are indicated in Part B of this SMP. Each monitoring report shall include the following information:

1. **Transmittal Letter**: A letter transmitting essential points shall be included in each monitoring report. The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall also certify the completion of all monitoring requirements. The letter shall be signed by the Discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

2. **Compliance Evaluation Summary**:

    a. A summary and certification of completion of all environmental media monitoring, standard observations, and facilities inspections
    b. A graphic presentation of the direction of groundwater flow under/around each waste management unit, based upon the past and present water level elevations and pertinent visual observations
    c. A graphic demonstration (e.g., piezometric surface contour maps) of hydraulic containment and/or separation from groundwater beneath and around the perimeter of waste management units where required
    d. The quantity and types of wastes disposed of during the past quarter, and the locations of the disposal operations, if applicable
    e. A description of the waste stream including the percentage of each waste type (e.g., residential, commercial, industrial, construction/demolition, etc.), if applicable
    f. Map(s) or aerial photograph(s) showing observation and monitoring station locations
    g. An evaluation of the effectiveness of the leachate monitoring/control facilities, including a summary of leachate management procedures, an evaluation of leachate buildup within each WMU, a summary of leachate volumes removed from the units, and a discussion of the leachate disposal methods and leachate containment capacity for each WMU
    h. The signature of the laboratory director whose name appears on the laboratory certification, indicating that he/she has supervised all analytical work in his/her laboratory

3. **Appendices:** Include the following information in appendices, unless the information is already contained in an approved Sampling and Analysis Plan. Print copies of the following information need not be included in the report if the information is submitted in electronic (e.g., PDF) format. The appendices need not include the actual laboratory analytical data sheets and QA/QC report summary, however, this information shall be provided upon request.

a. New boring and well logs
b. Method and time of water level measurements
c. Purging methods and results including the type of pump used, pump placement in the well, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity, calibration of the field equipment, pH, temperature, conductivity, and turbidity measurements, well recovery time, and method of disposing of the purge water
d. Sampling procedures, field and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other relevant observations
e. Documentation of laboratory results, analytical methods, detection limits, and Quality Assurance/Quality Control (QA/QC) procedures for the required sampling, including:

(1) Laboratory statements of results of analyses
(2) Descriptions of analytical methods used (note, if methods other than EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review and approval by the Executive Officer prior to use)
(3) Actual detection limits for each sample results (note, detection limits must be appropriate for the expected concentrations)
(4) Laboratory quality assurance/quality control (QA/QC) information and results including analytical methods, detection limits, recovery rates, explanations for low recovery rates (less than 80%), equipment and method blanks, spikes and surrogates, and QA/QC sample frequency

D. ANNUAL REPORTING

The Discharger shall submit an annual self-monitoring report to the Water Board covering the previous calendar year. The annual report must summarize all monitoring, investigation, and remedial activities that have occurred in the previous year. The annual report shall include the following information **for each monitoring event during the year** required pursuant to this self-monitoring program. If the annual report contains new monitoring results/data not previously presented in a report (e.g. 2nd semi-annual results, 4th quarter results, etc.), then the annual report shall also include the information required under Sections C.1, C.2, and C.3 of this self-monitoring program for the new results/data. Information in appendices may be presented in electronic format rather than print copy.

1. **Graphic Presentation**: Include site maps that are drawn to a scale that remains constant from reporting period to reporting period. These maps shall include the following information, if applicable:

a. Known or probable contaminant sources
b. Well locations
c. Groundwater elevation contours
d. Inferred groundwater flow direction(s)
e. Extent of phase-separated product (NAPL)
f. Extent of dissolved chemical constituents (e.g., isoconcentration maps)

g. Appropriate analytical results

Line or bar graphs are helpful to illustrate variations in groundwater elevations, phase-separated product thickness, and dissolved chemical concentrations with time. Geologic cross sections are required if new data is available and/or the previous interpretation of subsurface conditions has changed. When required, geologic cross sections shall include the following:

h. Vertical and lateral extent of contamination
i. Contaminant sources
j. Geologic structures
k. Soil lithology
l. Water table/piezometric surfaces
m. Sample locations
n. Sample analytical results
o. Subsurface utilities and any other potential natural or manmade conduits for contaminant migration

2. **Tabular Presentation**: Present all of the following data (if applicable to the site) in one or more tables to show a chronological history and allow quick and easy reference:

a. Well designations
b. Well location coordinates (latitude and longitude)
c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation)
d. Groundwater depths
e. Groundwater elevations
f. Horizontal groundwater gradients
g. Vertical groundwater gradients (including comparison wells from different zones)
h. Phase-separated product elevations
i. Phase-separated product thicknesses
j. Current analytical results (including analytical method and detection limits for each constituent)
k. Historical analytical results (including the past five years unless otherwise requested)
l. Measurement dates
m. Groundwater extraction, including:
   (1) Average daily extraction rate
   (2) Total volume extracted for monitoring period
   (3) Cumulative total volume extracted since system inception
n. Contaminant mass removal, including:
   (1) Average daily removal rate
   (2) Total mass removed for monitoring period
   (3) Cumulative total mass removed since system inception
o. Leachate volumes removed and disposed of, including leachate buildup in disposal units

3. **Discussion**: Provide a discussion of the field and laboratory results that includes the following information:

   a. Data Interpretations
   b. Conclusions
   c. Recommendations
   d. Newly implemented or planned investigations & remedial measures
   e. Data anomalies
   f. Variations from protocols
   g. Conditions of wells
   h. Effectiveness of leachate monitoring and control facilities

E. CONTINGENCY REPORTING

1. The Discharger shall report by telephone to the Water Board, any discharge from the disposal area immediately after it is discovered. The Discharger(s) shall submit a written report with the Water Board within five days of discovery of any discharge. The written report shall contain the following information:

   a. a map showing the location(s) of discharge
   b. approximate flow rate
   c. nature of effects (e.g., all pertinent observations and analyses)
   d. corrective measures underway or proposed

2. The Discharger shall submit a written report to the Water Board within seven days of determining that a statistically significant difference occurred between a self-monitoring sample set and an approved Water Quality Protection Standard (WQPS). The written report shall indicate what WQPS(s) have been exceeded. The Discharger shall immediately resample at the compliance point(s) where this difference has been found.

3. If re-sampling and analysis confirms the earlier finding of a statistically significant difference between self-monitoring results and WQPS(s) the Discharger shall, upon determination by the Executive Officer, submit to the Water Board an amended Report of Waste Discharge as specified in Title 27, Section 20420 for establishment of an Evaluation Monitoring program meeting the requirements of Title 27, Section 20425.

F. ELECTRONIC REPORTING FORMAT

In addition to print submittals, all reports submitted pursuant to this self-monitoring program must be submitted as electronic files in PDF format. The Water Board has implemented a document imaging system, which is ultimately intended to reduce the need for printed report storage space and streamline the public file review process. Documents in the imaging system may be viewed, and print copies made, by the public, during file reviews conducted at the Water Board's office. PDF files can be created by converting the original electronic file format (e.g., Microsoft Word) and/or by scanning printed text, figures & tables.

Monitoring results shall also be provided electronically in Microsoft Excel® or similar spreadsheet format to provide an easy to review chronological summary of monitoring data, and to facilitate data computations and/or plotting that Water Board staff may undertake during their review. Data tables submitted in electronic spreadsheet format will not be included in the case file for public review. Electronic tables submitted in spreadsheet format shall include the following information, if applicable:

1. Well designations
2. Well location coordinates (latitude and longitude)
3. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation)
4. Groundwater depths (water levels)
5. Groundwater elevations
6. Phase-separated product elevations
7. Phase-separated product thicknesses
8. Current analytical results by constituent of concern (including detection limits for each constituent)
9. Historical analytical results (including the past five years unless otherwise requested)
10. Measurement dates

All electronic files, whether in PDF or spreadsheet format, shall be submitted on CD or diskette and included with the print report.

G. MAINTENANCE OF WRITTEN RECORDS

Information required pursuant to this Self-Monitoring Program shall be maintained by the Discharger for at least five years. The five-year period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Water Board.

PART B

A. MONITORING LOCATIONS AND FREQUENCY

1. Groundwater, Surface Water, Leachate, and Landfill Gas

   Environmental media shall be monitored at locations indicated on Figure B-1 and in accordance with Table B-1.

2. Standard Observations

   Standard observations shall be made monthly at locations (see Figure 2) V-1 through V-8 (WMU), X-1 through X-15 (perimeter), EPUP-1 and NPUP-2 (receiving waters, when present), and CRD-3 and EC-SD (receiving waters, when present).

3. Facilities Inspections

   Landfill facilities (leachate discharge system, surface water runon/runoff diversionary structures, and landfill cover system, including ponding, erosion, and surface drainage) shall be inspected monthly. Monitoring systems (e.g., wellhead condition, locks) shall be inspected at least quarterly. All other landfill facilities shall be inspected at least twice per year.

4. Waste Monitoring

   Not Applicable.

B. REPORTING SCHEDULE

The Discharger shall submit self-monitoring reports per the schedule indicated in Table B-2. Reports due at the same time may be combined into one report for convenience, as long as monitoring activities and results pertaining to each monitoring period are clearly distinguishable. All monitoring reports shall be submitted to the Water Board in accordance with the schedule indicated in Table B-2.

Table B-2 Reports and Due Dates

Report Type	Reporting Frequency	Report Due Dates
Groundwater, Surface Water, Leachate, & Landfill Gas Monitoring	Semi-Annually	Aug 15, Feb. 15
Standard Observations & Facilities Inspections	Semi-Annually	Aug 15, Feb. 15

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Water Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Water Board's Order No. R2-2004-0029.

2. Is effective on the date shown below.

3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.

Bruce H. Wolfe
Executive Officer

Date Ordered: May 19, 2004

Attachments: Table B-1
Figure B-1

Table B-1
East Canyon Landfill, Self Monitoring Program (SMP) for Order No. R2-2004-0029

Well ID	Well Construction Details					Parameters and Monitoring Frequency								
	Date Installed	Date Destroyed	Total Depth	Screen Interval	Strata Screened	Head	VOCs	SVOCs	TPH-d [3]	Metals [4]	PCBs	GC [6]	Methane [5]	COD
Groundwater														
E-1	Jun-86	Fall-86	24.5	14.5 - 24.5	fractured bedrock									
E-1R	Jan-87	NA	25	14 - 24	fractured bedrock	Q	S	A	S	S	2A	S		
E-2	Jan-87	NA	38	18 - 38	fractured bedrock	Q	S	A	S	S	2A	S		
E-3	Jan-87	NA	40	20 - 40	fractured bedrock	Q	S	A	S	S	2A	S		
E-4 [1]	Jan-87	NA	25	14.5 - 24.5	fractured bedrock	Q	S	A	S	S	2A	S		
E-5s	Oct-95	NA	70	64 - 69	alluvium	Q	A	2A	A	A		A		
E-5d	Oct-95	NA	83	72 - 81	fractured bedrock	Q	A	2A	A	A		A		
E-6s	Oct-95	NA	69	59 - 68	alluvium	Q	A	2A	A	A		A		
E-6d	Oct-95	NA	78	68.5 - 77.5	fractured bedrock	Q	A	2A	A	A		A		
E-7s	Oct-95	NA	43	27 - 41	alluvium	Q	A	2A	A	A		A		
E-7d	Oct-95	NA	53	43 - 52	fractured bedrock	Q	A	2A	A	A		A		
E-8s	Oct-95	NA	27	22 - 27	alluvium	Q	A	2A	A	A		A		
E-8d	Oct-95	NA	39	29 - 39	fractured bedrock	Q	A	2A	A	A		A		
E-10	Oct-97	NA	27	21 - 26	alluvium	Q	S	A	S	S	2A	S		
E-11	Oct-98	NA	9.5	4.5 - 9.5	alluvium	Q	S	A	S	S	2A	S		
E-12	Oct-98	NA	14	9.5 - 14	alluvium	Q	S	A	S	S	2A	S		
PZ-1	Dec-98	NA	--	--	--	Q								
PZ-2	Dec-98	NA	--	--	--	Q								
PZ-3	Dec-98	NA	--	--	--	Q								
PZ-4	Dec-98	NA	--	--	--	Q								
PZ-5	Dec-98	NA	--	--	--	Q								
PZ-6	Dec-98	NA	--	--	--	Q								
PZ-7	Dec-98	NA	--	--	--	Q								
Leachate														
L1 [2]	--	NA	--	--	--		S	A	S	S	A	SA-2,4		
GR-1	1984	Spring-85	56	48 - 56	refuse									
GR-1R	Jan-87	Oct-95	58	17 - 57	refuse									
GR-2	Mar-85	Oct-95	68	56 - 68	refuse									
GR-2R	Apr-87	NA	55	51 - 55	refuse	Q	A	2A	A	A	2A	A-3		
GR-3	Apr-87	NA	40	36 - 40	refuse	Q								
GR-4	Apr-87	NA	45	41 - 45	refuse	Q								
GR-5	Apr-87	Oct-95	35	31 - 35	refuse									
GR-6	Apr-87	NA	21.5	9.5 - 21.5	refuse	Q								
GR-7	Apr-87	NA	30	20 - 30	refuse	Q	S	2A	S	S	2A	SA		
GR-8	Oct-95	NA	59.5	33 - 58	refuse	Q	S	2A	S	S	2A	SA		
GR-9	Oct-95	NA	46.5	22 - 42	refuse	Q								
GR-10	Oct-95	NA	58.5	32 - 57	refuse	Q	S	2A	S	S	2A	SA		
Surface Water														
EPUP-1 [1]	NA	NA	NA	NA	NA		A		A	A		A		A
NPUP-2 [1]	NA	NA	NA	NA	NA		A		A	A		A		A
CRD-3	NA	NA	NA	NA	NA		A		A	A		A		A
EC-SD	NA	NA	NA	NA	NA		A		A	A		A		A

Table B-1
East Canyon Landfill, Self Monitoring Program (SMP) for Order No. R2-2004-0029

Well ID	Well Construction Details					Parameters and Monitoring Frequency								
	Date Installed	Date Destroyed	Total Depth	Screen Interval	Strata Screened	Head	VOCs	SVOCs	TPH-d [3]	Metals [4]	PCBs	GC [6]	Methane [5]	COD
Landfill Gas														
MP1	--	NA	--	NA	--								Q	
MP3	--	NA	--	NA	--								Q	
MP4	--	NA	--	NA	--								Q	
MP5R	--	NA	--	NA	--								Q	
MP6	--	NA	--	NA	--								Q	
MP7	--	NA	--	NA	--								Q	
MP8	--	NA	--	NA	--								Q	
MP11	--	NA	--	NA	--								Q	
MP14	--	NA	--	NA	--								Q	
MP15	--	NA	--	NA	--								Q	
MP14	--	NA	--	NA	--								Q	
MP15	--	NA	--	NA	--								Q	
MP16	--	NA	--	NA	--								Q	
P2'	--	NA	--	NA	--								Q	
P4'	--	NA	--	NA	--								Q	
P6'	--	NA	--	NA	--								Q	
P7'	--	NA	--	NA	--								Q	
P8'	--	NA	--	NA	--								Q	
P9'	--	NA	--	NA	--								Q	
P10'	--	NA	--	NA	--								Q	
P11'	--	NA	--	NA	--								Q	
P14'	--	NA	--	NA	--								Q	

Notes:

(1) Background well or location

(2) Leachate collection system discharge location

(3) TPH-d shall be analyzed with a silica gel cleanup preparation.

(4) Metals to include As, Ba, Cd, total Cr, Cu, Fe, Pb, Hg, Ni, Se, Zn

(5) Methane to be measured as a percent of its lower explosive limit (LEL) by a combustible gas indicator or equivalent. Any well exceeding 25 percent LEL shall be sampled and analyzed for VOCs, C_1 to C_6 hydrocarbons, fixed gases (O_2, N_2, CO, CO_2), hydrogen sulfide, and hydrogen cyanide

(6) GC – general chemistry parameters to include chloride, nitrate-nitrite nitrogen, total Kjeldahl nitrogen, total dissolved solids, temperature (field), pH (field), and electrical conductivity (field)

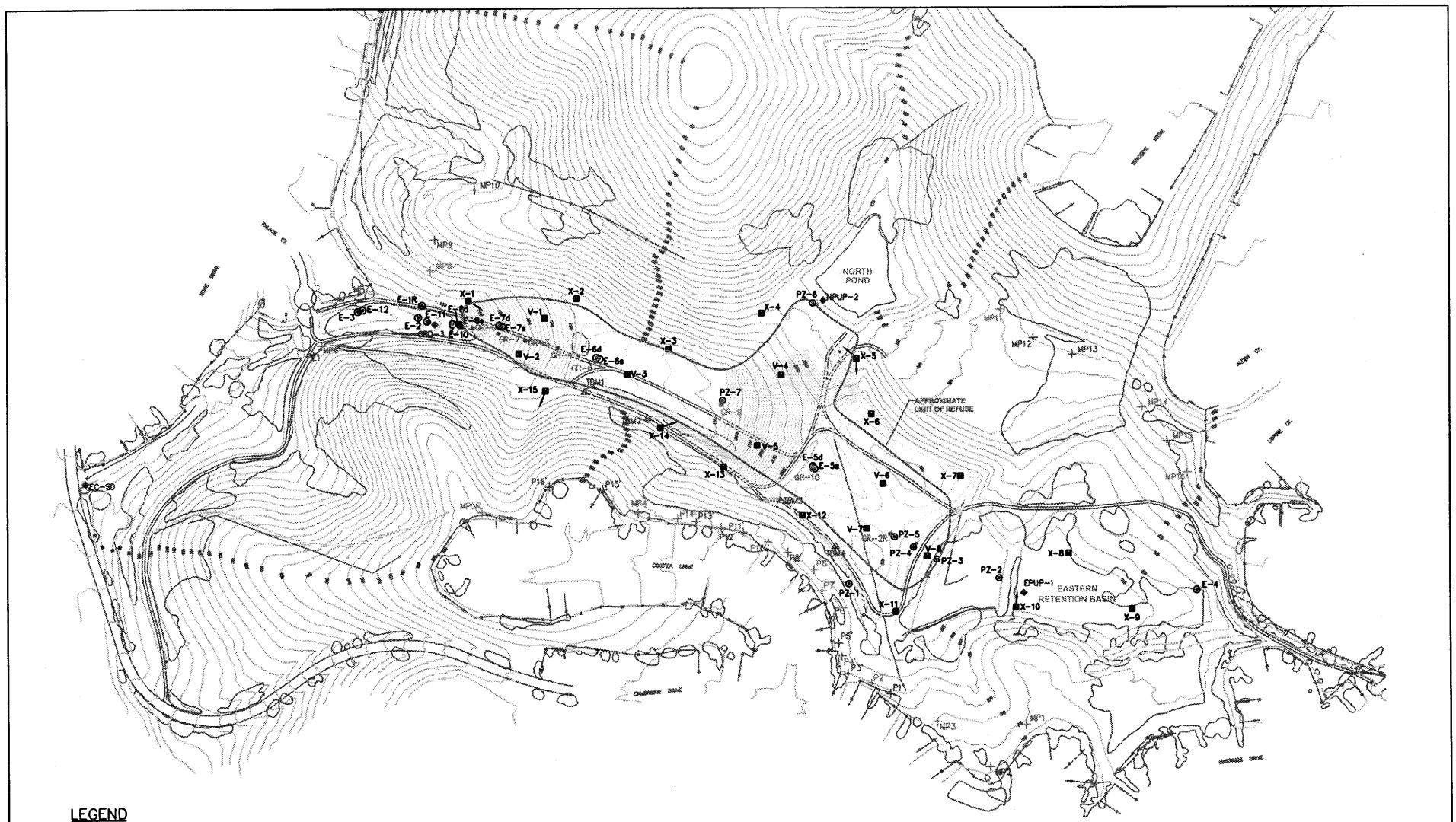
NA = Not Applicable

-- = No Data

blank = no sampling required

Q – quarterly
S – semiannually
A – annually
2A - biennially

VOCs – volatile organic compounds
SVOCs – semi-volatile organic compounds
TPH-d – total petroleum hydrocarbons as diesel
PCBs – polychlorinated biphenyls
COD – chemical oxygen demand



LEGEND

- Landfill gas probe
- Landfill gas probe not currently monitored
- Leachate monitoring point
- Groundwater monitoring point
- Surface observation point (V=landfill; X=perimeter)
- Photographic observation point
- Permanent survey marker
- Surface–water sample location

N

SCALE (FEET)

0 500 1,000

SOURCE: Topographic survey by Ronald Greenwell and Associates, October 23, 2003.

SITE PLAN

East Canyon Landfill
Benicia, California

TRC

FIGURE B-1