

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0106
WASTE DISCHARGE REQUIREMENTS
FOR CLEAN CLOSURE OF
FOLSOM CORPORATION YARD LANDFILL
CITY OF FOLSOM
CLASS III LANDFILL
SACRAMENTO COUNTY

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

1. The City of Folsom (hereafter referred to as "Discharger") owns and operates the City of Folsom Corporation Yard Landfill, a 3.2-acre closed landfill on Leidesdorff Street near Lake Natoma in the City of Folsom, as shown in Attachment "A", which is incorporated herein and made part of this Order. The landfill is within the City's 18-acre corporation yard site in Section 35, T10N, R7E, MDB&M. The assessor's parcel numbers for the site are 070-0031-002, 070-0032-001, 070-0032-005, 070-0033-001, 070-0033-002, 070-0033-003, 070-0034-001, 070-0034-002, 070-0041-001, and 070-0041-003.
2. The landfill operated from 1974 until 1987, accepting street cleaning and other wastes from City owned and/or operated facilities. While the facility was not open to the public, some unauthorized public dumping occurred immediately south of the main landfill in a 1.1-acre area hereinafter referred to as the "Uncontrolled Fill Area" (UFA). The landfill stopped accepting wastes in 1987 and in 1996 was closed (i.e. graded and clay capped) in accordance with Title 23 California Code of Regulations, Division 3, Chapter 15 (now Title 27 California Code of Regulations, Division 2 (Title 27) regulations. Since 1996, the Discharger has been performing post-closure monitoring and maintenance of the landfill under previous closure Waste Discharge Requirements (WDRs) Order No. 95-246.
3. Historical monitoring data for the site shows impacts to shallow groundwater from the landfill consisting of elevated inorganic salts and dissolved metals (see Finding 35). On 8 May 2008, the Discharger submitted a revised Report of Waste Discharge (RWD) proposing to clean close the landfill as a corrective action measure to address these impacts. On 19 June 2008, the Discharger submitted the construction bid package for the project, including plans and specifications, as an amendment to the RWD. These revised WDRs include updated findings that describe the Discharger's clean closure plan and prescribe requirements for clean closure of the landfill as a corrective action measure.
4. The landfill facilities include the landfill, uncontrolled fill area, access road/parking area, groundwater monitoring wells, gas monitoring wells, drainage facilities, and perimeter fence, as shown in Attachment "B", which is incorporated herein and made part of this Order.

5. The facility is not subject to federal municipal solid waste landfill regulations (Title 40, Code of Federal Regulations, Part 258, or "Subtitle D") because it stopped accepting wastes before the effective date of those regulations, 9 October 1991.

WASTE AND UNIT CLASSIFICATION

6. Wastes discharged to the landfill included "inert" and "nonhazardous" solid wastes as defined under 27 CCR Sections 20230 and 20220, respectively. The landfill was not authorized to accept hazardous or liquid wastes.
7. Historical records indicate that the main landfill accepted about 2.4 tons per day (10 cubic yards per day) of wastes, including the following:
 - Construction and demolition (C&D) debris (e.g., soil, asphalt, concrete, wood, and scrap metal);
 - Green wastes
 - Street cleaning wastes (e.g., glass, paper and plastic);
 - Residual wastes from garbage trucks (i.e., household waste)

After being discharged to the landfill, the wastes were typically compacted and covered with other landfill wastes, such as soil or asphalt.

8. Geotechnical investigations conducted by the discharger in 2000, 2006, and 2008 confirmed historical information regarding the types of wastes discharged to the landfill and indicated that the main landfill contains primarily of C&D and green wastes. Primarily household wastes were found in the UFA. About 42,000 cubic yards of waste are estimated to be in place in the main landfill and about 11,000 cubic yards in the UFA.
9. Under 27 CCR Section 20080(d), the main landfill is an existing Class III waste management unit (WMU) and the UFA is an existing unclassified WMU. The landfill is unlined and does not have a leachate collection and recovery system.

SITE DESCRIPTION

10. The site is within the American River corridor along the eastern side of Lake Natoma, about 3.3 miles downstream of the Folsom Dam and 2.6 miles upstream of the Nimbus Dam. The site is near the site of historic Negro Bar, a former gold rush era boomtown, and much of the area is built on dredge tailings from historical mining activities.
11. Within the river corridor, the topography includes beach, riverbank and terrace areas. Outside of the river corridor, the topography generally consists of rolling foothill terrain interrupted in areas by uplifted, exposed bedrock. Site elevations range from about 166 feet above mean sea level (MSL) at the NE end of the landfill to about 145 feet MSL along the SW site perimeter along the riverbank.

12. Land uses proximate to the site include residential development to the south and east; state parkland to the SW and NW (on the other side of Lake Natoma); a cemetery (adjacent to the private residences to the south); commercial development (i.e. to east on edge of downtown); and industrial development (i.e. City corporation yard to NE).
13. Based on a 2008 Department of Water Resources (DWR) well survey, there are no known domestic, municipal, industrial or agricultural supply wells within a one-mile radius of the site. Two historical supply wells were identified about 2/3 of a mile southeast of the site, but could not be located and are believed to have been abandoned. Residences and businesses in the landfill vicinity are connected to municipal water supplied by the City of Folsom. All City drinking water comes from the Folsom reservoir.
14. The site is not within the 100-year floodplain.
15. Surface drainage is to Lake Natoma, a part of the American River, tributary to the Sacramento River. The water elevation in lake Natoma is typically about 126 feet MSL.
16. The 100-year, 24-hour precipitation event is 4.0 inches, as determined from Rainfall Depth Duration Frequency data provided by the State Department of Water Resources for the Represa Station about three miles northeast of the facility. The average annual rainfall at the site is about 23 inches. Under the MRP of this Order, a storm event is considered "significant" (triggering facility monitoring) if it produces 1.5 inches or more of precipitation within a 24-hour period, as measured at the Represa Station.
17. MRP No. R5-2008-0106, Section F.3 requires that the Discharger inspect remaining portions of the landfill and associated facilities (i.e., those not yet clean closed) within seven days following a "significant storm event", and implement necessary repairs.
18. The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference, plans and policies adopted by the State Water Resources Control Board.
19. The beneficial uses of the American River from Folsom Dam to the Sacramento River are municipal and domestic supply; agricultural supply; industrial service supply; hydropower generation; water contact recreation, non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction and/or early development; and wildlife habitat.

20. The beneficial uses of the ground water are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply as designated in The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition.

GEOLOGY

21. The regional geology represents a transition between Cretaceous to Recent Age alluvial deposits of the American River flood plain and Jurassic Age metamorphic rocks of the Sierra Nevada foothills. As such, the regional geology is characterized by dissected alluvial uplands and exposed, uplifted bedrock. Alluvial deposits thin out and disappear within about a mile east of the site.
22. There are no known Holocene faults within 1000 feet of the facility. The closest active fault is in the Bear Mountains fault zone, the westernmost of the four major faults in the Sierra foothills (Melones, Sonora and Calaveras-Shoo being the other three), about 5 miles east of the site. Recorded magnitudes of seismic events along this fault zone range up to 5.8 on the Richter scale. The peak bedrock acceleration is estimated to be 0.2g to 0.3g based on a USGS probabilistic map.
23. Dredge tailings from historical mining activities underlie the site, as shown by monitoring well boring logs. The tailings layer is about 10 feet thick under the landfill and about 15 to 30 feet in other areas of the site. The material represents a mixture of disturbed river alluvium, Quaternary Laguna and, to a lesser degree, Tertiary Mehrten deposits, including unconsolidated cobble, gravel, sand, clays and silt. The tailings layer terminates along the eastern side of the landfill at the interface with undisturbed Laguna deposits, which form a hill on the eastern side of the site. The Laguna deposits typically consist of discontinuous, poorly bedded alluvium (i.e., sand, silt, clay and gravel) where not disturbed by historical dredging activities. Maximum depths of the Laguna at the site range from about 40 to 90 feet bgs.
24. The Mehrten formation directly underlies the tailings layer in areas where the Laguna was dredged, including the landfill area. The Mehrten consists of clay, mudflow, and other low permeability deposits. Boring logs for onsite wells indicate that the Mehrten is slightly mounded (138 feet MSL) on the northeastern side of the landfill and slopes radially toward the northwest, west and southwest landfill perimeters (125 feet MSL). In the landfill area, depths to the Mehrten range from about 12 to 30 feet bgs, while estimated depths to underlying bedrock range from about 150 to 170 feet bgs.

GROUNDWATER HYDROLOGY

Upper Water Bearing Zone

25. Based on boring logs for monitoring wells at the site, the upper water-bearing zone (UWBZ) is in the dredge tailings layer, perched on the underlying Mehrten formation. The site conceptual model developed from boring logs at the site indicates that the

UWBZ terminates with the dredge tailings along the eastern edge of the landfill at the interface with the Laguna formation, which is unsaturated east of the landfill.

26. Due to the limited easterly extent of the UWBZ, the Discharger has not been able to sufficiently space wells at the site to reliably triangulate the groundwater flow direction using groundwater elevation data (see Finding 34). The site conceptual model is therefore considered to be a more reliable indicator of the direction of shallow groundwater flow at the site than is groundwater elevation data. The model indicates that shallow groundwater is fed by surface infiltration and possible infiltration from the Laguna, and follows the topography of the underlying Mehrten toward the west, southwest and northwest (see Finding 23). The depth to shallow groundwater in the landfill area generally ranges from about 20 to 26 feet bgs.

Lower Water Bearing Zone

27. The lower water-bearing zone (LWBZ) is in the upper Mehrten formation directly underlying the dredge tailings/Laguna layers. Two LWBZ monitoring wells (FCYs-3 and 7) have been installed at the site, both along the northeast perimeter of the landfill. Piezometric groundwater elevations measured in these wells are typically up to 10 feet higher (e.g., 139 feet MSL) than UWBZ wells (e.g., 129 feet MSL), indicating that, at least on the eastern side of the site, the LWBZ may have only limited hydraulic communication with the UWBZ. No LWBZ monitoring wells have been installed on the western side of the site to measure the direction of groundwater flow, but based on the site conceptual model, it appears to be toward the west.

LANDFILL DESIGN

28. The main landfill was constructed in the City's former wastewater treatment plant ponds, which were decommissioned in 1973. There were three ponds, including a circular aeration basin in the northern part of the landfill and, immediately to the south, two large settling lagoons. The lagoons were separated by a central access berm that also formed their interior sides. The aeration basin was 100 feet in diameter and 14 feet deep, representing about 1/4 of the landfill area and 2/5 of the landfill volume. Each settling lagoon was about 90 feet wide, 625 feet long, and up to seven feet deep at the deepest (north) end, representing about 3/4 of the landfill area and 3/5 of the landfill volume. The interior side slopes of the landfill are the same as those of the sides of the former ponds, 3H:1V.
29. Each pond was lined with one foot of clay underlain by plastic, and the bottoms of the settling lagoons sloped from south to north, where each lagoon had a standpipe to regulate liquid level. Reports on file indicate that the clay liners of the ponds were breached in several places during landfill construction, and field borings have not been able to confirm the presence of the pond liner at all locations. Berms separating the ponds may have been removed during landfill construction. As such the landfill is considered unlined and does not have a leachate collection and

recovery system. All three ponds were filled with waste as a single, contiguous landfill unit.

LANDFILL CLOSURE

30. Section 20950(a)(2)(A) of Title 27 prescribes the performance standard applicable to classified units closed as a landfill as follows:

“ . . .the goal of closure, including but not limited to the installation of a final cover, is to minimize the infiltration of water into the waste, thereby minimizing the production of leachate and gas. For such Units, after closure, the final cover constitutes the Unit's principal waste containment feature;”

31. In 1996, the Discharger closed the landfill in accordance with an approved Final Closure Plan submitted under previous WDRs (9 December 1993 *Final Amendment to Final Closure Plan and to Letter of Modification*). A Title 27 prescriptive cover was installed as follows:

- a. Foundation Layer – 2 feet (90% compaction of upper foot)
- b. Low Hydraulic Conductivity (LHC) Layer – 1 foot of compacted clay ($k \leq 1 \times 10^{-6}$ cm/sec)
- c. Erosion Resistant Layer
 - Upper deck (1.2 acres): 8 inches of aggregate base covered with 2 inches of asphalt concrete
 - Lower deck and slopes (2.6 acres): 1 foot of clean vegetative cover soil seeded with native grass mix

Interim cover soil was used for the foundation layer and imported clay for the low permeability layer. Asphalt was applied in lieu of vegetative cover soil over the landfill deck area to create an employee parking area for the corporation yard. The closure work was documented in the October 1996 report *Final Report On Construction Quality Assurance, City of Folsom Corporation Yard Landfill Closure*, prepared by Golder Construction Services, Inc.

32. Precipitation and drainage controls installed as part of closure included grading the landfill cover (i.e., upper and lower decks) at about a 2 percent slope for sheet flow drainage to the western site perimeter. An unlined diversionary swale was also constructed along the eastern landfill perimeter plumbed to an outfall in the southwest corner of the site. All such controls, including ditches, drop inlets and culverts, were designed to accommodate a 24-hour, 100-year storm event.
33. Six landfill gas (LFG) monitoring wells were installed as part of closure in accordance with solid waste regulations, including five along the landfill perimeter (Gas-1, 2, 3, 4 and 6) and one (Gas-5) within the landfill footprint along the southern edge of the upper deck. Gas monitoring results since 1996 have indicated methane concentrations less than 1 percent in most wells. The highest methane concentrations (1.3 percent average, 6.1 percent maximum) at the site have been detected in well Gas-2 along the SE perimeter of the landfill.

GROUNDWATER MONITORING

34. The groundwater monitoring system for the landfill includes six upper zone wells (FCYs-2, 4, 5, 6, 8 and 9) and two lower zone wells (FCYs-3 and 7). An additional shallow well (FCY-1) was typically dry and was abandoned in 2002. Because perched zone flow beneath the landfill is radial, all of the shallow zone wells are downgradient (i.e., to the west, southwest or northwest). Further, due to the limited easterly extent of the shallow zone, the Discharger was not able to establish an upper zone well upgradient of the landfill for background monitoring purposes. The Discharger demonstrated the sufficiency of downgradient well FCY-9 for background monitoring per Section 20415(b)(2), however, and developed concentration limits using historical monitoring data from this well.
35. Historical groundwater monitoring data for the site shows spatial variability and elevated concentrations of certain inorganic constituents indicative of impacts from the landfill, as follows:

Constituent	Concentration^{1,2}			
		Upper Zone		Lower Zone
<u>General Minerals</u>	FCY-9 South	FCY-2 West	FCY-8 NW	FCY-3 NE
Specific Conductance (µmhos/cm)	262	705	912	996
Total Dissolved Solids	197	457	634	614
Bicarbonate Alkalinity	84	93	327	238
Nitrate	21	16	11	2
Sulfate	27	192	179	255
<u>Dissolved Metals (µg/L)</u>				
Arsenic	2	2	20	5
Iron	53	2,240	14,000	109

1. Concentrations in mg/, except where noted.
 2. Historical average concentrations from well installation through December 2007.

36. A limited number of volatile organic compounds (VOCs) have also been intermittently detected in monitoring wells at the site, including methyl tert-butyl ether (MTBE, up to 20 µg/L) and, less frequently, low to trace concentrations of ethylbenzene, toluene, xylenes and trichlorobenzene. Semiannual monitoring data for the past 10 years generally indicates declining concentrations (or less frequent detections) of these constituents, with MTBE reduced to non-detect levels in most wells.

37. Groundwater impacts at the site may be attributable to one or more of the following factors:
- a. Leachate infiltration - landfill unlined and pond bottom perforated
 - b. Reducing effects of landfill on groundwater geochemistry – elevated natural iron and arsenic; depressed nitrate
 - c. Landfill gas effects - elevated bicarbonate
 - d. Historical sources - former wastewater treatment plant, dredge tailings, other sources
 - e. Combined effects of a, b, c, and/or d.

38. Increasing concentrations of inorganic constituents in the groundwater from south to the north at the landfill (i.e., from FCY-9 to FCYs-3 and 8), except for nitrate, may be attributable to one or more of the following factors:
- a. Waste column thicker in northern part of landfill
 - b. Less groundwater separation in northern part of landfill
 - c. More leachate infiltration in northern part of landfill
 - d. LFG under cap in northern part of landfill
 - e. Reducing zone increases to north
 - f. Natural spatial variability

Decreasing nitrate concentrations from south to north are consistent with Factor (e) above.

39. Time series plots of the monitoring data for inorganic constituents do not show any clear rising or falling trends in concentrations since landfill closure in 1996, except for slightly increasing general minerals in offsite well FCY-4 and slightly decreasing general minerals in wells FCY-5 and 6. Concentrations detected in the most impacted well, FCY-8, have remained relatively constant since the well was installed in 2002.
40. Concentrations of landfill COCs detected in groundwater at the site exceed groundwater quality objectives as follows:

Constituent	WQ Objective	Concentration¹ (mg/L, except where noted)		
		WQ Limit	Upper Zone FCY-8	Lower Zone FCY-3
TDS	Chemical	450 ²		
	Constituents	500 ³	610	610
	Taste & Odor	500 ³		
Sulfate	Chemical	250 ³	No exceedance	255
	Constituents			

Constituent	WQ Objective	Concentration ¹ (mg/L, except where noted)		
		WQ Limit	Upper Zone FCY-8	Lower Zone FCY-3
Specific Conductance (µmhos/cm)	Chemical	700 ²		
	Constituents	900 ³	930	910
	Taste & Odor	900 ³		
<u>Dissolved Metals (µg/L)</u>				
Arsenic	Toxicity	0.004 ⁴		
	Chemical Constituents	10 ⁵	21	4
Iron	Chemical	300 ³		
	Constituents	5,000 ²	18,000	No exceedances
	Taste & Odor	300 ³		

1. Based on December 2007 monitoring results.
2. Agricultural Goal
3. California Secondary Maximum Contaminant Level (MCL)
4. California Public Health Goal
5. USEPA Primary MCL

CORRECTIVE ACTION

41. Section 20430 of Title 27 requires that the Discharger establish and implement a corrective action program (CAP) in response to confirmation of a release from the unit. The CAP goals are to remediate the release and achieve compliance with the Water Quality Protection Standards (WQPS). The Discharger has proposed landfill clean closure under Title 27 as a further corrective action measure to address groundwater impacts at the site.
42. Section 20950(a)(2)(B) prescribes the performance standards for clean closure as follows:

“ . . . for Units that are clean-closed, the goal of closure is to physically remove all waste and contaminated materials from the Unit and from its underlying and surrounding environs, such that the waste in the Unit no longer poses a threat to water quality. Successful completion of clean-closure eliminates the need for any post-closure maintenance period and removes the Unit from being subject to the SWRCB-promulgated requirements of this subdivision . . . ”
43. Section 21090(f) specifies that a discharger proposing clean closure submit a Clean Closure Plan (CCP), as follows

“ . . . [A] discharger proposing to clean-close a landfill shall submit a clean-closure plan meeting the requirements of this subsection. [Note: see also CIWMB’s additional landfill clean-closure requirements under §21810.] . . . The purpose

of a clean-closure plan is to propose a series of actions, including an accurate estimate of the cost of each such action, that will meet the requirements of this paragraph. . . . [T]he discharger shall have successfully clean-closed a landfill only if:

- (1) all waste materials, contaminated components of the containment system, and affected geologic materials — including soils and rock beneath and surrounding the Unit, and ground water polluted by a release from the Unit — are either removed and discharged to an appropriate Unit or treated to the extent that the RWQCB finds they no longer pose a threat to water quality;*
- (2) and all remaining containment features are inspected for contamination and, if contaminated, discharged in accordance with ¶(f)(1).”*

44. The Discharger’s CCP includes the following steps:

- a. Site preparation (e.g., equipment, roads, staging areas);
- b. Abandonment of wells (i.e., all gas wells and MW-9);
- c. Phased excavation;
- d. Waste stockpiling and characterization;
- e. Offsite disposal/recycling;
- f. Confirmation soil sampling;
- g. Backfilling and grading;
- h. Site reclamation
- i. Postclosure corrective action/groundwater monitoring.

45. Site preparation will include establishing project support, staging, and operations stockpile areas (see Attachment B). These areas will be located on a paved parking lot immediately north of the landfill, and, during Phase 1 of the project (see Finding 48), on the asphalt-cover over the northern portion of the landfill. After excavation and backfilling of the Phase 1 area, all project support operations will be moved to the southern part of the site so as to allow for excavation to proceed northward to the Phase 2 and 3 areas.

46. An existing paved road through the corporation yard to Leidesdorff Street will be used for site ingress and egress, while temporary haul roads will be established onsite for excavation, backfilling, and other project construction activities. Haul routes will change based on construction needs, but will generally be in areas that have not yet been remediated. Heavy equipment used in project construction activities will include excavators, backhoes, skid steer loaders, bulldozers, graders and rollers.

47. All monitoring wells within the excavation area, including all six gas wells and groundwater monitoring well FCY-9 will be abandoned prior to excavation activities (b). Since well FCY-9 is needed as a background monitoring well, MRP No.

R5-2008-0106 requires that this well be replaced after completion of excavation and backfilling of the UFA area.

Excavation Plan

48. The landfill, including UFA, will be excavated in three phases, beginning at the south end of the site and proceeding northward. At any given location, the landfill will be excavated to predetermined depths based on the estimated top of the dredge tailings layer. The landfill cover components will be removed first and then the waste column, including underlying pond liner if present and distinguishable from the dredge tailings at that location. Excavation may therefore exceed target depths, if necessary. The excavation plan is summarized below:

<u>Phase</u>	<u>Location</u>	<u>Area (sq ft)</u>	<u>Waste Column (ft)</u>	<u>Waste Volume (cy)</u>	<u>Components to be Excavated</u>
1	UFA	60,000	6	13,000	Waste column
2	Middle and lower decks	66,000	10	24,000	Clay cover, waste column, former pond liner
3	Upper deck	65,000	15	36,000	Asphalt, clay cover, waste column, former pond liner

49. Except for small amounts of perched water, the discharger is not expecting to encounter groundwater during the excavation and will implement measures to prevent run-on into the excavation pit. Discharge Specification B.4 requires that any liquid encountered in the excavation area, including perched groundwater, leachate, and/or storm water, be pumped and appropriately disposed of after testing.

Confirmation Sampling

50. Soil cleanup goals were developed for the project using the Designated Level Methodology assuming total nitrate and total sulfate as surrogates for landfill constituents of concern. Both constituents were assumed to be 100 percent soluble and to attenuate by 10:1 in the vadose zone. Soluble designated levels were calculated for each constituent using the lesser of the groundwater concentration limit and the maximum contaminant level (MCL) as the water quality goal. For total nitrate, the soil cleanup goal was determined to be 450 mg/kg, and for total sulfate it was determined to be 570 mg/kg. These soil cleanup goals are incorporated into Discharge Prohibition A.6.

51. Soil cleanup criteria were also developed for total metals based on health risk considerations. This work included sampling and testing of background soil at the site for California Assessment Manual (CAM) 17 metals, including all landfill COC metals, except for aluminum, cyanide, iron, manganese, sulfide, and tin, and performing statistical analysis on the results. Background concentrations for each metal, except antimony, which was not detected in any of the samples, were calculated based on the 95 percent upper prediction limit. The soil cleanup criteria

for each CAM 17 metal was then set at the higher of the California Human Health Risk Screening Level, or background concentration.

52. Confirmation sampling will be conducted in the bottom of the excavation area in accordance with the Discharger Confirmation Sampling and Analysis Plan (CSAP) in the RWD. The plan defines a sampling grid over the excavation area, including main fill and UFA, consisting of 336 nodes, 25 percent of which (84) will be randomly selected for sampling at the discharger's direction. Sampling will be conducted for the same "target" parameters for which cleanup goals were developed, including soluble minerals and total metals.
53. The plan includes a protocol for delineating the lateral extent of any impacted areas in the event any cleanup goals are exceeded at any given node. Under the protocol, consecutive step out sampling would be required at each untested node immediately surrounding a failing node, but would be limited to those parameters that exceeded cleanup goals at the failing node. Once defined, the area exceeding cleanup goals would be remediated (i.e., excavated) and confirmation sampling conducted at the previously failing nodes.
54. After completion of confirmation sampling and any necessary additional excavation, the site would be regraded for drainage and revegetated.

Stockpile Operations

55. Wastes excavated during each phase will be segregated and stockpiled based on visual inspection and/or organic vapor meter (PID) readings. Separate stockpiles will be created as follows:
 - a. Recyclables (e.g., concrete, asphalt, scrap metal, cobble, tires; appliances, vehicles)
 - b. Hazardous or potentially hazardous wastes
 - c. Designated waste
 - d. Refuse/household waste
 - e. Soil containing refuse or debris
 - f. Potentially impacted soil (i.e., soil from the fill area that does not contain debris or otherwise appear to be impacted).
56. Most of the landfill cover material (i.e., about 18,000 cubic yards), including asphalt, aggregate, vegetative cover soil, clay and upper 18 inches of foundation soil, is expected to be recyclable or suitable for onsite reuse (e.g., as road base or backfill soil). The lower six inches of foundation soil (about 3,000 cubic yards), which may contain wastes, will be handled as potentially impacted or refuse-containing material, as appropriate based on visual inspection (see Finding 57).
57. Recyclable/reusable materials identified in wastes during excavation and stockpile operations will be removed, as feasible, and separately stockpiled. Any identifiable hazardous waste, including household hazardous waste (HHW), will also be

separated and stockpiled. Recyclable materials will be reused onsite or transported to appropriate recycling facility, while HHW will be diverted to the City's HHW program. Other hazardous waste will be removed from the site and transported to an authorized hazardous waste disposal facility (i.e., Class I landfill).

To the extent possible, excavated soil will be stockpiled for onsite reuse as backfill if the soil appears to be clean. Soil containing refuse may also be reused if it is feasible to remove the refuse and the soil otherwise appears to be clean. Household wastes, refuse, debris, and soil containing such wastes that cannot be separated will be removed from the site and transported to an authorized Class I, II or III landfill as appropriate.

Further characterization, including chemical testing, will be conducted on other wastes, including those tentatively identified as potentially hazardous, designated, and potentially impacted. Once characterized, all such wastes will be transported to an appropriate offsite disposal facility (i.e., Class I, II or III landfill). Any potentially impacted soil not confirmed as impacted will be transported to a Class III landfill for possible use as alternative daily cover.

58. The volume of each waste and material stockpile in the stockpile operations area is expected to be limited to about 750 cubic yards. All waste and material stockpiles will be managed for dust control, and to prevent nuisance conditions, erosion and storm water impacts (see Finding 59). Plastic sheeting will be placed over any piles that have an odor or indicate elevated organic vapor readings. Water will be applied to any piles, as necessary, to control dust and prevent wind erosion.

Storm Water

59. It is expected that all clean closure activities, including excavation, confirmation sampling, and equipment mobilization and demobilization, will be completed in a single construction season. In the event that the work takes longer, however, these WDRs require that the Discharger will implement a site winterization plan, including any necessary BMPs under the Construction Activities General Storm Water Permit and Storm Water Pollution Prevention Plan (SWPPP). See Storm Water Specifications D.1 through D.5.

Groundwater

60. MRP No. R5-2008-0106 (attached) specifies the WQPS for the site required under Section 20390, including concentration limits (i.e., groundwater cleanup goals), and the Discharger's proposed corrective action monitoring program required under Section 20430(d) to demonstrate the effectiveness of corrective action in achieving compliance with the WQPS. The MRP also incorporates requirements in these WDRs for demonstrating compliance with the WQPS (see Monitoring Specification G.27).

COST ESTIMATES AND FINANCIAL ASSURANCES

61. The Discharger is not required to demonstrate financial assurances to the CIWMB for closure (Section 22205(b)) and postclosure maintenance (Section 22210(b)), since the landfill ceased operations prior to January 1, 1988. The Discharger is also not required to demonstrate financial assurances to the CIWMB for corrective action (Section 22220(b)), since the landfill ceased operations prior to July 1, 1991.
62. The total estimated cost of clean closure construction activities, including waste excavation, disposal, confirmation sampling and site reclamation is \$1,500,000 in 2008 dollars. Clean closure construction activities will be funded from the City's Solid Waste Fund. The Discharger has budgeted \$1,000,000 from the fund for clean closure activities for this year (2008). Section 22207(a) does not require financial assurances for clean closure of the landfill except as necessary to repair the final cover in the event that work is suspended or not completed (see Finding 63).
63. After removal of landfill wastes and reclamation of the site, postclosure maintenance costs will be limited to maintenance of monitoring facilities. In the event that clean closure construction activities are interrupted or suspended for a significant period of time (i.e., greater than six months) repair or reconstruction of remaining portions of the landfill (i.e., final cover, slopes and/or precipitation and drainage controls) may become necessary. Specification C.5 of these WDRs requires that the Discharger implement such repairs, as necessary, in accordance with Title 27 closure requirements. Provision I.8.a.i requires that the Discharger provide updated estimates of these closure/postclosure maintenance costs for Board staff approval, while Provision I.6 requires that the Discharger provide financial assurances per Sections 22207(a) and 22212(a) in the amount of the Board staff approved cost estimates.
64. The Discharger is required to provide financial assurances to the Regional Water Board to cover estimated costs of corrective action to address a known or reasonably foreseeable release (KRFR) per Section 22222. Exclusive of clean closure construction costs, such additional costs include the following:
 - a. Cost of postclosure corrective action monitoring from the beginning of clean closure construction through the required compliance period specified in Section C.5 of MRP No. R5-2008-0106 (including required proof period to demonstrate compliance with the Water Quality Protection Standard);
 - b. Cost of remediation measure(s) necessary to address KRFR to groundwater (i.e., existing release) and achieve compliance with the WQPS.

Provisions I.8.a.ii and I.8.a.iii require that the Discharger provide updated estimates of these corrective action costs for Regional Water Board staff approval, and Provision I.6 requires that the Discharger provide corrective action financial assurances in the amount of the Regional Water Board staff approved cost estimates.

REGULATORY CONSIDERATIONS

65. The City of Folsom approved a Negative Declaration for the landfill clean closure project on 26 February 2008 in accordance with the California Environmental Quality Act (CEQA, Public Resources Code Section 21000 et seq.) and CEQA guidelines (14 CCR Section 15000 et seq.). No significant water quality impacts were identified with the project after incorporation of mitigation measures.
66. Section 13267(b) of California Water Code provides that: "In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who had discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports." The monitoring and reporting program required by this Order (MRP No. R5-2008-0106, attached) is necessary to assure compliance with these waste discharge requirements. The Discharger operates the facility that discharges the waste subject to this Order.
67. This order implements:
 - a. *The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*; and
 - b. Chapters 1 through 7, Subdivision 1, Division 2, Title 27, of the California Code of Regulations, effective 18 July 1997, and subsequent revisions.
68. The technical reports required by this Order and attached MRP No. R5-2008-0106 are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

PROCEDURAL REQUIREMENTS

69. 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.
70. The Regional Water Board notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge, and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
71. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

72. Any person affected by this action of the Regional Water 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 www.waterboards.ca.gov/laws_regulations and will be provided on request.

IT IS HEREBY ORDERED, pursuant to Sections 13263 and 13267 of the California Water Code, that Order No. Order No. 95-246 is rescinded, and that the City of Folsom, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. With the exception of waste stockpiling conducted as part of landfill clean closure operations, the discharge of new or additional waste at this facility is prohibited.
2. The discharge of waste constituents to the unsaturated zone or to groundwater is prohibited.
3. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.
4. The landfill shall not cause pollution or a nuisance, as defined by the California Water Code, Section 13050, and shall not cause degradation of any water supply.
5. 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.
6. The concentration of total nitrate and total sulfate in residual soil in the excavation area after removal of landfill wastes and completion of confirmation sampling (including any necessary step out sampling and soil remediation in the event of a failing sampling node) shall not exceed the soil cleanup goals for these constituents (450 mg/kg and 570 mg/kg) specified in Finding 50.

B. DISCHARGE SPECIFICATIONS

1. With the following exceptions, wastes shall remain within the designated disposal area at all times:
 - a. Wastes removed for disposal at an authorized offsite facility
 - b. Inert fill stockpiled for use as backfill
 - c. Inert wastes stockpiled for beneficial reuse
 - d. Stockpiles of recyclable materials
2. All excavated wastes shall be characterized for disposal and transported to an authorized disposal or recycling facility, as appropriate, within 30 days. No waste stockpile destined for offsite disposal shall remain onsite for longer than 30 days and each such stockpile shall be limited to a maximum volume of 1,000 cubic yards.
3. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order.
4. Any liquid encountered in the landfill or UFA excavation areas, including perched groundwater, leachate, and/or storm water, shall be pumped out and appropriately disposed of after testing. All leachate and contact water shall be disposed of as wastewater (i.e., discharged to sanitary sewer or removed by authorized hauler).
5. Storm water runoff from the facility shall be monitored in accordance with MRP No. R5-2008-0106 and applicable storm water regulations.
6. Measures proposed to address a known or reasonably foreseeable release for financial assurances purposes shall be considered part of the corrective action program for the landfill and implemented as necessary.

C. CONSTRUCTION SPECIFICATIONS

1. All construction documents shall be certified by a California registered civil engineer or a certified engineering geologist in accordance with the August 1997 Standard Provisions and Reporting Requirements (Requirements 1, 3 and 4, *Supervision and Certification, STANDARD CONDITIONS*) and applicable Title 27 sections (e.g. Sections 20323, 20324, and 21090(h)).
2. Clean closure construction activities shall be conducted in phases as proposed in the Clean Closure Plan (described in Findings 44 through 59), beginning in the UFA area. Each phase shall include the following major steps:
 - a. Waste excavation,
 - b. Waste stockpiling and characterization,
 - c. Waste recycling/offsite disposal
 - d. Confirmation sampling and additional excavation, if necessary

- e. Backfilling and grading
- f. Site reclamation

At a minimum, Steps a through d shall be completed for each phase before beginning the next phase. Steps e and f may be deferred until completion of multiple phases if excavated areas are needed for project construction activities (i.e., staging, stockpiling) and adequate BMPs have been implemented to address any associated erosion control, drainage, and/or storm water issues in such areas.

- 3. The discharger shall not disturb any more of the landfill final cover than is necessary for that phase of construction based on the excavation plan.
- 4. Waste excavation shall be conducted in accordance with the excavation plan and shall continue until excavation criteria and confirmation sampling results indicate that all landfill wastes have been removed in accordance with the soil cleanup goals per Discharge Specification A.6.
- 5. In the event that clean closure construction activities are interrupted or suspended for any significant period of time (i.e., six months or greater), the discharger shall repair or reconstruct, as necessary, any remaining portions of the landfill disturbed by excavation activity (e.g., final cover, slopes, precipitation and drainage controls) where wastes have not yet been removed. All repairs shall be to Title 27 performance standards (e.g., Section 20950(a)(2)(A) for final cover).
- 6. With the exception of postclosure groundwater monitoring, in no case shall landfill clean closure plan construction activities, as listed in Finding 44, extend beyond **15 October 2009**.

D. STORM WATER SPECIFICATIONS

- 1. The discharger shall obtain coverage for the clean closure project under the General Storm Water Permit for Construction Activities prior to initiating project construction.
- 2. The discharger shall implement appropriate storm water best management practices (BMPs) for the project in accordance with the Storm Water Pollution Prevention Plan (SWPPP) developed under the General Permit.
- 3. The discharger shall regularly check local weather forecasts so as to identify and allow sufficient time to prepare the site for periods of wet weather. In the event wet weather occurs at the site that was not forecast, the discharger shall implement storm water BMPs to the extent conditions allow.

4. During periods of wet weather, storm water BMPs shall be implemented within the excavation and stockpile areas to promote drainage, protect against erosion, and minimize infiltration, ponding and storm water contact with wastes.
 - a. Storm water shall be diverted around the excavation area to prevent it from contacting wastes and ponding within the excavation area. Any ponded water within the excavation area shall be pumped out and appropriately disposed of. Contact storm water shall be discharged to sanitary sewer.
 - b. Exposed excavation slopes shall be covered and graded prior to significant storm events.
 - c. Exposed stockpiles of excavated waste shall be covered as feasible in accordance with the SWPPP.
 - d. Construction activities shall be suspended if such activity could interfere with implementation of the BMPs, disturb landfill cover and/or precipitation and drainage controls in areas not under excavation, or otherwise threaten water quality.

5. Annually, prior to the anticipated rainy season, but no later than **31 October**, any necessary erosion control measures shall be implemented and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent storm water flows from:
 - a. Contacting or percolating through wastes;
 - b. Causing erosion or inundation of the landfill cover, precipitation and drainage controls, or other areas of the site; or
 - c. Causing sedimentation and clogging of the storm drains.

Winterization measures shall include all areas affected by clean closure construction activities, including, but not necessarily limited to, the excavation, equipment staging, and waste stockpile areas.

E. POSTCLOSURE SPECIFICATIONS

The following specifications apply to any portions of the landfill that have not been clean closed:

1. The Discharger shall maintain the landfill cover, precipitation and drainage controls, monitoring wells and all other landfill facilities throughout the post-closure maintenance period.
2. The final cover shall be graded and maintained to prevent ponding, promote lateral runoff, and prevent soil erosion due to high run-off velocities.
3. Areas with slopes greater than ten percent, surface drainage courses, and areas subject to erosion by wind or water shall be maintained to prevent such erosion.

4. All landfill final cover slopes shall be capable of withstanding a maximum probable earthquake.
5. The erosion-resistant layer shall be maintained with native or other vegetation capable of providing effective erosion resistance. The vegetation shall not have a rooting depth greater than the erosion-resistant layer thickness.
6. The closed landfill shall be maintained to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout.
7. The Discharger shall conduct an aerial site survey for the purpose of updating the topographic map for the site at least every five years.
8. Precipitation and drainage control systems shall be designed, constructed, operated and maintained to convey peak flows from a 100-year, 24-hour storm event.
9. The post-closure maintenance and monitoring period shall continue until such time as:
 - a. The landfill has been clean closed in accordance with Title Sections 20950(a)(2)(B) and 21090(f); or
 - b. The Regional Water Board otherwise finds that the landfill no longer threatens water quality and that groundwater quality at the site has returned to compliance with the Water Quality Protection Standard.

Regional Water Board concurrence of clean closure completion does not relieve the discharger from the requirements of other state agencies (including the agents of such agencies) such as the CIWMB and Local Enforcement Agency.

F. FACILITY SPECIFICATIONS

1. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements. All storm water controls, including drainage facilities, shall be maintained so that they function effectively during precipitation events.
2. Methane and other landfill gases shall be adequately vented, removed from the Unit, or otherwise controlled to prevent the danger of adverse health effects, nuisance conditions, or the impairment of the beneficial uses of surface water or groundwater due to migration through the unsaturated zone.
3. All wells within 500 feet of the facility shall have sanitary seals that meet the requirements of the Sacramento County Environmental Management Department or shall be properly abandoned. A record of the sealing and/or

abandonment of such wells shall be sent to the Board and to the State Department of Water Resources.

4. The Discharger shall immediately notify the Regional Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures. This specification shall exclude those areas of the landfill that have been clean closed.

G. MONITORING SPECIFICATIONS

1. The Discharger shall conduct background and corrective action groundwater monitoring, as specified in MRP No. R5-2008-0106. Background monitoring shall be conducted for the purpose of establishing and updating concentration limits as part of the Water Quality Protection Standard per 27 CCR Section 20400(a). Corrective action monitoring shall be conducted for the purpose of assessing the nature and extent of the release, designing corrective action measures, and for assessing the progress of corrective action in returning to compliance with the WQPS (Section 20430(d)).
2. The Discharger shall provide Regional Water Board staff a minimum of one-week notification prior to commencing any field activities related to the installation, non-routine repair, or abandonment of monitoring devices. The Discharger shall also provide Regional Water Board staff with a sampling schedule at least 48 hours prior to initiation of each detection, evaluation, or corrective action monitoring event conducted pursuant to MRP No. R5-2008-0106.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in MRP No. R5-2008-0106 and the August 1997 Standard Provisions and Reporting Requirements (SPRR).
4. The concentrations of the constituents of concern in waters passing the Point of Compliance shall not exceed concentration limits established in accordance with MRP No. R5-2008-0106.
5. The Discharger shall maintain and implement a Sample Collection and Analysis Plan that includes the following elements:
 - 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.
6. 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.
7. 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 sampling 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. **Unknown chromatographic peaks** shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
14. 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.

MONITORING DATA ANALYSIS

15. All monitoring data analysis methods shall be consistent with the performance standards specified in Section 20415(e)(9) and sampling standards specified in Section 20415(e)(12).
16. Some of the monitoring data analysis procedures specified in these WDRs (including the MRP) are different than, or are contradictory to, those specified in the SPRR (incorporated under Provision I.2 of this Order). In particular, Monitoring Specification allows for (but does not require) use of monitoring data analysis methods other than the hierarchical Analysis of Variance (ANOVA) approach described in the SPRR. Monitoring Specifications G.18, G.20, and G.21 clarify which specific constituent groups shall be evaluated statistically and which constituent groups shall be evaluated non-statistically. Monitoring Specification G.21 treats VOCs as individual monitoring parameters rather than as a single combined monitoring parameter as set forth in the SPRR. In accordance with General Provision 8 of the SPRR, the data analysis specifications in the WDRs and MRP shall govern over those of the SPRR in such cases where they are inconsistent.
17. The statistical method shall account for data below the practical quantitation limit (PQL) with one or more statistical procedures that are protective of human health and the environment. Any PQL validated pursuant to 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. Any Section 20415(e)(7) technical report submitted by the Discharger shall consider the PQLs listed in Appendix IX to Chapter 14 of Division 4.5 of Title 22, California Code of Regulations, for guidance when specifying limits of precision and accuracy. For any given constituent monitored at a background or 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".

Concentration Limits

18. Concentration limits (CLs) for corrective action monitoring shall be developed consistent with Monitoring Specifications G.19 through G.21 below.
19. For inorganic COCs for which at least 10% of the data from background samples equal or exceed their respective MDL (i.e., naturally occurring COCs), the Discharger shall use one of the following **statistical** data analysis methods for determination of CLs and detection of a release:
 - a. Tolerance or Prediction Interval statistical method;
 - b. Analysis of Variance (ANOVA) statistical method; and/or
 - c. An alternative statistical method authorized under Section 20415(e)(8) and approved by the Executive Officer under Section 20415(e)(7)).

Background monitoring data shall be screened for trends prior to calculating s to ensure that it represents a single statistical population (i.e. one that does not show appreciable variation per Section 20415(e)(10)). CLs shall be periodically updated, as necessary, to reflect current background conditions. If a significant trend is identified that reflects changes in background conditions, data prior to development of the trend shall not be included in updating s . Otherwise CLs shall include prior historical data. Statistical CLs shall also take into account any seasonality in the data.

Any analyte that exceeds its statistical CL shall provide a preliminary indication [or, for a retest, measurably significant evidence] of a release at that monitoring point.

20. For inorganic COCs for which less than 10% of the data from background samples equal or exceed their respective MDL (including inorganic COCs not detected in background), the CL shall be the MDL. Any analyte that exceeds its MDL shall provide a preliminary indication [or, for a retest, measurably

significant evidence] of a release at that monitoring point.

21. For VOCs and all other organic COCs, the CL shall be the MDL, and the trigger for detection of a release shall be as follows:
 - a. From the COC or monitoring parameter list, identify each analyte in the current sample that exceeds its respective MDL. The Discharger shall conclude that the exceedance provides a preliminary indication [or, for a retest, provides measurably significant evidence] of a release (existing or new) 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.
22. If the above statistical or non-statistical trigger procedures used for monitoring data analysis for a given media provide a preliminary indication of a release (i.e., new release or a previously unconfirmed constituent of the existing release) at a given monitoring point, the Discharger shall immediately notify Regional Water Board staff by phone or e-mail of a preliminary indication of a release, and, within 30 days of such indication, conduct confirmation (retest) sampling.
 - a. Exceedances for constituents that have been previously confirmed as part of the release at a given monitoring point, including regularly-detected and sporadically detected (e.g. as a result of seasonal or lateral fluctuations in the plume) COCs, shall be considered confirmed without notification and retest.
 - b. Exceedances for any other constituent for which the Discharger fails to conduct a retest will be considered confirmed without retest unless and until the Discharger demonstrates its absence through subsequent monitoring.

Discrete Retest

23. Confirmation sampling shall consist of taking two new (retest) samples from the monitoring point where the release is preliminarily indicated. 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.
 - a. As soon as the retest data are available, the Discharger shall apply the same tests [i.e. G.19 for statistical constituents, G.20 or G.21 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 the applicable trigger above, 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 Water 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) Proceed in accordance with G.24 and/or G.25, below, as applicable.
24. Exceedances that the Discharger demonstrates per Section 20420(k)(7) are the result of sample corruption, laboratory interferences, error, natural variation in the water quality, statistical evaluation, or other cause not associated with a release from the unit shall not provide a preliminary indication of a release, or, in the case of a discrete retest, confirm a release. Retesting may be necessary, however, to make such demonstration or, such as in the case of error or laboratory interferences, to obtain valid monitoring data.
25. Any COC confirmed by retest as part of an existing release shall be added to the monitoring parameter list such that it is monitored during each regular monitoring event. 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 SPRR.

Corrective Action Progress

26. The data analysis methods shall also include trend analysis using time series plots and an evaluation of the water chemistry to monitor the effectiveness of corrective action measures in accordance with Section D.3 of the MRP. The trigger requirement for performing trend analysis shall be at least 4 historical data points above the PQL. The water quality chemistry analysis shall, at a minimum, include ion balance and an appropriate graphical method (e.g., Piper diagram, trilinear plot, stiff diagram, Scheuler plot).
27. Prior to termination of corrective action measures required under Section 20430(c), the discharger shall demonstrate, pursuant to Section 20430(f), that the constituents of the release have been reduced to levels below concentration limits throughout the entire zone affected by the release. During this "proof period", the Discharger shall demonstrate that:
- a. The concentration of each constituent in each sample from each monitoring point remained at or below its concentration limit for at least one year, beginning immediately after the suspension of corrective action measures; and
 - b. The individual sampling events for each monitoring point must have been evenly distributed throughout the proof period and have consisted of at least eight sampling events per year per monitoring point.

28. Any proposal for concentration limits greater than background (CLGBs) shall be accompanied by the requisite demonstration under Section 20400(c) (i.e., that it is technologically or economically infeasible to achieve the background value for that constituent and that the constituent will not pose a substantial present or potential hazard to human health or the environment). Approval of CLGBs shall require approval of revised WDRs by the Regional Water Board.

H. REPORTING REQUIREMENTS

1. The Discharger shall comply with the reporting requirements specified in this Order, in MRP Order No. R5-2008-0106 and in the SPRR.
2. The Discharger shall immediately notify the Regional Water Board of any flooding, unpermitted discharge of waste off-site, equipment failure, slope failure, or other change in site conditions that could impair the integrity of waste or leachate containment facilities or precipitation and drainage control structures.
3. The Discharger shall notify the Regional Water Board in writing of any proposed change in ownership or responsibility for construction or operation of the landfill. To assume ownership or operation under this Order, the succeeding owner or operator must apply in writing to the Regional Water 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 Water Board, and a statement. The statement shall comply with the signatory requirements contained in the SPRR (Reporting Requirement 5) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer of this Order shall be approved or disapproved by the Regional Water Board.
4. The discharger shall mail a copy of each monitoring report and any other reports required by this Order to:

California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670
(or the current address if the office relocates)

I. PROVISIONS

1. The Discharger shall comply with the MRP No. R5-2008-0106, which is attached to and made part of this order. A violation of the MRP is a violation of these waste discharge requirements.
2. The Discharger shall comply with the August 1997 SPRR, which are incorporated herein and made part of this Order by reference. The SPRR contain important provisions and requirements with which the Discharger must comply. A violation of any of the SPRR is a violation of these waste discharge requirements.
3. The Discharger shall maintain the waste containment facilities, landfill final cover, precipitation and drainage controls, landfill gas controls, and groundwater monitoring wells, and shall continue to monitor ground water and surface waters per MRP No. R5-2008-0106 throughout the post-closure maintenance period.
4. The owners of the waste management facility shall have the continuing responsibility to assure protection of usable waters from discharged wastes and from gases and leachate generated by discharged wastes during the closure and post-closure maintenance period of the landfill and during subsequent use of the property for other purposes.
5. If the Discharger or Regional Water Board determines that the corrective action program is not adequate (i.e. does not satisfy the provisions of Section 20430), the Discharger shall, within 90 days of making the determination, or of receiving written notification from the Regional Water Board of such determination, submit an amended report of waste discharge (RWD) to make appropriate changes to the program. The amended RWD shall include the following:
 - a. A discussion as to why existing corrective action measures have been ineffective or insufficient.
 - b. A revised evaluation monitoring plan if necessary to further assess the nature and extent of the release
 - c. A discussion of corrective action options and feasibility.
 - d. Proposed additional corrective action measures, as necessary,
 - e. A plan to monitor the progress of corrective action measures consistent with the MRP
 - f. Cost estimates for implementing additional corrective action, including monitoring
 - g. An implementation schedule.
6. The Discharger shall obtain and maintain assurances of financial responsibility for closure/post-closure maintenance (including facility monitoring) costs for the landfill in the amount of the approved cost estimates submitted under Provision I.8.a.i. The financial assurances mechanism shall be an irrevocable fund or other acceptable mechanism under the California Integrated Waste Management Board (CIWMB)-promulgated sections of Chapter 6, Title 27, but

with the Regional Water Board named as beneficiary. Budgeted clean closure funds (i.e., per Finding 62) may be applied for satisfaction of this requirement.

7. The Discharger shall obtain and maintain financial assurances in the amount of the approved corrective action cost estimates under Provision I.8.a.ii and I.8.a.iii. The financial assurances mechanism shall be an irrevocable fund or other acceptable mechanism under the California Integrated Waste Management Board (CIWMB)-promulgated sections of Chapter 6, Title 27, but with the Regional Water Board named as beneficiary.
8. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:
 - a. By **31 October 2008**, the Discharger shall submit for Board staff approval an updated Post-Closure Maintenance Plan (PCMP) to reflect current operations and requirements under these WDRs and MRP No. R5-2008-0106. The plan shall include updated estimates for the following:
 - i. Costs of closure/post-closure maintenance related repairs (e.g., to final cover and drainage system) and associated facility monitoring in the event that clean closure construction is interrupted for a significant period of time (six months or more);
 - ii. Costs of postclosure corrective action monitoring from the beginning of clean closure construction through the required compliance period specified in the MRP (including proof period required under Section 20430(f) to demonstrate compliance with the Water Quality Protection Standard);
 - iii. Corrective action costs, over and above those necessary for clean closure construction activities, to address a known or reasonably foreseeable release so as to achieve compliance with the Water Quality Protection Standard.
 - b. Within 2 months after completion of construction, the Discharger shall submit the project as-built plans, CQA report and certification report.
 - c. By **31 July 2010**, in consideration of the possible need to submit an amended RWD as described above, the Discharger shall submit a technical report containing an evaluation of the effectiveness of the corrective action program based on monitoring under this Order. At a minimum, the report shall consider progress toward remediating releases from the landfill and achieving compliance with the Water Quality Protection Standard. If the Discharger determines that an amended RWD is needed, the report shall include a schedule for submission of the amended RWD within 90 days. If the Discharger determines that the corrective action program is adequate and that an amended RWD does not need to be submitted under this

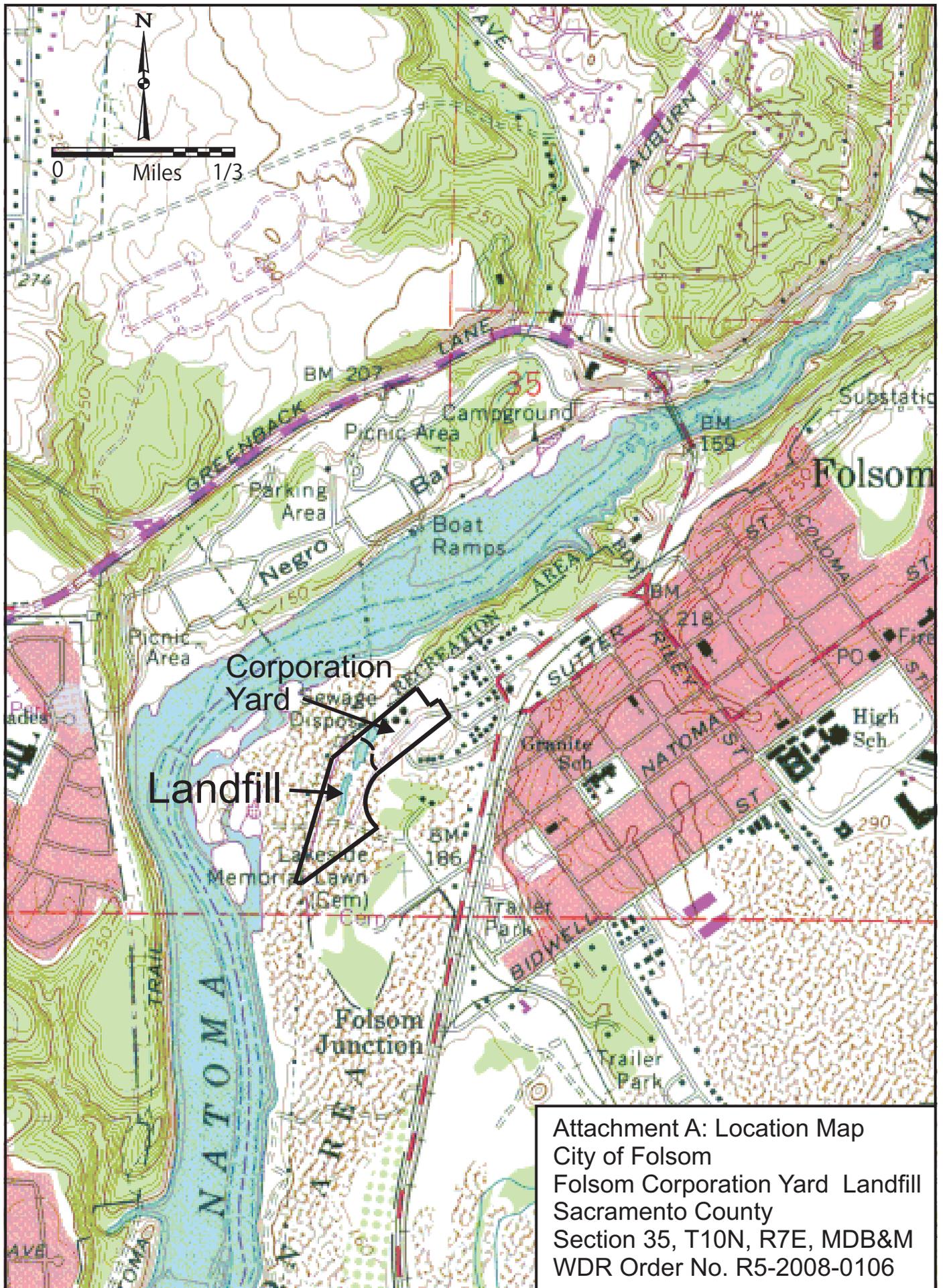
provision, the report shall explain the adequacy of the existing program, addressing why additional corrective action measures and/or monitoring are not necessary. Such determination shall not preclude a contrary determination by Board staff.

9. 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.
10. 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.
11. The Regional Water Board will review this Order periodically and will revise these requirements when necessary.

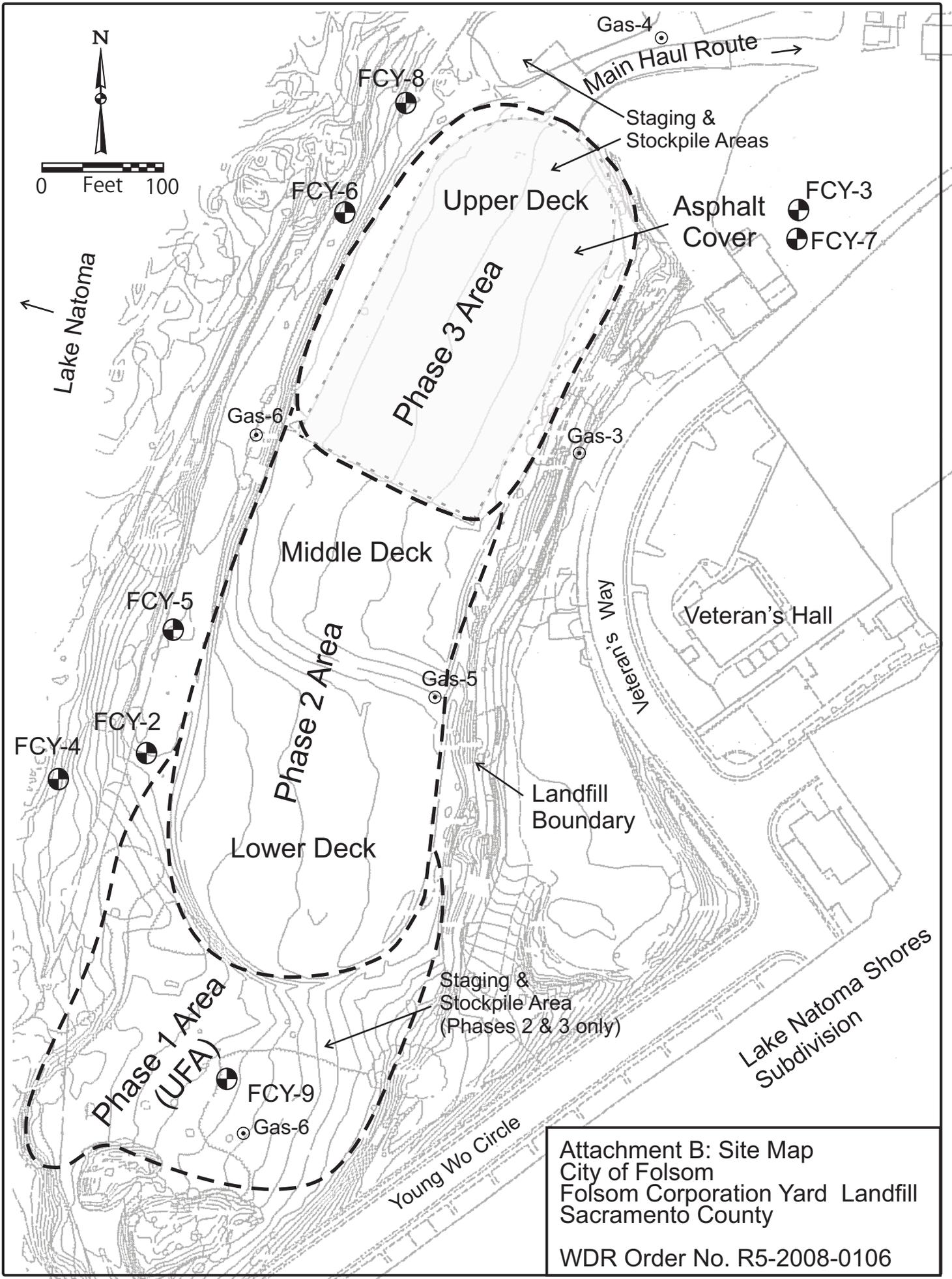
I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 31 July 2008.

PAMELA C. CREEDON, Executive Officer

JDM: 31 July 2008



Attachment A: Location Map
 City of Folsom
 Folsom Corporation Yard Landfill
 Sacramento County
 Section 35, T10N, R7E, MDB&M
 WDR Order No. R5-2008-0106



Attachment B: Site Map
 City of Folsom
 Folsom Corporation Yard Landfill
 Sacramento County
 WDR Order No. R5-2008-0106

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2008-0106
FOR CLEAN CLOSURE OF
FOLSOM CORPORATION YARD LANDFILL
CITY OF FOLSOM
CLASS III LANDFILL
SACRAMENTO COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code Section 13267 and incorporates requirements for corrective action, detection and site maintenance monitoring contained in Title 27 regulations, Waste Discharge Requirements (WDRs) Order No. R5-2008-0106, and the August 1997 Standard Provisions and Reporting Requirements (SPRR). Compliance with this MRP is ordered by the WDRs. The Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Executive Officer.

Pursuant to 27 CCR Section 20430(d), the Discharger shall maintain water quality monitoring systems for background and corrective action monitoring.

MRP SUMMARY TABLE

<i>Section</i>	<i>Type</i>	<i>Frequency</i>
	<i>Monitoring</i>	
A.	Standard Observations	Weekly
B.	Facility Monitoring:	
	1. Maintenance Inspections	Monthly
	2. After Significant Storm Events	Within 7 Days After Event
	3. Site Winterization	Annually
C.	Water Quality Protection Standard	Update as necessary
D.	Groundwater Monitoring	
	1. Elevation	Quarterly
	2. Background	
	a. Field Parameters	Semiannually
	b. Monitoring parameters	Semiannually
	c. Constituents of Concern	Annually
	3. Corrective Action	Same as D.2
E.	Surface Water Monitoring:	Per General Storm Water Permit
	<i>Reporting</i>	
F.	Periodic Reporting:	
	1. Semiannual Report ¹	Semiannually
	2. Annual Monitoring Summary	Annually
	3. Constituents of Concern	Every 5 years
G.	Notifications ²	Per SPRR

1. Including certification of standard observations

2. In event of release or leachate seep.

A. STANDARD OBSERVATIONS

Standard observations shall be performed **weekly** at the site and shall include those elements identified in Definition 24 of the SPRR. Each monitoring report shall include a summary and certification of completion of all Standard Observations (*Provision 2h, Reports to be Filed with the Board, REPORTING REQUIREMENTS, SPRR*). Field logs of standard observations shall also be included in the report. Any landfill leachate seeps detected during these inspections (or at any other time) shall be reported in accordance with the SPRR (*Provision 3, Reports to be Filed with the Board, REPORTING REQUIREMENTS*), and any leachate that enters the excavation area or facility drainage system shall be sampled and analyzed for the COCs referenced in Table C herein. This monitoring shall discontinue upon concurrence by Regional Water Board Executive Officer that clean-closure is complete and in compliance with WDRs Order No. R5-2008-0106.

B. FACILITY MONITORING

The discharger shall inspect those areas of the landfill and associated facilities (e.g., cover, precipitation and drainage controls, monitoring wells, access roads) not yet disturbed by clean closure activities (i.e., areas not within the current phase of clean closure construction), as necessary, to ensure that such facilities are functioning properly and in adequate repair. Facility inspections shall also include any disturbed areas of the landfill where clean closure construction activities have been suspended for a significant period of time (i.e., six months or greater). Any damage to the landfill facilities observed during these inspections shall be flagged and repaired. Facility inspections and repairs shall be conducted in accordance with the following schedule:

Purpose	Inspection Frequency	Complete Repairs¹
1. Regular Maintenance	Monthly	Within 30 days
2. Storm Response	Within one week of significant storm event ²	Within two weeks of storm event
3. Site Winterization	By September 30 of each year	By October 31 of each year

1. If necessary repairs cannot be completed within specified time frame, the Discharger shall, within 7 days, notify the Regional Water Board and provide a schedule for completing them.
2. A "significant" storm event shall be one that produces 1.5 inches or more of precipitation within a 24-hour period, as measured at the Represa Station.

The results of these inspections, including documentation of any significant damage and/or repairs (e.g., field logs, site map showing location of damage, before and after photos) shall be included in the semiannual monitoring report for the period and summarized in the Annual Report. If no inspection and/or repairs were conducted as required above, the report shall so state, providing the reason and circumstances (e.g., landfill removed, no significant storm event during monitoring period). This monitoring shall discontinue upon concurrence by Regional Water Board Executive Officer that clean-closure is complete and in compliance with WDRs Order No. R5-2008-0106.

C. WATER QUALITY PROTECTION STANDARD (Section 20390)

The Water Quality Protection Standard (WQPS) for groundwater shall consist of all Constituents of Concern, Concentration Limits for each constituent of concern, Monitoring Points, Point of Compliance, and the Compliance Period.

1. Constituents of Concern (Section 20395)

The constituents of concern (COC) list includes 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 COCs for the landfill, including monitoring parameters, shall be as listed in Tables G.1 and G.2, which are incorporated herein and made part of this Order by reference. The COC list groups are as follows:

Table C.1

Constituents of Concern	Units	Test Method
Field Parameters:		See Table G.1
General Minerals:		See Table G.1
Dissolved Metals	µg/L	See Table G.1
Volatile Organic Compounds	µg/L	USEPA Method 8260B
Semi-Volatile Organic Compounds	µg/L	USEPA Method 8270
Organophosphorus Pesticides	µg/L	USEPA Method 8141A
Chlorinated Herbicides	µg/L	USEPA Method 8151
Organochlorine Pesticides	µg/L	USEPA Method 8081A
Polychlorinated Biphenols (PCBs)	µg/L	USEPA Method 8082

2. Concentration Limits (Section 20400)

The Discharger developed concentration limits using historical monitoring data from background well FCY-9. The previous six years (12 semiannual sampling events) of monitoring data was evaluated, as follows:

a. Statistical

CLs for statistical COCs were developed consistent with Monitoring Specification G.19 using a nonparametric statistical method (Chebyshev Prediction Limits) and an EPA software program (ProUCL, Version 4.0). A total of 26 inorganic COCs were identified for which at least 10% of the data from background samples equaled or exceeded their respective MDL. Upper prediction limits (i.e., CLs) were calculated at the 95 percent confidence level. The results are listed in Table G.1.

b. Non-Statistical

i. A total of 14 inorganic COCs were identified for which less than 10% of the data from background samples equaled or exceeded their respective MDL. Of these, 10 were not detected in background. In accordance with Monitoring Specification G.20, the concentration limits for these constituents were set equal to the MDL, as listed in Table G.1.

- ii. The concentration limit for VOCs and all other organic COCs was set to the MDL in accordance with Monitoring Specification G.21.

3. Monitoring Points (Section 20405)

The monitoring points for groundwater monitoring shall be as identified in Table D.3.a herein.

4. Point of Compliance (Section 20405)

The point of compliance (POC) for the water standard is a vertical surface located at the hydraulically down gradient limit of the Unit that extends through the uppermost aquifer underlying the Unit. The POC wells shall include existing wells FCYs-2, 5, 6, 8, and 9, and any future wells that meet the above definition.

5. Compliance Period (Section 20410)

The compliance period (the minimum period for a landfill during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit) is equal to the active life of the Unit plus the closure period. Following removal of the landfill unit, the compliance period shall be extended until the discharger can demonstrate that the Unit has been in continuous compliance with the WQPS for a period of three consecutive years, including proof period under Section 20430(f), and as approved by the Executive Officer. See Monitoring Specification G.27.

D. GROUNDWATER MONITORING

1. Groundwater Elevation Monitoring (Section 20415(e)(13))

The groundwater surface elevation (in feet and hundredths, MSL) in all wells and piezometers shall be measured on a **quarterly** basis. Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters may be used to fulfill this requirement. Groundwater elevations for all monitoring 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, as feasible:

- a. The groundwater flow velocity
- b. The gradient direction in the upper aquifer, and in any additional zone of saturation monitored pursuant to this MRP
- c. Times of highest and lowest elevations of the water levels in the wells
- d. Estimated separation of groundwater from the lowest point of the unit

The results of these determinations shall be included in the semi-annual reports.

2. Background Monitoring (Section 20415(b)(1)(A))

Background monitoring shall be performed for developing and updating concentration limits as described in Section C.2.

a. Monitoring Points

The Discharger shall install and operate a sufficient number of background monitoring wells at appropriate locations and depths to yield ground water samples from the uppermost aquifer that represent the quality of ground water that has not been affected by a release from the unit. The background monitoring system may include wells that are not hydraulically upgradient of the Unit if it can be demonstrated that samples from such wells are representative of background groundwater quality, or are at least more representative than those provided by upgradient wells. The background monitoring points for groundwater shall be as listed in Table D.3.a herein.

b. Monitoring Parameters

See Section D.3.b.

c. Monitoring Schedule

The background monitoring schedule shall be as specified in Table D.3.c.

3. Corrective Action Monitoring (Sections 20425 and 20430)

The Discharger shall install and operate a groundwater corrective action monitoring system for the purpose of monitoring the nature and extent of the release and the progress of corrective action.

a. Monitoring Points

The corrective action monitoring locations shall be as follows:

Table D.3.a: Monitoring Locations

<u>Aquifer</u>	<u>Zone</u>	<u>Monitoring Wells</u>	
		<u>Background</u>	<u>Downgradient</u>
Upper	Dredge tailings	FCY-9 ^{1, 2}	FCYs-2, 4, 5, 6, 8, 9 ²
Lower	Mehrten	FCYs-3 ² , 7 ²	FCYs-3 ² , 7 ²

1. No upgradient background well feasible due to limited extent of shallow zone. Discharger has demonstrated sufficiency of well FCY-9 for background monitoring per Section 20415(b)(2).
2. Intrawell monitoring performed on these wells (each well functions as its own background well).

Absent a demonstration that it is no longer needed for monitoring, any groundwater monitoring wells damaged or destroyed during clean closure activities shall be repaired or replaced, as applicable, in accordance with Section B herein.

b. 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 the landfill shall be as listed in Table D.3.c and Tables G.1 and G.2. Any COC confirmed by retest (per WDR Monitoring Specification G.23) to be a constituent of a release shall also be added to the monitoring parameter list per Monitoring Specification G.25. In such cases, the Discharger shall also follow the Response to Release requirements of the WDRs (Monitoring Specification E.22) and 1997 SPRR, as necessary.

c. Monitoring Schedule

A sufficient number of samples shall be taken from all 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. Collection and analysis of samples shall be in accordance with procedures set forth in the Sampling Collection and Analysis Plan per Monitoring Specification G.5 of the WDRs. The groundwater corrective action monitoring schedule shall be as follows:

**Table D.3.c:
 Corrective Action Monitoring Schedule**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>	<u>Data Analysis</u>
Field Parameters			
Elevation	Feet MSL	Quarterly	---
Specific Conductance	µMhos/cm	Semiannually	---
pH	pH units	Semiannually	---
Redox potential	millivolts	Semiannually	---
Temperature	°C, °F	Semiannually	---
Turbidity	NTU	Semiannually	---
Monitoring Parameters			
General Minerals:			
Chloride	mg/L	Semiannually	Statistical
Nitrate	mg/L	Semiannually	Statistical
Sulfate	mg/L	Semiannually	Statistical
TDS	mg/L	Semiannually	Statistical
Total Alkalinity	mg/L	Semiannually	Statistical
Total Hardness	mg/L	Semiannually	Statistical
Chemical Oxygen Demand (COD)	mg/L	Semiannually	Statistical
Major Anions ¹	mg/L	Annually	Statistical
Major Cations ¹	mg/L	Annually	Statistical
Dissolved arsenic	µg/L	Semiannually	Statistical

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2008-0106
 FOLSOM CORPORATION YARD LANDFILL
 CLASS III LANDFILL
 SACRAMENTO COUNTY

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>	<u>Data Analysis</u>
Dissolved Iron	µg/L	Semiannually	Statistical
VOCs ¹	µg/L	Annually	Statistical
Dissolved Metals ¹	µg/L	Annually	Statistical/Nonstatistical
COCs ^{1,2}	See Table C	Every 5 years	Statistical/Nonstatistical

1. See Tables G.1 and G.2 for the full list of constituents and EPA test methods.
2. COC monitoring shall be conducted by **15 December 2011** and at least every five years thereafter. If the landfill is clean closed per the WDRs Order No. R5-2008-0106 in 2008, then this sampling is no longer necessary.

d. Data Evaluation

Corrective Action monitoring data evaluation shall include the following:

- i. Background Data
 - Updating concentration limits for statistical monitoring parameters and COCs, as necessary.
- ii. Nature and Extent of Release
 - Comparing monitoring data with concentration limits to identify any new release or new constituent of existing release.
 - Water chemistry analysis by ion balance and an appropriate graphical methods (e.g., Piper diagram, Trilinear plot, Stiff diagram)
 - Preparation of contaminant contour maps for representative constituents/parameters (e.g., specific conductance, TDS, COD, Redox potential).
- iii. Effectiveness of Corrective Action
 - Preparation of time series plots for each constituent for which there are three or more data points (including non-detect values).
 - Trend analysis for each constituent for which there are four or more data points above the practical quantitation limit (PQL), using appropriate statistical and graphical methods (e.g., Mann-Kendall, Sen's Slope).
 - Comparing monitoring data with concentration limits (i.e., cleanup goals) to check progress in returning to compliance with WQPS.
 - Comparing contour maps for representative constituents/parameters with those of prior years to track changes in plume concentrations and/or groundwater geochemical conditions.
 - A discussion of the ongoing effectiveness of corrective action measures implemented (e.g., clean closure) and the need for additional corrective action measures and/or monitoring wells.

The results of the above analysis, including a narrative discussion, shall be included in each semiannual report and summarized in the Annual Report, as specified under Section F.2 below. The semiannual monitoring reports shall also include a discussion of the progress of corrective action toward returning to compliance with the WQPS, as specified in Section 20430(h) of Title 27.

E. SURFACE WATER MONITORING (Section 20415(c))

Storm water shall be monitored at an appropriate background location and at representative outfalls toward the nearest surface water (i.e., Lake Natoma) in accordance with the NPDES General Storm Water Permit (Construction Activities or Industrial). The storm water monitoring locations shall include the following monitoring points (Attachment B: Site Map):

<u>Monitoring Point</u>	<u>Storm Water Type</u>	<u>Drain</u>	<u>Location</u>
SW-1	Runon	Upstream swale	NE of landfill
SW-2	Runoff	Landfill perimeter swale	NW outfall
SW-3	Runoff	Landfill perimeter swale	SW outfall

Storm water sampling shall include the semiannual field and monitoring parameters specified in Table D.3.c and those parameters required under the General Storm Water Permit. If the landfill units are clean closed in compliance with WDRs Order No. R5-2008-0106 and with Regional Water Board staff concurrence, sampling of Table D.3.c constituents shall no longer be required under this Order (sampling may still be required under the General Storm Water Permit, however, if the site has not yet been backfilled and/or reclaimed).

F. REPORTING

1. Semiannual Reports

The Discharger shall report monitoring data and information as required in this MRP and as required under WDRs Order No. R5-2008-0106 and the SPRR. Reports shall be submitted **semiannually**. Each semiannual monitoring report shall include the following information:

- a. A compliance evaluation summary for the monitoring period as specified in the SPRR (Requirement 2, *Reports to be Filed with the Board, REPORTING REQUIREMENTS*).
- b. 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.
- c. The results of groundwater elevation monitoring.

- d. Tabular summaries of corrective action monitoring data for the monitoring period, showing sampling date, well, constituents, concentrations, units, and concentration limits. The table shall also clearly show whether new monitoring data exceedances occurred during the monitoring period (i.e. highlight exceedances).
- e. Tables of historical monitoring data, as available, for each waste management unit (or former waste management unit, if clean closed), showing well, sampling dates, constituents, concentrations, units, and concentration limits. The data shall be presented so as to clearly show historical concentrations at each well.
- f. Plots, graphical summaries and a narrative discussion of the results of correction action monitoring, as specified in Section D.3.d herein.
- g. Field and laboratory tests sheets.
- h. An electronic copy of historical analytical data for at least the previous five years, as available, in a digital format necessary for statistical analysis (e.g., Excel format).

2. **Annual Monitoring Summary Report**

An Annual Monitoring Summary Report (Annual Report) shall also be prepared and submitted in accordance with this section of the MRP and the SPRR (Requirement 4, *Reports to be Filed with the Board, REPORTING REQUIREMENTS*). The report shall summarize monitoring results for the prior year and include a discussion of compliance with the WDRs and the WQPS. The report may be included in the Second Semiannual Report for each year, but shall also include the following:

- a. Tabular and graphical summaries of the results of the prior year, including, but not necessarily limited to, representative time series plots and contaminant contour maps.
- b. A summary of the results of trend analysis performed on each constituent of the release during the prior year.
- c. A summary of the results of water chemistry analysis of water quality data collected during the prior year.
- d. A summary of comparisons of contaminant contour maps of representative constituents/parameters with those of prior years to track changes in plume and/or groundwater geochemical conditions since initiation of corrective action.
- e. A copy of the Sampling and Analysis Plan per WDR Monitoring Specification E.5 and the SPRR (Requirement 1, *Provisions for Monitoring*).

Reports that do not comply with the above-required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste discharge requirements.

The semiannual and annual reports shall be submitted to the Board in accordance with the following schedule for the calendar period in which samples were taken or observations made:

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

The Discharger shall implement the above monitoring program on the effective date of this Program. The transmittal letter accompanying monitoring reports submitted under this Order shall, as required under the SPRR (*Provision 5, General Requirements, REPORTING REQUIREMENTS*), contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

31 July 2008

(Date)

Attachments
JDM: 31 July 2008

Table G.1
 INORGANIC CONSTITUENTS OF CONCERN, APPROVED USEPA
 ANALYTICAL METHODS, & CONCENTRATION LIMITS

	USEPA Test Method	Concentration Limit
Field Parameters		
Groundwater Elevation, Ft MSL	----	----
pH, pH units	----	<6, >8
Oxidation-Reduction (Redox) Potential, Millivolts	----	----
Specific conductance, μ Mhos/cm	----	550
Temperature, $^{\circ}$ C, $^{\circ}$ F	----	----
Turbidity, NTU	----	----
General Minerals, mg/L		
Total Dissolved Solids (TDS)	2540C	354
Total Alkalinity	2320B	250
Total Hardness	2340B	
Chemical Oxygen Demand (COD)	410.4	
Major Anions		
Bicarbonate	2310B	250
Chloride	300	60
Nitrate – Nitrogen	300	60
Sulfate	300	57
Major Cations		
Calcium	200.7/6010	----
Magnesium	200.7/6010	----
Potassium	200.7/6010	----
Sodium	200.7/6010	----
Dissolved Metals, μg/L¹		
Aluminum	200.7/6010	MDL
Antimony	200.7/6010	MDL
Arsenic	200.9/200.8	4.6
Barium	200.7/6010	MDL
Beryllium	200.7/6010	MDL
Cadmium	200.7/6010	MDL
Chromium	200.7/6010	10
Hexavalent Chromium	7199/1636	MDL
Cobalt	200.7/6010	MDL
Copper	200.7/6010	MDL

Table G.1

Cyanide	335.4/9010	MDL
Iron	200.9/200.8	93
Lead	200.9/200.8	5
Manganese	200.7/6010	MDL
Mercury	7470A	0.2
Molybdenum	200.7/6010	MDL
Nickel	200.9/200.8	MDL
Selenium	200.9/200.8	MDL
Silver	200.7/6010	MDL
Sulfide	9030	MDL
Thallium	200.7/6010	MDL
Tin	200.7/6010	MDL
Vanadium	200.7/6010	MDL
Zinc	200.7/6010	MDL

1. Samples shall be filtered prior to performing dissolved inorganics analysis.

Table G.2

ORGANIC CONSTITUENTS OF CONCERN & APPROVED USEPA
 ANALYTICAL METHODS
 (CONCENTRATION LIMIT = MDL)

Volatile Organic Compounds (VOCs)¹ (USEPA Method 8260B)

- Acetone
- Acetonitrile
- Acrolein
- Acrylonitrile
- Allyl chloride (3-Chloropropene)
- 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

Table G.2

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

Table G.2

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-VOCs¹ (USEPA Method 8270 - base, neutral, & acid extractables):

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzoanthracene)
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)

Table G.2

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)

Table G.2

N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propyl nitrosamine)
N-Nitrosomethylethylamine (Methylethyl nitrosamine)
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 Pesticides¹ (USEPA 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

Table G.2

Hexachlorocyclopentadiene
Isodrin
Methoxychlor
Toxaphene

Polychlorinated Biphenols¹ (PCBs, USEPA Method 8082)

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

Organophosphorus Pesticides¹ (USEPA Method 8141A):

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

Chlorinated Herbicides¹ (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

1. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte per WDR Monitoring Specification G.13.

INFORMATION SHEET

ORDER NO. R5-2008-0106
CITY OF FOLSOM
FOLSOM CORPORATION YARD LANDFILL
SACRAMENTO COUNTY

The 3.2-acre Folsom Corporation Yard Landfill is a closed, Class III landfill on Leidesdorff Street near Lake Natoma in the City of Folsom. The unlined landfill was constructed in the ponds of the City's former wastewater treatment plant, which was demolished in 1973. The landfill operated from 1974 until 1987, accepting primarily street cleaning wastes, construction and demolition debris, and green wastes from City owned and/or operated facilities. The landfill stopped accepting wastes in 1987 and in 1996 was closed with a cover containing a low permeability clay layer in accordance with Chapter 15 (now Title 27), California Code of Regulations. A 1990 Solid Waste Assessment Test (SWAT) found elevated concentrations of general minerals and some dissolved metals in shallow groundwater at the site. Monitoring since landfill closure in 1996 has confirmed impacts to shallow groundwater from the landfill, including, for example, elevated total dissolved solids (634 mg/L), arsenic (20 µg/L) and dissolved iron (14,000 µg/L). Volatile organic compounds (VOCs), primarily methyl tert-butyl ether (MTBE, up to 20 µg/L) and low to trace concentrations of a few other VOCs have also been detected in a few wells.

To address the impacts to groundwater, and reduce postclosure monitoring costs, the Discharger is proposing to clean close the landfill and an adjacent 1.1-acre unclassified fill area (UFA) immediately south of the landfill. The Discharger's clean closure plan proposes that the landfill be closed in three phases, beginning with the UFA and proceeding northward with the lower and upper landfill deck areas. After excavation, the waste will be stockpiled onsite, sorted, and characterized for recycling or offsite disposal. While the Discharger expects to complete the project in the 2008 construction season, the plan includes contingency winterization measures in the event that construction extends into the wet season.

These WDRs incorporate the Discharger's clean closure plan and prescribe requirements for the project as a corrective action measure in accordance with Title 27 regulations. Discharge specifications specify cleanup goals for removal of landfill wastes and limit the amount of time any waste can remain onsite pending offsite disposal. The WDRs also require the Discharger to obtain coverage under the General Storm Water Permit and implement winterization measures to protect landfill facilities during the wet season. The WDRs also require that the Discharger provide updated cost estimates and financial assurances for any necessary cover repairs in the event the project is suspended for a significant period of time, or is not completed; and any additional corrective action that may ultimately be necessary to achieve compliance with the Water Quality Protection Standard (WQPS) The Discharger must provide these financial assurances in approved amounts and in an acceptable mechanism under Title 27. The WDRs (Construction Specification C.6) further require

that all clean closure construction activity be completed by 15 October 2009.

The monitoring and reporting program (MRP) in the WDRs specifies the WQPS, including concentration limits for groundwater cleanup derived from statistical analysis of historical background data at the site. The MRP requires semiannual groundwater monitoring for regularly detected constituents, including field parameters, general minerals, and specified dissolved metals (arsenic and iron); and annual monitoring for less frequently detected constituents, including VOCs, major anions and cations, and a longer list of dissolved metals. The MRP also has a proof period during which the Discharger must demonstrate compliance with the WQPS prior to termination of corrective action measures. The minimum proof period is one year and must include at least eight regular sampling events. The MRP also specifies a three-year compliance period (which may include the proof period) for demonstrating compliance with the WQPS prior to termination of monitoring.

Surface drainage in the site area is toward Lake Natoma, a part of the American River and tributary to the Sacramento River.