

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2017-0054

WASTE DISCHARGE REQUIREMENTS
FOR
KINGS WASTE AND RECYCLING AUTHORITY
HOUSTON AVENUE LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE
KINGS COUNTY

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

1. The Kings Waste and Recycling Authority (hereinafter Discharger) owns and operates the Houston Avenue Landfill Name (facility) located in the southern portion of the City of Hanford, in Section 1, T19S, R21E, MDB&M, as shown in Attachment A. The facility has also been referred to as the old Hanford City Dump and operated from the 1950's until it ceased accepting waste in 1970. The Kings Waste and Recycling Authority was created by a name change from the Kings Waste Management Authority in 1995. The Kings Waste Management Authority was created as a Joint Powers Authority consisting of the County of Kings and the Cities of Hanford, Corcoran, and Lemoore.
2. Pursuant to California Code of Regulations, title 27, section 20164, the facility is a "closed, abandoned, or inactive" (CAI) unit because closure occurred prior to 27 November 1984.
3. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by this reference:
 - a. Attachment A – Site Location Map
 - b. Attachment B – Site Map
 - c. Information Sheet
 - d. Standard Provisions and Reporting Requirements (SPRRs) dated December 2015
4. The facility is on a 44-acre property north of Houston Avenue between 10 ½ Avenue and 11th Avenue in the City of Hanford. The existing unlined landfill area is approximately 38 acres. The existing permitted landfill area is shown in Attachment B. The facility comprises Assessor's Parcel Numbers (APN) 18-122-05, 18-122-07, 18-122-08, 18-122-13, and 18-122-16.
5. This Order updates the waste discharge requirements for the facility, as part of an administrative policy of periodic review, to incorporate revisions to regulations and policies

adopted thereunder, for continued post-closure maintenance of the facility. The last revision of this Order was in 2000.

6. A Solid Waste Assessment Test (SWAT) was conducted in 1986.
7. On 5 August 1993, the Central Valley Water Board issued Order No. 93-113 in which the facility was classified as Class III waste disposal site. On 16 June 2000, the Central Valley Water Board issued Order No. 00-160, which continued to classify the facility as Class III waste disposal site in accordance with California Code of Regulations, title 27, section 20005, et seq. (Title 27).¹
8. The existing landfill facility consists of one unlined waste management unit covering approximately 38 acres. This unit has no leachate collection and removal system and is classified as a closed, abandoned, or inactive (CAI) site.
9. On-site facilities include groundwater monitoring wells, a stormwater sedimentation basin, and a chain-link fence surrounding the facility.
10. This Order implements the applicable regulations for discharges of solid waste to land through Prohibitions, Specifications, Provisions, and monitoring and reporting requirements. Prohibitions, Specifications, and Provisions are listed in Sections A through G of these WDRs below, and in the Standard Provisions and Reporting Requirements (SPRRs), dated December 2015, which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2017-0054 and in the SPRRs. The portions of the SPRRs that apply to CAI landfills are identified in the applicable section (A through G) of these WDRs. Terms and conditions for these WDRs are included in Section B of the SPRRs. In general, requirements that are either in regulation or otherwise apply to all landfills are considered to be "standard" and are therefore in the SPRRs. Any site-specific changes to a requirement in the SPRRs are included in the applicable section (A through G) of these WDRs, and the requirement in the WDRs supersedes the requirement in the SPRRs.
11. Title 27 contains regulatory standards for discharges of solid waste promulgated by the State Water Board and the California Department of Resources Recovery and Recycling (CalRecycle). In certain instances, this Order cites CalRecycle regulatory sections. Section 20012 allows the Central Valley Water Board to cite CalRecycle regulations from Title 27 where necessary to protect water quality provided it does not duplicate or conflict with actions taken by the Local Enforcement Agency in charge of implementing CalRecycle's regulations.

¹ Unless otherwise noted, all section references are to California Code of Regulations, title 27.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

12. It is estimated that the site received approximately 1.5 million cubic yards of waste consisting of petroleum refining wastes, industrial wastes, pesticide containers, and household refuse. From 1950 until 1967, municipal wastes were burned. From 1967 until 1970, municipal waste was placed in the landfill unit and covered daily. Industrial liquid waste, including refinery sludge and spent caustic solution, was discharged into brick lined pits and allowed to evaporate. County records estimate that approximately 5,000 gallons a month of spent caustic solution, determined to be hazardous waste, was discharged at the facility during the ten-year period from 1954 to 1964.
13. Pursuant to section 20164, the facility is a "closed, abandoned, or inactive" (CAI) unit because closure occurred prior to 27 November 1984.

SITE DESCRIPTION

14. The facility is in a topographically flat region of the San Joaquin Valley. The native ground surface is at an approximate elevation of 240 feet mean sea level.
15. Land uses within one mile of the facility include Santa Fe Railroad tracks, residential properties, a municipal sewage treatment plant, agricultural properties, light industrial properties, and undeveloped properties.
16. There are approximately 75 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the facility.
17. The soils immediately underlying the site were deposited as alluvial fan sediments consisting of unconsolidated and interbedded sands, silts, and clays.
18. The measured hydraulic conductivity of the native soils underlying the landfill units ranges between 4×10^{-7} and 1×10^{-3} centimeters per second (cm/s).
19. The facility receives an average of 8.31 inches of precipitation per year as measured at the Hanford 1 S Station. The mean pan evaporation is 79 inches per year within the area of Kings County.
20. The 100-year, 24-hour precipitation event for the facility is estimated to be 2.6 inches, based on the National Oceanic and Atmospheric Administration Atlas 2, Volume XI.
21. The waste management facility is not within a 100-year flood plain based on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, Community-Panel Number 06031C0195C.
22. A storm water sedimentation basin is located north of the landfill. The basin detains storm water for sedimentation control during the rainy season and is normally dry during the summer months.

23. The southwest portion of the landfill facility property was converted to a number of municipal uses following landfill closure. This included a fire training facility, a Mosquito Abatement District Facility, and the Kings County operations and road yards. Only the fire training facility was underlain by waste and has subsequently been dismantled and removed.

SURFACE WATER AND GROUNDWATER CONDITIONS

24. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised July 2016*, (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

25. Surface water drainage from the site is to the south and southwest in the Hanford-Lemoore Hydrologic Area of the Tulare Lake Basin.

26. The designated beneficial uses of the Kings River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial process supply; water contact recreation; non-contact water recreation; warm fresh water habitat; wildlife habitat; and groundwater recharge.

27. Two groundwater bearing zones have been identified beneath the facility. The shallow zone occurs above the A-Clay layer and deep zone groundwater, which occurs below the A-Clay layer. The A-Clay layer occurs between 30 and 55 feet bgs. All shallow zone wells are currently dry (2nd semiannual 2016 monitoring period). The shallow zone does not extend further than 400 to 700 feet downgradient of the facility. As the A-Clay layer becomes increasingly sandy to the east of the facility, the shallow groundwater merges with the deeper groundwater zone. As a result, the shallow and deep groundwater zones become contiguous east of the facility and no longer behave as discrete hydrological units. Waste depth is approximately 30 feet bgs and, prior to declining groundwater levels, shallow zone groundwater may have been in contact with waste materials. During the 2nd semiannual 2016 monitoring event, the first encountered groundwater beneath the facility was approximately 130 feet bgs in the deep zone.

28. Monitoring data indicate background groundwater quality for first encountered groundwater has electrical conductivity (EC) ranging between 632 and 1,729 micromhos/cm, with total dissolved solids (TDS) ranging between 190 and 1,200 milligrams per liter (mg/L).

29. The direction of groundwater flow is generally toward the east and northeast. The estimated average groundwater gradient is approximately 0.011 feet per foot.

30. The designated beneficial uses of the groundwater, as specified in the Basin Plan, are domestic and municipal water supply, agricultural supply, industrial service supply, and industrial process supply.

GROUNDWATER AND UNSATURATED ZONE MONITORING

31. Pursuant to section 20080(g), persons responsible for discharges at CAI units may be required to develop and implement a detection monitoring program (DMP) in accordance with Title 27, section 20380 et seq.
32. The existing groundwater monitoring network for the landfill units is described in MRP R5-2017-0054.
33. Due to declining groundwater levels and drought conditions, monitoring wells within the DMP have gone dry. Only one shallow zone well, located upgradient of the landfill, has not gone dry. This Order requires the Discharger submit an evaluation of its DMP. If the DMP is determined to be inadequate, the Discharger shall include proposed changes and a time schedule to bring its DMP into compliance.
34. The existing unsaturated zone monitoring system for the landfill consists of four active landfill gas monitoring wells (P-1A, P-2A, P-4, and UW-1). These wells are used to monitor for methane in soil vapor as well as vapor phase Volatile Organic Compounds (VOCs) in their immediate area.
35. VOCs are often detected in a release from landfills and are often associated with releases of landfill gas rather than leachate. Since volatile organic compounds are not naturally occurring and thus have no background value, they are not amenable to the statistical analysis procedures contained in Title 27 for the determination of a release of wastes from a landfill unit. Sections 20415(e)(8) and (9) allows the use of a non-statistical evaluation of monitoring data that will provide the best assurance of the earliest possible detection of a release from a landfill unit in accordance with sections 20415(b)(1)(B)2.-4. However, Title 27 does not specify a specific method for non-statistical evaluation of monitoring data.
36. The Central Valley Water Board may specify a non-statistical data analysis method pursuant to Title 27, section 20080(a)(1). Water Code section 13360(a)(1) allows the Central Valley Water Board to specify requirements to protect groundwater or surface waters from leakage from a solid waste site, which includes a method to provide the best assurance of determining the earliest possible detection of a release.
37. In order to provide the best assurance of the earliest possible detection of a release of non-naturally occurring waste constituents from a landfill unit, the SPRRs specify a non-statistical method for the evaluation of monitoring data for non-naturally occurring compounds. The specified non-statistical method for evaluation of monitoring data provides two criteria (or triggers) for making the determination that there has been a release of non-naturally occurring waste constituents from a landfill unit. The presence of two non-naturally occurring waste constituents above their respective method detection limit (MDL), or one non-naturally occurring waste constituent detected above its practical quantitation limit (PQL) [a.k.a, laboratory reporting limit (RL)], indicates that a release of

waste from a Unit has occurred. Following an indication of a release, verification testing must be conducted to determine whether there has been a release from the landfill unit or the detection was a false detection. The detection of two non-naturally occurring waste constituents above the MDL as a trigger is appropriate due to the higher risk of false-positive analytical results and the corresponding increase in sampling and analytical expenses from the use of one non-naturally occurring waste constituent above its MDL as a trigger.

38. For a naturally occurring constituent of concern, Title 27 requires concentration limits for each constituent of concern be determined as follows:
- a. By calculation in accordance with a statistical method pursuant to section 20415(e)(8);
or
 - b. By an alternate statistical method meeting the requirements of section 20415(e)(8)(E).
39. The Discharger submitted a Water Quality Protection Standard (WQPS) report proposing statistical data analysis methods to calculate concentration limits for each monitored constituent in accordance with Title 27. The WQPS report proposed to use Interwell data analysis to calculate tolerance limits for the monitored constituents. The WQPS and approved data evaluation methods are included in MRP No. R5-2017-0054.

GROUNDWATER DEGRADATION AND CORRECTIVE ACTION

40. Pursuant to Title 27, section 20080(g), persons responsible for discharges at CAI units may be required to develop and implement a detection monitoring program (DMP) in accordance with Title 27, section 20380 et seq. If water quality impairment is found, such persons may be required to develop and implement a corrective action program under that article.
41. Impacted groundwater proximal to the landfill was first reported in 1971 when phenol compounds and chemical odors were reported in domestic wells near the facility. In 1979, the Department of Water Resources (DWR) investigated the nature, origin, and extent of waste constituents present in groundwater. In the report *Hanford Groundwater Pollution*, DWR concluded the facility vicinity was the major source of groundwater contamination. The facility was subsequently placed on the State Superfund list from December 1984 until February 1996 when the Department of Toxic Substances Control ceased taking an active regulatory role at the site after impacted soils at the site were excavated and remediated.
42. Historically, VOCs exceeding their respective primary maximum contaminant levels (MCLs) at the point of compliance included the following: cis-1,2-dichloroethene, trichloroethene (TCE), tetrachloroethene (PCE), and vinyl chloride. The following other organic compounds have been detected at levels less than their respective MCLs: dichlorodifluoromethane; trans-1,2-dichloroethane; 1,4-dichlorobenzene; methylene

chloride; benzene; toluene; xylenes; diesel; jet fuel; 2,4 dimethyl phenol; 2,4,6-trichlorophenol; and naphthalene. Organic waste constituents detected at concentrations exceeding their MCLs in downgradient evaluation monitoring wells included: cis-1,2-dichloroethene, 1,1-dichloroethene, TCE, and PCE. Benzene, diesel, and jet fuel were detected in these wells at concentrations less than the MCLs. Diesel and jet fuel had also been detected in upgradient monitoring wells.

43. Inorganic waste constituents were historically detected at concentrations exceeding their respective primary MCLs included: aluminum, antimony, arsenic, barium, chromium, lead, nickel, nitrate, and thallium. Total dissolved solids, chloride, iron, manganese, and sulfate were detected at concentrations exceeding their secondary MCLs.
44. The Discharger implemented a monitoring program at the facility in 1988, which included characterization of the site hydrogeology and plume delineation. In 1993, the Discharger submitted an investigation report and amended report of waste discharge, which summarized its activities to further characterize groundwater quality. VOCs were identified in both shallow and deep groundwater zones beneath the facility and at least 1,475 feet downgradient of the facility. Diesel and jet fuel were also identified in both groundwater zones though the source of these compounds was not identified. The report also identified high priority source areas, which included the following:
 - a. Source Area (SA)-1 was historically referred to as the community pit and was located in the central part of the property. SA-1 was used in the early 1950s for the disposal of caustic solutions and has not been located.
 - b. SA-2 was a waste disposal pit that was discontinued in the 1960s.
 - c. SA-3 was also a waste disposal pit that was discontinued in the 1960s.
 - d. SA-4 and SA-5 are brick lined pits which were used through the 1960s for disposal of refinery waste.
45. The Discharger implemented the following corrective action measures prior to submittal of a formal Corrective Action Program (CAP):
 - a. Extending the City of Hanford's domestic water supply line to service residences along 10 ½ Avenue.
 - b. Extensive regrading of the landfill cover to improve site drainage and direct it to an on-site storm water basin.
 - c. Remediation of impacted soils from the former fire training facility.
 - d. Remediation of SA-2, which included the excavation of contaminated soil.

46. The proposed CAP included the following additional corrective action measures:

- a. Remediation of SA-3.
- b. If needed, the lowering of the groundwater surface to maintain the required five-foot separation between waste and groundwater.
- c. Monitored natural attenuation to address any remaining groundwater impact.

47. The remediation of SA-2 is considered complete. The remediation of SA-3 was overseen by Cleanup Program site in the Central Valley Water Board Fresno office. A No Further Action letter was issued on 9 February 2016 and this site has subsequently been closed. SA-4 and SA-5 are regulated separately from the facility by the Cleanup Unit in the Central Valley Water Board Fresno office and are under the Sanchez Property project name. Remediation and monitoring of SA-4 and SA-5 are ongoing. The groundwater separation has been maintained in part due to extended drought conditions.

48. During the 1st semiannual 2016 monitoring period, TCE was detected at 0.51 micrograms per liter (μ /L) and PCE was detected at a trace concentration of 0.39 μ /L in off-site monitoring well MW-16D2. However, monitoring well MW-16D2 is located over a half mile downgradient from the facility and monitoring wells closer to the facility had no detectable concentrations of VOCs.

LANDFILL CLOSURE

49. Landfill operation ceased in 1970 and the facility closure consisted of covering the waste with a minimum of one foot of soil.

50. Landfill closure was completed prior to the adoption and implementation of the current regulations governing landfills, including California Code of Regulations, title 23, division 3, Chapter 15 (Chapter 15) which became effective in November 1984. Therefore, the site is exempt from the siting and closure requirements contained within Chapter 15.

LANDFILL POST-CLOSURE MAINTENANCE

51. The post-closure maintenance of the landfill will be implemented until the Central Valley Water Board determines that the waste no longer poses a threat to water quality. The completed final cover is periodically inspected for damage or defects and to ensure positive drainage.

FINANCIAL ASSURANCES

52. The facility is exempt from Title 27 financial assurance requirements for postclosure maintenance requirements (section 22210) because the facility closed before 1 January 1988.
53. The Discharger is responsible for all costs associated with post-closure maintenance of the landfill and all costs associated with complying with the requirements of these WDRs.
54. The facility is exempt from Title 27 financial assurance requirements for corrective action requirements (section 22220) because the facility closed before 1 July 1991.
55. The Discharger is responsible for all costs associated with any corrective actions associated with a release from the landfill and all costs associated with complying with the requirements of these WDRs.

CEQA AND OTHER CONSIDERATIONS

56. The action to revise waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resource Code section 21000, et seq., and the CEQA guidelines, in accordance with California Code of Regulations, title 14, section 15301.
57. This order implements the *Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised July 2016*.
58. Based on the threat and complexity of the discharge, the facility is determined to be classified 1-B as defined below:
 - a. Category 1 threat to water quality, defined as, "Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish."
 - b. Category B complexity, defined as, "Any discharger not included in Category A that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units."
59. The *Statement of Policy With Respect to Maintaining High Quality of Waters in California*, SWRCB Order WQ 68-16 (hereinafter "Anti-Degradation Policy") was adopted by the State Water Board in October 1968. Anti-Degradation Policy limits the Board's discretion to authorize the degradation of "high-quality waters." This policy has been incorporated into the Board's Basin Plans. "High-quality waters" are defined as those waters where water quality is more than sufficient to support beneficial uses designated in the Board's

Basin Plan. Whether or not a water is a high-quality water is established on a constituent-by-constituent basis, which means that an aquifer can be considered a high-quality water with respect to one constituent, but not for others. (SWRCB Order No. WQ 91-10.)

60. Anti-Degradation Policy applies when an activity discharges to high quality waters and will result in some degradation of such high quality waters. When it applies, the Policy requires that WDRs reflect best practicable treatment or control (BPTC) of wastes and that any degradation of high quality waters (a) will be consistent with the maximum benefit to the people of the State, and (b) will not result in an exceedance of water quality objectives. If the activity will not result in the degradation of high quality waters, Anti-Degradation Policy does not apply, and the Discharger need only demonstrate that it will use "best efforts" to control the discharge of waste.
61. Due to the presence of unlined waste disposal units at the site, waste discharged at the site could be discharged to waters of the State as a result of permitted activities at the facility. The potential for waste constituents to discharge to waters of the State has decreased since landfill closure in 1970. Groundwater quality data indicate that the release of waste constituents decreased between 1986 and 2016. The potential for ongoing release of waste constituents is expected to continue to decrease over time. Because of previous and future anticipated natural attenuation of waste discharges from the facility, any degradation that occurs will not cause exceedances of applicable water quality objectives. Further, any degradation that may occur due to waste discharges from the site would be to the maximum benefit to the people of the state, given that preventing such degradation would require re-engineering the facility at considerable expenditures of public funds out of proportion with the benefit to water quality. Compliance with this Order, the attached Standard Provisions and Reporting Requirements, and Monitoring and Reporting Program R5-2017-0054 represent BPTC of the discharge of waste to waters of the State. Therefore, the site complies with the Anti-Degradation Policy.
62. Water Code section 13267(b) 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 discharge or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes 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.
63. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2017-0054" are necessary to assure compliance with these waste discharge requirements. The Discharger owns and maintains the facility that discharged the waste subject to this Order.

PROCEDURAL REQUIREMENTS

64. 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.
65. The Central Valley 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.
66. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.
67. Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date that this Order becomes final, except that if the thirtieth day following the date that this Order becomes final falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

IT IS HEREBY ORDERED, pursuant to California Water Code sections 13263 and 13267, that Order No. 5-00-160 is rescinded except for purposes of enforcement, and that the Kings Waste and Recycling Authority, its agents, successors, and assigns, in order to meet the provisions of Division 7 of the California Water Code and the regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of any waste at this facility is prohibited.
2. The discharge of solid or liquid waste or leachate to surface waters, surface water drainage courses, or groundwater is prohibited.

B. DISCHARGE SPECIFICATIONS

1. The waste shall not cause pollution or a nuisance as defined by the California Water Code, Section 13050.
2. The waste shall not cause degradation of any water supply beyond that which has been authorized in accordance with the Ant-Degradation Policy.
3. Water used for facility maintenance shall be limited to the minimum amount for dust control, construction, or proper compaction of the cover during any necessary repairs.

C. FACILITY SPECIFICATIONS

1. Annually, prior to the anticipated rainy season but no later than **31 October**, the Discharger shall implement any necessary erosion control measures and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities to prevent erosion or flooding of the facility and to prevent surface drainage from contacting or percolating through wastes.
2. Surface drainage and subsurface drainage from tributary areas and internal site drainage from surface or subsurface soils shall not contact or percolate through wastes.
3. Cover materials shall be graded to divert precipitation from the waste management unit, to prevent ponding of surface water over wastes, and to resist erosion as a result of precipitation.
4. The Standard Facility Specifications 6 through 11 listed in Section E of the SPRRs apply to the facility.

D. POST-CLOSURE MAINTENANCE SPECIFICATIONS

1. The Discharger shall maintain the structural integrity and effectiveness of all containment structures, maintain the cover as necessary to correct the effects of settlement and other adverse factors and prevent erosion and related damage to the cover due to drainage.
2. The Discharger shall maintain in good working order any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
3. The Discharger shall comply with all applicable Standard Closure and Post-Closure Specifications listed in Section G of the SPRRs.

E. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall be financially responsible for the funds necessary for corrective action of the landfill and all activities associated with complying with these WDRs.

F. MONITORING SPECIFICATIONS

1. The Discharger shall comply with the applicable detection monitoring program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, and in accordance with Monitoring and Reporting Program (MRP) No. R5-2017-0054, and the Standard Monitoring Specifications listed in Section I of the SPRRs. (See Finding 31).
2. The Discharger shall, for any landfill unit in a corrective action monitoring program (See Finding 40), comply with the corrective action monitoring program provisions of Title 27, MRP No. R5-2017-0054, and the Standard Monitoring Specifications listed in Section I of SPRRs.
3. The Discharger shall comply with the Water Quality Protection Standard as specified in this Order, MRP No. R5-2017-0054, and the SPRRs.
4. The concentrations of the constituents of concern in waters passing the Point of Compliance (defined pursuant to Title 27, section 20164 as a vertical surface located at the hydraulically downgradient limit of the landfill unit that extends through the uppermost aquifer underlying the unit) shall not exceed the concentration limits established pursuant to MRP No. R5-2017-0054.
5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with the Water Quality Protection Standard using procedures specified in MRP No. R5-2017-0054 and the Standard Monitoring Specifications in Section I of the SPRRs.
6. Due to declining groundwater levels and drought conditions, numerous monitoring wells within the Detection Monitoring Program have gone dry. **By 1 March 2018**, the Discharger shall submit an evaluation of its DMP, including an updated Water Quality Protection Standard (WQPS) and an updated Sampling and Analysis Plan (SAP). If the DMP is determined to be inadequate, the Discharger shall include proposed changes and a time schedule to bring its DMP into compliance.
7. As specified in MRP No. R5-2017-0054, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23.
8. The Discharger shall comply with all Standard Monitoring Specifications and Response to a Release specifications listed in Sections I and J of the SPRRs.

G. PROVISIONS

1. The Discharger shall maintain a copy of this Order at their office, including the MRP No. R5-2017-0054 and the SPRRs which are part of this Order, and make it available at all times to facility operating personnel, who shall be familiar with its contents, and to regulatory agency personnel.
2. The Discharger shall comply with all applicable provisions of Title 27 and Subtitle D that are not specifically referred to in this Order.
3. The Discharger shall comply with MRP No. R5-2017-0054, which is incorporated into and made part of this Order by reference.
4. If there is any conflicting or contradictory language between the WDRs, the MRP, or the SPRRs, then language in the WDRs shall supersede either the MRP or the SPRRs, and language in the MRP shall supersede the SPRRs.
5. All reports required by this Order shall be submitted pursuant to Water Code section 13267.
6. The Discharger shall complete the tasks contained in these waste discharge requirements in accordance with the following time schedule:

Task

Compliance Date

A. Monitoring

1. Submit an evaluation of the DMP, including an updated WQPS and an updated SAP. If the DMP is determined to be inadequate, include proposed changes and a time schedule to bring DMP into compliance. (See Monitoring Specification F.6)

By 1 March 2018

7. The Discharger shall comply with all General Provisions listed in Section K of the SPRRs.

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 7 April 2017.

Original Signed by:

PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

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FOR
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HOUSTON AVENUE LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE
KINGS COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater and unsaturated zone monitoring and reporting; facility monitoring, maintenance, and reporting; and financial assurances reporting contained in California Code of Regulations, title 27, section 20005, et seq. (hereafter Title 27), Waste Discharge Requirements (WDRs) Order No. R5-2017-0054, and the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015. Compliance with this MRP is ordered by the WDRs and the Discharger shall not implement any changes to this MRP unless a revised MRP is issued by the Central Valley Water Board or the Executive Officer.

A. MONITORING

The Discharger shall comply with the detection monitoring program provisions of Title 27 for groundwater and the unsaturated zone in accordance with Standard Monitoring Specifications in Section I of the SPRRs and the Monitoring Specifications in Section F of the WDRs. All monitoring shall be conducted in accordance with the most recently approved Detection Monitoring Program.

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

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, and are identified in the most recently approved Detection Monitoring Program.

The monitoring program of this MRP includes:

<u>Section</u>	<u>Monitoring Program</u>
A.1	Groundwater Monitoring
A.2	Unsaturated Zone Monitoring
A.3	Seep Monitoring
A.4	Facility Monitoring

1. Groundwater Monitoring

The Discharger shall operate and maintain a groundwater detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420. The detection monitoring system shall be certified by a California-licensed professional civil engineer or geologist as meeting the requirements of Title 27.

The current groundwater monitoring network consists the following:

<u>Well</u>	<u>Status</u>	<u>Zone</u>
MW-1	Background	Shallow
MW-3	Detection	Shallow
MW-5	Background	Shallow
MW-6S	Evaluation	Shallow
MW-7S	Evaluation	Shallow
MW-12S	Evaluation	Shallow
MW-13S	Detection	Shallow
MW-14S	Detection	Shallow
MW-15S	Detection	Shallow
P-1	Detection	Deep
P-2	Detection	Deep
P-3	Detection	Deep
MW-4	Detection	Deep
MW-6D	Evaluation	Deep
MW-7D	Evaluation	Deep
MW-8D	Evaluation	Deep
MW-9DR	Evaluation	Deep
MW-10D	Evaluation	Deep
MW-10D2	Evaluation	Deep
MW-11DR	Evaluation	Deep
MW-13D	Detection	Deep
MW-16D	Evaluation	Deep
MW-16D2	Evaluation	Deep

Groundwater samples shall be collected from the background wells, detection monitoring wells, and any additional wells added as part of the approved groundwater monitoring system. The collected samples shall be analyzed for the parameters and constituents listed in Table I in accordance with the

specified methods and frequencies. The Discharger shall collect, preserve, and transport groundwater samples in accordance with the most recently approved Detection Monitoring Program.

Once per quarter, the Discharger shall measure the groundwater elevation in each well and piezometers PZ-1 through PZ-5, determine groundwater flow direction, and estimate groundwater flow rates in the uppermost aquifer and in any zones of perched water and in any additional portions of the zone of saturation monitored. The results shall be reported semiannually, including the times of expected highest and lowest elevations of the water levels in the wells, pursuant to Title 27, section 20415(e)(15).

Samples collected for the COC monitoring specified in Table I shall be collected and analyzed in accordance with the methods listed in Table V every five years. Five-year COCs were last monitored in 2015 and shall be monitored again in **2020**. The results shall be reported in the Annual Monitoring Report for the year in which the samples were collected.

2. Unsaturated Zone Monitoring

The Discharger shall operate and maintain an unsaturated zone detection monitoring system that complies with the applicable provisions of Title 27, sections 20415 and 20420.

The current unsaturated zone monitoring network consists of the following landfill gas monitoring wells: P-1A, P-2A, P-4, and UW-1.

Unsaturated zone samples shall be collected from the monitoring network listed above and shall be analyzed for the parameters and constituents listed in Table II in accordance with the specified methods and frequencies.

The Discharger shall collect, preserve, and transport samples in accordance with the quality assurance/quality control standards contained in the approved monitoring plan.

Monitoring results for the unsaturated zone shall be included in monitoring reports and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

3. Seep Monitoring

Leachate that seeps to the surface from a landfill unit shall be sampled and analyzed for the Field and Monitoring Parameters listed in Table III upon detection. The quantity of leachate shall be estimated and reported as Leachate Flow Rate (in gallons/day). Reporting for leachate seeps shall be conducted as required in Section B.3 of this MRP, below.

4. Facility Monitoring

a. Annual Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for drainage control systems, cover systems, and groundwater monitoring wells; and shall assess preparedness for winter conditions (including but not limited to erosion and sedimentation control). The Discharger shall take photos of any problems areas before and after repairs. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. Annual facility inspection reporting shall be submitted as required in Section B.4 of this MRP.

b. Major Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities and all landfill side slopes for damage **within 7 days** following major storm events capable of causing damage or significant erosion. The Discharger shall take photos of any problems areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in Section B.5 of this MRP.

c. Standard Observations

The Discharger shall conduct Standard Observations at the landfill in accordance with this section of the MRP. Standard observations shall be conducted in accordance with the following schedule:

<u>Frequency</u>	<u>Season</u>
Monthly	Wet: 1 October to 30 April
Quarterly	Dry: 1 May to 30 September

The Standard Observations shall include:

1) For the landfill units:

- a) Evidence of ponded water at any point on the landfill outside of any contact storm water/leachate diversions structures on the active face (show affected area on map); and
- b) Evidence of erosion and/or of day-lighted refuse.

- 2) Along the perimeter of the landfill units:
 - a) Evidence of leachate seeps, estimated size of affected area, and flow rate (show affected area on map); and
 - b) Evidence of erosion and/or of day-lighted refuse.
- 3) For receiving waters:
 - a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area; and
 - b) Discoloration and turbidity - description of color, source, and size of affected area.

Results of Standard Observations shall be submitted in the semiannual monitoring reports required in Section B.1 of this MRP.

B. REPORTING

The Discharger shall submit the following reports in accordance with the required schedule:

Reporting Schedule

<u>Section</u>	<u>Report</u>	<u>End of Reporting Period</u>	<u>Due Date</u>
B.1	Semiannual Monitoring Report	30 June, 31 December	1 August, 1 February
B.2	Annual Monitoring Report	31 December	1 February
B.3	Seep Reporting	Continuous	Immediately & 7 Days
B.4	Annual Facility Inspection Report	31 October	15 November
B.5	Major Storm Event Reporting	Continuous	7 days from damage discovery

Reporting Requirements

The Discharger shall submit monitoring reports **semiannually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2017-0054 and the Standard Provisions and Reporting Requirements (particularly Section I: "Standard Monitoring Specifications" and Section J: "Response to a Release"). In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format, such as a computer disk.

Field and laboratory tests shall be reported in each monitoring report. Semiannual and annual monitoring reports shall be submitted to the Central Valley Water Board in accordance with the above schedule for the calendar period in which samples were taken or observations made. In addition, the Discharger shall enter all monitoring data and monitoring reports into the online Geotracker database as required by Division 3 of Title 27 and Chapter 30, Division 3 of Title 23.

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

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

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

Required Reports

1. **Semiannual Monitoring Report:** Monitoring reports shall be submitted semiannually and are due on **1 August** and **1 February**. Each semiannual monitoring report shall contain at least the following:
 - a) For each groundwater monitoring point addressed by the report, a description of:
 - 1) The time of water level measurement;
 - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

- 3) The method of purging used to stabilize water in the well bore before the sample is taken including the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; results of pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water;
 - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
 - 5) A statement that the sampling procedure was conducted in accordance with the approved monitoring plan.
- b) A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
 - c) The estimated quarterly groundwater flow rate and direction in the uppermost aquifer, in any zones of perched water, and in any additional zone of saturation monitored based upon water level elevations taken prior to the collection of the water quality data submitted in the report [Title 27, section 20415(e)(15)].
 - d) Cumulative tabulated monitoring data for all monitoring points and constituents for groundwater, unsaturated zone, and leachate seeps. Concentrations below the laboratory reporting limit shall not be reported as "ND" unless the reporting limit is also given in the table. Otherwise they shall be reported "<" the reporting limit (e.g., <0.10). Units shall be as required in Tables I through IV unless specific justification is given to report in other units. Refer to the SPRRs Section I "Standard Monitoring Specifications" for requirements regarding MDLs and PQLs.
 - e) Laboratory statements of results of all analyses evaluating compliance with requirements.
 - f) An evaluation of the concentration of each monitoring parameter (or 5-year COC when five year COC sampling is conducted) as compared to the current concentration limits, and the results of any required verification testing for constituents exceeding a concentration limit . Report any actions taken under Section J: Response to a Release for verified exceedances of a concentration limit for wells/constituents not already in corrective action monitoring.
 - g) A summary of all Standard Observations for the reporting period required in Section A.4.c of this MRP.
 - h) A summary of inspection and repair of final covers on any closed landfill units in accordance with an approved final post-closure maintenance plan as required by Standard Closure and Post-Closure Maintenance Specifications G.26 through G.29 of the SPRRs.
2. **Annual Monitoring Report:** The Discharger shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** covering the reporting

period of the previous monitoring year. If desired, the Annual Monitoring Report may be combined with the second semiannual report, but if so, shall clearly state that it is both a semi-annual and annual monitoring report in its title. Each Annual Monitoring Report shall contain the following information:

- a) All monitoring parameters shall be graphed to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. If a 5-year COC event was performed, then these parameters shall also be graphically presented. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
 - b) An evaluation of the monitoring parameters with regards to the cation/anion balance, and a graphical presentation using a Stiff diagram, a Piper graph, or a Schoeller plot.
 - c) All historical monitoring data for which there are detectable results, including data for the previous year, shall be submitted in tabular form in a digital file format such as a computer disk. The Central Valley Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27, section 20420(h)], that facilitates periodic review by the Central Valley Water Board.
 - d) Hydrographs of each well showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted annually.
 - e) A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
 - f) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.
 - g) Updated concentration limits for each monitoring parameter at each monitoring well based on the new data set.
3. **Seep Reporting:** The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Central Valley Water Board **within seven days**, containing at least the following information:
- a) A map showing the location(s) of seepage;
 - b) An estimate of the flow rate;

- c) A description of the nature of the discharge (e.g., all pertinent observations and analyses);
 - d) Verification that samples have been submitted for analyses of the Field Parameters and Monitoring Parameters listed in Table III of this MRP, and an estimated date that the results will be submitted to the Central Valley Water Board; and
 - e) Corrective measures underway or proposed, and corresponding time schedule.
4. **Annual Facility Inspection Reporting:** By **15 November** of each year, the Discharger shall submit a report describing the results of the inspection and the repair measures implemented, preparations for winter, and include photographs of any problem areas and the repairs. Refer to Section A.4.a of this MRP, above.
5. **Major Storm Event Reporting:** Following major storm events capable of causing damage or significant erosion, the Discharger **immediately** shall notify Central Valley Water Board staff of any damage or significant erosion upon discovery and report subsequent repairs within **14 days** of completion of the repairs, including photographs of the problem and the repairs. Refer to Section A.4.b of this MRP, above.

C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD

1. Water Quality Protection Standard Report

For each waste management unit, the Water Quality Protection Standard shall consist of all COCs, the concentration limit for each constituent of concern, the verification retesting procedure to confirm measurably significant evidence of a release, the point of compliance, and all water quality monitoring points for each monitored medium.

The Water Quality Protection Standard for naturally occurring waste constituents consists of the COCs, the concentration limits, and the point of compliance and all monitoring points. Any proposed changes to the Water Quality Protection Standard other than annual update of the concentration limits shall be submitted in a report for review and approval.

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a waste management unit or portion of a unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.

- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with Title 27, section 20405.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).
- d. Include a proposed statistical method for calculating concentration limits for monitoring parameters and constituents of concern that are detected in 10% or greater of the background data (naturally-occurring constituents) using a statistical procedure from Title 27, section 20415(e)(8)(A-D)] or section 20415(e)(8)(E).
- e. Include a retesting procedure to confirm or deny measurably significant evidence of a release pursuant to Title 27, section 20415(e)(8)(E) and section 20420(j)(1-3).

The Water Quality Protection Standard shall be certified by a California-registered civil engineer or geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

The Discharger proposed the methods for calculating concentration limits and the limits are calculated using Interwell tolerance limits based on background data from background monitoring wells.

The Water Quality Protection Standard shall be updated annually for each monitoring well using new and historical monitoring data.

2. Monitoring Parameters

Monitoring parameters are a select group of constituents that are monitored during each monitoring event that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a waste management unit. The monitoring parameters for all waste management units are those listed in Tables I through IV for the specified monitored medium.

3. Constituents of Concern (COCs)

The COCs include a larger group of waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the waste management unit, and are required to be monitored every five years [Title 27, sections 20395 and 20420(g)]. The COCs for all waste management units at the facility are those listed in Tables I through III for the specified monitored medium, and Table V. The Discharger shall monitor all COCs every five years, or more frequently as required in accordance with a Corrective Action Program. The last 5-year COC report was submitted to the Central Valley Water Board in the 2015 *Annual Monitoring Report*, and 5-year COCs are due to be monitored again in **2020**.

4. Concentration Limits

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

- a. By calculation in accordance with a statistical method pursuant to Title 27, section 20415(e)(8); or
- b. By an alternate statistical method meeting the requirements of Title 27, section 20415(e)(8)(E).

The approved method for calculating concentration uses Interwell tolerance limits based on background data from background monitoring well.

5. Retesting Procedures for Confirming Evidence of a Release

If monitoring results indicate measurably significant evidence of a release, as described in Standard Monitoring Specification I.45 of the SPRRs, then:

- a. For analytes that are detected in less than 10% of the background samples (such as non-naturally occurring constituents), the Discharger shall use the non-statistical retesting procedure required in Standard Monitoring Specification I.46 of the SPRRs.
- b. For analytes that are detected in 10% or greater of the background samples (naturally occurring constituents), the Discharger shall use one of the statistical retesting procedure as required in Standard Monitoring Specification I.47 of the SPRRs.

6. Point of Compliance

The point of compliance for the water standard at each waste management unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the unit.

7. Compliance Period

The compliance period for each waste management unit shall be the number of years equal to the active life of the unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the waste management unit. The compliance period shall begin anew each time the Discharger initiates an evaluation monitoring program [Title 27, section 20410].

8. Monitoring Points

A monitoring point is a well, device, or location specified in the waste discharge requirements, which monitoring is conducted and at which the water quality protection standard applies. The monitoring points for each monitored medium are listed in Section A of this MRP.

D. TRANSMITTAL LETTER FOR ALL REPORTS

A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report. The transmittal letter shall 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.

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

Original Signed by:

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

_____ 7 April 2017
(Date)

TABLE I
GROUNDWATER DETECTION MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Field Parameters			
Groundwater Elevation	Ft. & 100ths, M.S.L.	Quarterly	Semiannual
Temperature	°F	Semiannual	Semiannual
Electrical Conductivity	umhos/cm	Semiannual	Semiannual
pH	pH units	Semiannual	Semiannual
Turbidity	Turbidity units	Semiannual	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L ¹	Semiannual	Semiannual
Chloride	mg/L	Semiannual	Semiannual
Carbonate	mg/L	Semiannual	Semiannual
Bicarbonate	mg/L	Semiannual	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual	Semiannual
Sulfate	mg/L	Semiannual	Semiannual
Calcium	mg/L	Semiannual	Semiannual
Magnesium	mg/L	Semiannual	Semiannual
Potassium	mg/L	Semiannual	Semiannual
Sodium	mg/L	Semiannual	Semiannual
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L ²	Semiannual	Semiannual
Diesel Range Organics (USEPA Method 8015M)	ug/L	Semiannual	Semiannual
5-Year Constituents of Concern (see Table V)			
Total Organic Carbon	mg/L	5 years	2020
Inorganics (dissolved)	ug/L	5 years	and every 5 years
Volatile Organic Compounds (USEPA Method 8260B, extended list)	ug/L	5 years	thereafter
Semi-Volatile Organic Compounds (USEPA Method 8270C or D)	ug/L	5 years	" "
Chlorophenoxy Herbicides (USEPA Method 8151A)	ug/L	5 years	" "
Organophosphorus Compounds (USEPA Method 8141B)	ug/L	5 years	" "

¹ Milligrams per liter

² Micrograms per liter

TABLE II
UNSATURATED ZONE DETECTION MONITORING PROGRAM

SOIL-PORE GAS¹

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Monitoring Parameters			
Volatile Organic Compounds (USEPA Method TO-14)	ug/cm ³	Annual	Annual
Methane	%	Semiannual	Semiannual

¹ Soil-pore gas samples collected from landfill gas probes are only subject to the VOC (USEPA Method TO-14) and methane monitoring.

TABLE III
SEEP MONITORING

<u>Parameter</u>	<u>Units</u>	<u>Sampling Frequency</u> ¹	<u>Reporting Frequency</u>
Field Parameters			
Total Flow	Gallons	Monthly	Semiannual
Flow Rate	Gallons/Day	Monthly	Semiannual
Electrical Conductivity	umhos/cm	Quarterly	Semiannual
pH	pH units	Quarterly	Semiannual
Monitoring Parameters			
Total Dissolved Solids (TDS)	mg/L	Annually	Annually
Chloride	mg/L	Annually	Annually
Carbonate	mg/L	Annually	Annually
Bicarbonate	mg/L	Annually	Annually
Nitrate - Nitrogen	mg/L	Annually	Annually
Sulfate	mg/L	Annually	Annually
Calcium	mg/L	Annually	Annually
Magnesium	mg/L	Annually	Annually
Potassium	mg/L	Annually	Annually
Sodium	mg/L	Annually	Annually
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table IV)	ug/L	Annually	Annually

¹ The sampling frequency only applies to a period in which the leachate seep(s) is active.

TABLE IV

MONITORING PARAMETERS FOR DETECTION MONITORING

Surrogates for Metallic Constituents:

pH
Total Dissolved Solids
Electrical Conductivity
Chloride
Sulfate
Nitrate nitrogen

Volatile Organic Compounds, short list:

USEPA Method 8260B

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

TABLE IV
MONITORING PARAMETERS FOR DETECTION MONITORING

Continued

Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Methyl ethyl ketone (MEK: 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
4-Methyl-2-pentanone (Methyl isobutylketone)
Naphthalene
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene)
Toluene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride
Xylenes

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

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

Volatile Organic Compounds, extended list:

USEPA Method 8260B

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropropene)
Benzene
Bromochloromethane (Chlorobromomethane)
Bromodichloromethane (Dibromochloromethane)
Bromoform (Tribromomethane)
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane (Ethyl chloride)
Chloroform (Trichloromethane)
Chloroprene
Dibromochloromethane (Chlorodibromomethane)
1,2-Dibromo-3-chloropropane (DBCP)
1,2-Dibromoethane (Ethylene dibromide; EDB)
o-Dichlorobenzene (1,2-Dichlorobenzene)

TABLE V
5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

m-Dichlorobenzene (1,3-Dichlorobenzene)
p-Dichlorobenzene (1,4-Dichlorobenzene)
trans- 1,4-Dichloro-2-butene
Dichlorodifluoromethane (CFC 12)
1,1 -Dichloroethane (Ethylidene chloride)
1,2-Dichloroethane (Ethylene dichloride)
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)
1,2-Dichloropropane (Propylene dichloride)
1,3-Dichloropropane (Trimethylene dichloride)
2,2-Dichloropropane (Isopropylidene chloride)
1,1 -Dichloropropene
cis- 1,3-Dichloropropene
trans- 1,3-Dichloropropene
Di-isopropylether (DIPE)
Ethanol
Ethyltertiary butyl ether
Ethylbenzene
Ethyl methacrylate
Hexachlorobutadiene
2-Hexanone (Methyl butyl ketone)
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethane)
Methyl chloride (Chloromethane)
Methyl ethyl ketone (MEK; 2-Butanone)
Methyl iodide (Iodomethane)
Methyl t-butyl ether
Methyl methacrylate
4-Methyl-2-pentanone (Methyl isobutyl ketone)
Methylene bromide (Dibromomethane)
Methylene chloride (Dichloromethane)
Naphthalene
Propionitrile (Ethyl cyanide)
Styrene
Tertiary amyl methyl ether
Tertiary butyl alcohol
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)
Toluene
1,2,4-Trichlorobenzene

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

1,1,1 -Trichloroethane (Methylchloroform)
1,1,2-Trichloroethane
Trichloroethylene (Trichloroethene; TCE)
Trichlorofluoromethane (CFC- 11)
1,2,3-Trichloropropane
Vinyl acetate
Vinyl chloride (Chloroethene)
Xylene (total)

Semi-Volatile Organic Compounds:

USEPA Method 8270C or D - base, neutral, & acid extractables

Acenaphthene
Acenaphthylene
Acetophenone
2-Acetylaminofluorene (2-AAF)
Aldrin
4-Aminobiphenyl
Anthracene
Benzo[a]anthracene (Benzanthracene)
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[g,h,i]perylene
Benzo[a]pyrene
Benzyl alcohol
Bis(2-ethylhexyl) phthalate
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC (Lindane)
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl) ether (Dichloroethyl ether)
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)
4-Bromophenyl phenyl ether
Butyl benzyl phthalate (Benzyl butyl phthalate)
Chlordane
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol (4-Chloro-3-methylphenol)
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl phenyl ether
Chrysene
o-Cresol (2-methylphenol)
m-Cresol (3-methylphenol)
p-Cresol (4-methylphenol)

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

4,4'-DDD
4,4'-DDE
4,4'-DDT
Diallate
Dibenz[a,h]anthracene
Dibenzofuran
Di-n-butyl phthalate
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Dieldrin
Diethyl phthalate
p-(Dimethylamino)azobenzene
7,12-Dimethylbenz[a]anthracene
3,3'-Dimethylbenzidine
2,4-Dimethylphenol (m-Xylenol)
Dimethyl phthalate
m-Dinitrobenzene
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octyl phthalate
Diphenylamine
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Ethyl methanesulfonate
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Indeno(1,2,3-c,d)pyrene
Isodrin
Isophorone
Isosafrole
Kepone
Methapyrilene
Methoxychlor
3-Methylcholanthrene

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Methyl methanesulfonate
2-Methylnaphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
o-Nitroaniline (2-Nitroaniline)
m-Nitroaniline (3-Nitroaniline)
p-Nitroaniline (4-Nitroaniline)
Nitrobenzene
o-Nitrophenol (2-Nitrophenol)
p-Nitrophenol (4-Nitrophenol)
N-Nitrosodi-n-butylamine (Di-n-butylnitrosamine)
N-Nitrosodiethylamine (Diethylnitrosamine)
N-Nitrosodimethylamine (Dimethylnitrosamine)
N-Nitrosodiphenylamine (Diphenylnitrosamine)
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylnitrosamine)
N-Nitrosomethylethylamine (Methylethylnitrosamine)
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Pentachlorobenzene
Pentachloronitrobenzene (PCNB)
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Polychlorinated biphenyls (PCBs; Aroclors)
Pronamide
Pyrene
Safrole
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
o-Toluidine
Toxaphene
2,4,5-Trichlorophenol
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene

TABLE V

5-YEAR COCs & APPROVED USEPA ANALYTICAL METHODS

Continued

Chlorophenoxy Herbicides:

USEPA Method 8151A

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

Organophosphorus Compounds:

USEPA Method 8141B

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

INFORMATION SHEET - ORDER R5-2017-0054
KINGS WASTE AND RECYCLING AUTHORITY
HOUSTON AVENUE LANDFILL
KINGS COUNTY

INFORMATION SHEET

ORDER R5-2017-0054
KINGS WASTE AND RECYCLING AUTHORITY
POSTCLOSURE MAINTENANCE
HOUSTON AVENUE LANDFILL
KINGS COUNTY

The Kings Waste and Recycling Authority (hereinafter Discharger) owns and operates the Houston Avenue Landfill Name (facility) located in the southern portion of the City of Hanford, in Section 1, T19S, R21E, MDB&M. The California Regional Water Quality Control Board (Central Valley Water Board) adopted Waste Discharge Requirements (WDRs) Order No. 5-00-160 on 16 June 2000, which classified the facility as a Class III landfill as defined in Title 27, California Code of Regulations, section 20005 et seq. (hereafter Title 27). The proposed revised Order provides for continuing postclosure maintenance.

The 44-acre facility consists of one unlined waste management unit covering approximately 38 acres. The facility accepted waste from the 1950's until 1970 when the facility was closed in accordance with existing state regulations at the time. The facility is a "closed, abandoned, or inactive" (CAI) unit because closure occurred prior to 27 November 1984, in accordance with Title 27, section 20164. The Closure consisted of covering waste with a minimum of one foot of soil. soils immediately underlying the site were deposited as alluvial fan sediments consisting of unconsolidated and interbedded sands, silts, and clays.

The first encountered groundwater beneath the facility ranges between 47 and 131 feet below ground surface. Two groundwater bearing zones have been identified beneath the facility. The shallow zone occurs above the A-Clay layer and ranged in depth from 17 feet bgs to 41 feet bgs and deep zone groundwater occurs below the A-Clay layer. The A-Clay layer does not extend further than 400 to 700 feet downgradient of the facility. As a result, the shallow and deep groundwater zones become contiguous east of the facility and no longer behave as discrete hydrological units.

Volatile organic compounds (VOCs) have been detected in the unsaturated zone and in groundwater. The latest self-monitoring report (1st Semiannual 2016) reported low-levels of trichloroethene (0.51 μL) and tetrachloroethene (0.39 μL [trace]) in a downgradient groundwater monitoring well. Historically, the facility was a major source of groundwater contamination. However, the Discharger undertook several corrective action measures and is currently using monitored natural attenuation as a corrective action measure.

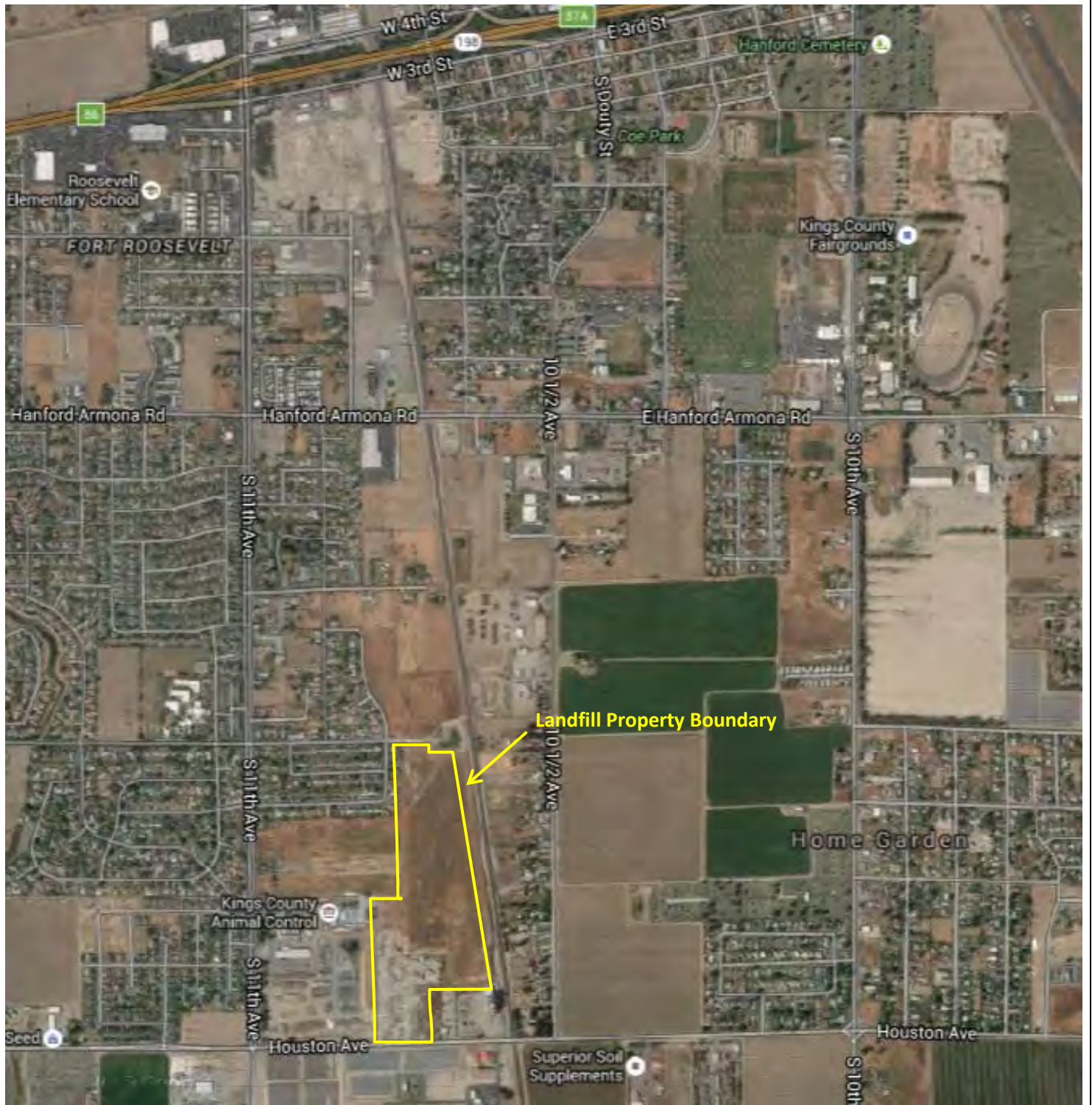
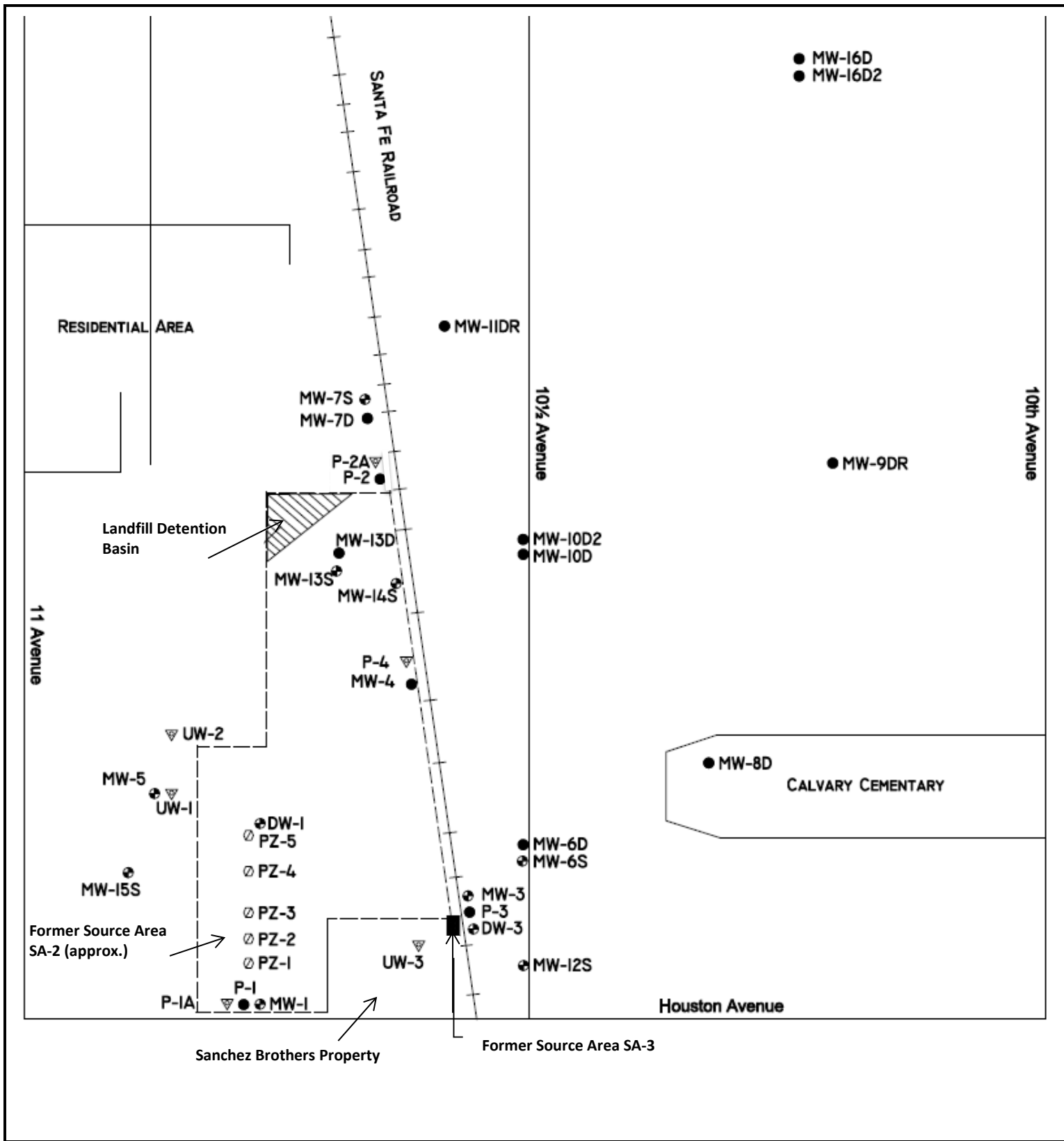


Image Source: Google Maps

WASTE DISCHARGE REQUIREMENTS
ORDER NO. R5-2017-0054
KINGS WASTE AND RECYCLING AUTHORITY
FOR
HOUSTON AVENUE LANDFILL
KINGS COUNTY
ATTACHMENT A



- Deep Monitoring Well
- ⊕ Shallow Monitoring Well
- ⊕ Piezometer
- ▽ LFG Monitoring Well

WASTE DISCHARGE REQUIREMENTS
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 KINGS WASTE AND RECYCLING AUTHORITY
 FOR
 HOUSTON AVENUE LANDFILL
 KINGS COUNTY
 ATTACHMENT B