CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2017-0051

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF BAKERSFIELD
BAKERSFIELD SANITARY LANDFILL
CLASS III LANDFILL
POST-CLOSURE MAINTENANCE

KERN COUNTY

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

1. The City of Bakersfield (hereinafter Discharger) owns and maintains the Bakersfield Sanitary Landfill (facility) about three quarters of a mile south of the Kern River, in Sections 10, and 11, T29S, R28E, MDB&M, as shown in Attachment A. The facility is a municipal solid waste (MSW) landfill regulated under authority given in Water Code section 13000 et seq. and the California Code of Regulations, title 27 ("Title 27"), section 20005 et seq.[1]

2. The following documents are attached to this Order and hereby incorporated into and made a part of this Order by reference:

   a. Attachment A – Site Location Map

   b. Attachment B – Site Plan

   c. Information Sheet

   d. Standard Provisions and Reporting Requirements (SPRRs) dated December 2015.

3. The facility is on a 132-acre property located at 4200 Panorama Drive in the City of Bakersfield. The existing permitted landfill area is approximately 99 acres as shown in Attachment B. The facility is comprised of Assessor's Parcel Numbers (APN) 146-011-36-6.

4. 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

[1] Unless otherwise specified, all section references in this Order are to California Code of Regulations, title 27.

policies adopted thereunder, for continued post-closure maintenance of the facility. The last revision of this Order was in 2005.

5. The site was originally established as a burn dump in 1943, and was converted to a sanitary landfill in 1956. The site ceased accepting refuse on 15 September 1983 and was covered with a one foot of soil as a final cover.

6. On 27 October 2000, the Central Valley Water Board classified the facility as a Class III waste disposal site. On 16 September 2005, the Central Valley Water Board adopted Order No. R5-2005-0135, which continued to classify the facility as a Class III waste disposal site in accordance with section 20004, et seq. This Order continues to classify the facility as a Class III waste management unit in accordance with Title 27.

7. The existing landfill facility consists of one closed, unlined waste management unit covering approximately 99 acres. This unit has no leachate collection and removal system.

8. On-site facilities at the City of Bakersfield Sanitary Landfill include: landfill gas extraction and flare system and a chain-link fence surrounding the facility.

9. 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 SPRRs dated December 2015 which are part of this Order. Monitoring and reporting requirements are included in the Monitoring and Reporting Program (MRP) No. R5-2017-0051. 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.

10. 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.

WASTE CLASSIFICATION AND UNIT CLASSIFICATION

11. The Discharger previously discharged municipal solid wastes, which are defined in section 20164.

SITE DESCRIPTION

12. The facility is located in northeast Bakersfield in Kern County. The entire 132-acre property is owned by the City of Bakersfield. Attachment B shows the current property boundary and the 99-acre disposal footprint.

13. The closest Holocene fault is the Kern Bluff fault, approximately two miles east of the site. The fault has offset modern soils by approximately two feet. Two historic earthquakes were recorded on the fault in 1954 and 1985 with Richter magnitudes of 2.5 and 2.4, respectively. A report prepared for a nearby area concluded that the Kern Bluff fault is an active tectonic feature capable of producing surface rupture in the future. Two faults have been mapped within the site boundaries. It is not known whether these faults are active although a Richter Magnitude 6.1 quake was recorded in the area. The peak horizontal ground acceleration has been calculated at 0.306g for a Richter Magnitude 6.1 quake at a depth of 10 kilometers below the site.

14. Land within 1,000 feet of the facility is used for residential, non-irrigated open space, and commercial activities including oil production. There are two oil production fields located within the vicinity of the site: (1) the large Kern River Oil Field is located ¾ miles to the northwest, (2) the smaller Kern Bluff Oil Field is located 1¼ mile to the east. The residential areas are located atop the bluffs of the southern and western slopes of the landfill boundary.

15. There are 41 municipal, domestic, industrial, or agricultural groundwater supply wells within one mile of the site. No surface springs or other sources of groundwater supply have been observed. The Kern River is approximately three quarters of a mile north of the site.

16. The measured hydraulic conductivity of the native soils underlying the Unit ranges between 2.3×10^{-5} and 2.6×10^{-6} cm/sec.

17. The facility receives an average of 6.7 inches of precipitation per year as shown on the Mean Annual Precipitation Map of Kern County prepared by the Kern County Public Works Department in 1985. The map was prepared based on data from the Department of Water Resources Bulletin No. 195 published in 1976. The mean pan evaporation is 73.4 inches per year as measured at the United States Department of Agriculture Station near Shafter.

18. The 100-year, 24-hour precipitation event is estimated to be 2.5 inches, based on data from the 100-year, 24-hour precipitation map prepared by the Kern County Public Works Department. Data for the map was provided by the National Weather Service and the United States Department of Agriculture, Natural Resource Conservation Service.

19. 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 060077 0006 B.

SURFACE AND GROUND WATER CONDITIONS

20. The *Water Quality Control Plan for the Tulare Lake Basin, Second Edition*, *revised January 2015* (hereafter Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin.

21. Surface drainage is to the north towards the Kern River in the Kern Delta Hydrologic Area (557.10) of the Tulare Lake Basin.

22. The landfill is located along the eastern edge of the San Joaquin Valley near the boundary with the Sierra Nevada Mountains. The designated beneficial uses of the Kern River below Powerhouse No. 1, as specified in the Basin Plan, are municipal, agricultural, industrial service, and process supply; water contact and non-contact water recreation; warm fresh water habitat; preservation of rare, threatened, and endangered species; and groundwater recharge.

23. The first encountered groundwater is over 600 feet below the native ground surface. Groundwater elevations range from approximately 121 feet mean sea level (MSL) to 103 feet MSL. Monitoring data indicate that the groundwater is unconfined. The depth to groundwater fluctuates seasonally as much as two feet.

24. During drilling, natural gas has been encountered at elevations greater than the groundwater surface within the boundaries of the waste management facility.

25. Monitoring data indicates background groundwater quality has an electrical conductivity (EC) ranging between 40 and 300 micromhos/cm, with total dissolved solids (TDS) ranging between 262 and 302 mg/L.

26. The direction of regional groundwater flow is toward the south. There are no site-specific data on the direction of groundwater flow or variability of direction or gradient.

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

GROUNDWATER AND SOIL-PORE LIQUID DEGRADATION

28. Volatile organic compounds that are common constituents of crude oil and other petroleum constituents have been detected in groundwater at the site. Detection of these compounds is believed to be naturally occurring and not indicative of a release from the Unit. Other volatile organic landfill waste constituents have not been detected in groundwater.

29. Volatile organic compounds (VOCs) have been detected in soil-pore liquid. The VOCs detected include: chlorobenzene; dichlorobenzene; dichloroethene; ethylbenzene; isopropylbenzene; isopropyl toluene; naphthalene; toluene; trichlorobenzene; trimethylbenzene; xylenes; acetone; carbon disulfide; and methyl ethyl ketone. Many of these VOCs may be associated with naturally occurring petroleum deposits in the area.

30. The site has an operating landfill gas extraction system.

GROUNDWATER AND VADOSE ZONE MONITORING

31. Subchapter 3 of Chapter 3 of Title 27 requires the Discharger to institute a detection monitoring program for each waste management unit. California Water Code section 13269 authorizes the Regional Board to waive waste discharge requirements where such waiver is not against the public interest. Such waiver shall be conditional and may be terminated at any time by the Regional Water Board.

32. The Discharger demonstrated that groundwater detection monitoring is not feasible due to the depth to groundwater, the thickness of the vadose zone, the presence of subsurface natural gas hazards, and the lack of evidence for landfill impacts to groundwater.

33. The Discharger also demonstrated that site specific conditions preclude the operation of an effective vadose monitoring system. The landfill gas extraction system and the construction of a final cover system will be the best practicable control measure available for the containment of the waste and the removal of landfill gas entering the vadose zone.

34. The Regional Board finds that it is not against the public interest to waive compliance with the Title 27 detection monitoring requirements at this facility. (See Finding No. 29).

LANDFILL CLOSURE

35. The site ceased accepting refuse on 15 September 1983. The facility closure consisted of covering the waste with a minimum of one foot of soil. 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.

36. The Central Water Board, in Order No. 5-00-235, determined that the cover did not meet the closure requirements in place at the time the landfill stopped accepting refuse, did not meet the final cover system requirements of Title 27, and designated the facility as an "Existing Unit" as defined in section 20080(d).

37. Section 20080(d) states the all "Existing Units" shall be closed and maintained after closure according to Subchapter 5, Chapter 3 of this subdivision (section 20950 et seq.).

38. Section 20080(b) allows the Central Valley Water Board to consider the approval of an engineered alternative to the prescriptive standard. In order to approve an engineered alternative in accordance with sections 20080(c)(1) and (2), the Discharger must demonstrate that the prescriptive design is unreasonably and unnecessarily burdensome and will cost substantially more than an alternative which will meet the criteria contained in section 20080(b), or would be impractical and would not promote attainment of applicable performance standards. The Discharger must also demonstrate that the proposed engineered alternative cover system is consistent with the performance goal addressed by the particular prescriptive standard, and provides protection against water quality impairment equivalent to the prescriptive standard in accordance with section 20080(b)(2).

39. Water Code section 13360(a)(1) allows the Central Valley Water Board to specify the design, type of construction, and/or particular manner in which compliance must be met in waste discharge requirements or orders for the discharge of waste at solid waste disposal facilities.

40. The Discharger proposed a cover system which was designed, constructed, and operated in accordance with the criteria set forth in Title 27.

41. The Discharger submitted a design plan for the closure of the landfill in a Final Closure Plan dated 25 August 2003. The Final Closure and Post-Closure Maintenance Plans were determined to be adequate in a letter from the Central Valley Water Board staff dated 13 December 2004. A September 2008 amendment to the plan was also approved. The plan proposed the construction of an engineered alternative in lieu of the prescriptive cover design specified in section 21090(a). The engineered alternative is an evapo-transpirative design consisting of a three-foot thick vegetated soil layer.

42. The Discharger adequately demonstrated that construction of a Title 27 prescriptive standard cover would be unreasonable and unnecessarily burdensome when compared to the proposed engineered alternative.

43. The Discharger adequately demonstrated that an evapo-transpirative cover utilizing soil from a nearby borrow source was an appropriate engineered alternative to the prescriptive design. Further, that the evapo-transpirative cover to be consistent with

the performance goals of Title 27 and affords equivalent protection against water quality impairment.

44. The final closure construction of the evapo-transpirative landfill cover was performed between 21 November 2011 and 4 February 2013, in accordance with Title 27 and with the approved Construction Quality Assurance Plan.

45. A pan lysimeter was constructed in the northwest area of the top deck to monitor potential percolation through the evapo-transpirative cover.

46. The Discharger submitted the *Construction Quality Assurance (CQA) Report, Final Closure of Bakersfield City Sanitary Landfill*; dated July 8, 2013; prepared by Advanced Earth Science, Incorporated for the City of Bakersfield Department of Public Works. The Central Valley Water Board approved the CQA Report in the *Review of Construction Quality Assurance Report,* dated 18 September 2013. Kern County Environmental Health Department as the Local Enforcement Agency (LEA) approved the CQA Report on 5 November 2013.

47. On 18 February 2015, the Kern County Environmental Health Department as the LEA on behalf of the California Department of Resources, Recycling, and Recovery (CalRecycle) issued the final closure permit. Final closure was accomplished by construction of an evapo-transpirative cover as an engineered alternative per Title 27 California Code of Regulations.

LANDFILL POST-CLOSURE MAINTENANCE

48. The Discharger submitted the *Final Closure and Postclosure Maintenance Plan*, dated March 2004 for closure and post-closure maintenance of the facility. The plan includes inspection, maintenance, and monitoring of the landfill during the post-closure maintenance period, and includes a post-closure maintenance cost estimate for the entire facility. Inspection and maintenance will include the condition of the final cover, landfill gas migration monitoring and maintenance, stormwater monitoring, landfill settlement, vegetative cover, access road, landfill gas system, pan lysimeter monitoring, and site security. The plan will be implemented for a minimum period of 30 years or until the waste no longer poses a threat to water quality, whichever is greater.

49. Once every five years during the post-closure maintenance period, iso-settlement maps will be prepared to determine the amount of differential settlement occurring over the previous five years. Pursuant to section 21090(e)(2), this Order requires iso-settlement maps to be prepared and submitted every five years.

50. Section 21090(a)(4)(A) requires that a periodic leak search, including a method for identifying and repairing breaches in “the low-hydraulic conductivity layer”, be a component of the cover maintenance plan.

51. A common way to conduct a leak search on a cover that utilizes a low-hydraulic conductivity layer as part of its design is to monitor the surface of the cover for landfill gas emissions.

52. In an evapo-transpirative cover design, the low-hydraulic conductivity layer is replaced by a vegetated soil layer that is engineered and constructed to absorb moisture during precipitation events and expel moisture by evaporation and transpiration before it flows through the bottom of the cover.

53. Landfill gas emissions do not definitely indicate a leak in an evapo-transpirative cover. A leak in this kind of cover will be detected by using a device that directly measures moisture flux through the cover, such as a pan lysimeter. The Discharger installed a pan lysimeter beneath the evapo-transpirative cover.

54. The final cover will be monitored for performance and for damage or defects by visual inspection and monitoring of a pan lysimeter installed beneath the cover pursuant to section 21090(a)(4)(A). Defects will be repaired and tested for adequacy based on the closure CQA Report.

55. The pan lysimeter monitoring consists of measuring any moisture that infiltrates the cover soil and collects in the pan lysimeter. The volume of water collected in the lysimeter shall be used to calculate an infiltration rate to determine the effectiveness of the final cover in minimizing moisture that contacts the waste. In a report that was included as an appendix to the CQA Report, the Discharger proposed that an average percolation rate in excess of five millimeters per year will constitute "significant infiltration". In the event the pan lysimeter detects significant moisture infiltration, the Discharger, within 120 days of making such a determination, will submit to the Central Valley Water Board a plan and time schedule to evaluate the problem and recommend and implement corrective action measures.

56. 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

57. In accordance with section 22210, the Discharger is not required to comply with California Code of Regulations Title 27 financial assurance requirements for post-closure maintenance because the Facility ceased operating before 1 January 1988.

58. 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.

59. In accordance with section 22222, the Discharger is not required to comply with Title 27's financial assurance requirements for corrective action because the facility ceased operating before 1 July 1991.

60. 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

61. 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.

62. This Order implements *the Water Quality Control Plan for the Tulare Lake Basin, Second Edition*; revised July 2016.

63. Based on the threat and complexity of the discharge, the facility is determined to be classified <3-B> as defined below:

    a. Category 3 threat to water quality, defined as, "Those discharges of waste that could degrade water quality without violating water quality objectives, or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2."

    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."

64. 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 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.

65. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2017-0051" 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

66. 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.

67. 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.

68. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

69. 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. WDR Order No. R5-2005-0135 and WDR Order No. R5-2006-0021 are rescinded except for purposes of enforcement, and that The City of Bakersfield, 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.

3. The waste shall not cause pollution or a nuisance as defined by the California Water Code, Section 13050.

4. The waste shall not cause degradation of any water supply.

5. The Discharger shall comply with all applicable Standard Prohibitions listed in Section C of the Standard Provisions and Reporting Requirements (SPRRs) dated December 2015.

B. DISCHARGE SPECIFICATIONS

1. The Discharger shall, in a timely manner, remove and relocate any wastes discharged at this facility in violation of this Order. If the Discharger is unable to remove and relocate the waste, the Discharger shall submit a report to the Central Valley Water Board explaining how the discharge occurred, why the waste cannot be removed, and any updates to the waste acceptance program necessary to prevent re-occurrence. If the waste is a hazardous waste, the Discharger shall immediately notify the Department of Toxic Substances Control.

2. 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. Precipitation and drainage control systems for the final cover system shall be maintained to accommodate the anticipated volume of precipitation and peak flows from surface runoff under 100-year, 24-hour precipitation event condition as described in Finding 16.

5. The closed landfill shall be maintained to prevent inundation or washout due to floods with a 100-year return period, and to prevent, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout under the 100-year wet season, as described in Finding 16.

6. The Standard Facility Specifications 6 through 11 in Section E of the SPRRs apply to the landfill.

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.

4. The Discharger shall monitor and implement the approved Post-Closure Maintenance Plan, dated March 2004, and any approved revisions thereto.

E. FINANCIAL ASSURANCE SPECIFICATIONS

1. The Discharger shall provide the funds necessary for post-closure maintenance of the landfill, any corrective actions required, and all activities associated with complying with these WDRs.

F. MONITORING SPECIFICATIONS

1. The Discharger shall comply with Monitoring and Reporting Program No. R5-2017-0051, which is incorporated into and made part of this Order.

2. The Discharger shall monitor the final cover in accordance with the Post-Closure Maintenance Plan and the Monitoring and Reporting Program No. R5-2017-0051.

3. Monitoring of the final cover shall include inspecting and recording the volume of moisture collected by the pan lysimeter. The volume of water collected in the lysimeter shall be used to calculate an infiltration rate to determine the effectiveness of the final cover in minimizing moisture that contacts the waste.

4. An average percolation rate in excess of five millimeters per year will constitute “significant infiltration”. In the event the pan lysimeter detects significant moisture infiltration, the Discharger shall notify the Central Valley Water Board staff and, within 120 days of making such a determination, shall submit to the Central Valley Water Board a plan and time schedule to evaluate the problem and recommend and implement corrective action measures.

5. For each monitoring event, the Discharger shall determine whether the landfill is in compliance with these WDRs, MRP No. R5-2017-0051, and the Standard Monitoring Specifications in Section I of the SPRRs.

6. The Discharger shall comply with all applicable 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. R5-2017-0051 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 not specifically referred to in this Order.

3. The Discharger shall comply with MRP No. R5-2017-0051, 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 comply with all applicable 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:

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PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2017-0051
FOR
CITY OF BAKERSFIELD
BAKERSFIELD SANITARY LANDFILL
POST-CLOSURE MAINTENANCE

KERN COUNTY

This monitoring and reporting program (MRP) is issued pursuant to California Water Code section 13267 and incorporates requirements for groundwater, surface water, 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. R5-2017-0051, 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 monitoring program of this MRP includes:

Section	Monitoring Program
A.1	Leachate Seep Monitoring
A.2	Final Cover Monitoring
A.3	Facility Monitoring

1. Leachate Seep Monitoring

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 I 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.2 of this MRP, below.

2. Final Cover Monitoring

The Discharger shall monitor the final cover in accordance with the provisions in the Final Closure Plan and the Post-Closure Maintenance Plan. The pan lysimeter(s) shall be checked for the presence of water on a quarterly basis. The volume of water discovered in the pan lysimeter(s) shall be reported in the Annual Monitoring Summary Report.

3. 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.3 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.4 of this MRP.

c. Five-Year Iso-Settlement Survey for Closed Units

For closed landfill units, the Discharger shall conduct a five-year iso-settlement survey and produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. For each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map [Title 27, section 21090(e)(1 & 2)]. Reporting shall be in accordance with Section B.5 of this MRP. The next iso-settlement survey shall be conducted in **2018**.

d. 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:

Frequency	Season
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 cover;
   b) Evidence of erosion and/or of day-lighted refuse; and
   c) Evidence of leachate seeps.
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);
   b) Evidence of erosion and/or of day-lighted refuse; and
   c) Evidence of leachate seeps.

Results of Standard Observations shall be submitted in the annual 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

Section	Report	End of Reporting Period	Due Date
B.1	Annual Monitoring Report	31 December	**1 February**
B.2	Leachate Seep Reporting	Continuous	**Immediately & 7 Days**
B.3	Annual Facility Inspection Report	31 October	**15 November**
B.4	Major Storm Event Reporting	Continuous	**Immediately & 7 days from damage discovery**
B.5	Survey and Iso-Settlement Map for Closed Landfills	Every Five Years	**1 February 2019 & Every Five Years Thereafter**
B.6	Pan Lysimeter	31 March 30 June 30 September 31 December	**1 February**

REPORTING REQUIREMENTS

The Discharger shall submit monitoring reports **annually** with the data and information as required in this Monitoring and Reporting Program and as required in WDRs Order No. R5-2017-0051 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.

The Dischargers shall submit all reports required under the MRP, including discharge location data, and pdf monitoring reports to the State Water Resources Control Board (State Water Board) GeoTracker database.

Field and laboratory tests shall be reported in each monitoring report. 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. **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. Each Annual Monitoring Report shall contain the following information:

   a) 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.

   b) 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.

   c) A written summary of the monitoring results, indicating any changes made or observed since the previous Annual Monitoring Report.

2. **Leachate 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 I 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.

3. **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.3.a of this MRP, above.

4. **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.3.b of this MRP, above.

5. **Survey and Iso-Settlement Map for Closed Landfills:** The Discharger shall conduct a survey and submit an iso-settlement map for each closed area of the landfill every five years pursuant to Title 27, section 21090(e). Refer to Section A.3.c of this MRP, above. The next report is due by **1 February 2019**.

6. **Pan Lysimeter:** The Discharger shall inspect and record the volume of moisture collected by the pan lysimeter quarterly. The results shall be included in the Annual Monitoring Report and a discussion of the performance of the evapo-transpirative (ET) cover relative to the moisture limits established in the Final Closure and Post-Closure Maintenance Plan. Refer to Section A.2. in this MRP above.

C. 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].

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
LEACHATE SEEP MONITORING

Parameter	Units	Sampling/Reporting Frequency
Field Parameters		
Total Flow	Gallons	Upon Occurrence
Flow Rate	Gallons/Day	"
Electrical Conductivity	µmhos/cm	"
pH	pH units	"
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L[1]	Upon Occurrence
Chloride	mg/L	"
Carbonate	mg/L	"
Bicarbonate	mg/L	"
Nitrate-Nitrogen	mg/L	"
Sulfate	mg/L	"
Calcium[2]	mg/L	"
Magnesium[2]	mg/L	"
Potassium[2]	mg/L	"
Sodium[2]	mg/L	"
Volatile Organic Compounds (USEPA Method 8260B, short list, see Table II)	µg/L[3]	"

[1] milligrams per liter
[2] Dissolved concentration
[3] micrograms per liter

TABLE II

MONITORING PARAMETERS FOR DETECTION MONITORING

Volatile Organic Compounds, short list:

USEPA Method 8260B

Acetone
Acetonitrile (Methyl cyanide)
Acrolein
Acrylonitrile
Allyl chloride (3-Chloropopene)
Benzene
Bromochloromethane
Bromodichloromethane
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)
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
Isobutyl alcohol
Methacrylonitrile
Methyl bromide (Bromomethene)
Methyl chloride (Chloromethane)

TABLE II

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
Xylene (total)

INFORMATION SHEET

ORDER NO. R5-2017-0051
CITY OF BAKERSFIELD
FOR POST-CLOSURE MAINTENANCE
BAKERSFIELD SANITARY LANDFILL
KERN COUNTY

The City of Bakersfield owns and manages the City of Bakersfield Sanitary Landfill, located in the northeast part of the City of Bakersfield about three quarters of a mile south of the Kern River. The 132-acre facility contains one unlined waste management unit (Unit) covering an area of approximately 99 acres. The facility was originally established as a burn dump in 1943 and converted to a sanitary landfill in 1956. The site ceased operation in September of 1983. Construction of the final cover system complying with the requirements of Title 27 was completed in 2013.

On 27 October 2000, the Central Valley Water Board classified the Unit as a Class III landfill as defined in Title 27, California Code of Regulations, §20005, et seq. (Title 27). This Order continues to classify the landfill unit as Class III units in accordance with Title 27, California Code of Regulations, section 20005 et seq. (Title 27).

On 16 September 2005, the Central Valley Water Board adopted Waste Discharge Requirements (WDRs) Order No. R5-2005-0135 to provide for the construction of a final cover and to regulate post-closure maintenance of the facility. On 26 January 2006, the Central Valley Water Board adopted WDRs Order No. R5-2006-0021, amended WDRs Order No. R5-2005-0135 to correct a typographical error. These WDRs update the waste discharge requirements for continued post-closure maintenance of the facility and were developed in accordance with an administrative policy of periodic review designed to incorporate revisions to Title 27 and policies adopted thereunder. The last revision of this Order was in 2005, 12 years ago.

The site is near the eastern edge of the San Joaquin Valley near the boundary with the southern Sierra Nevada Mountains. The climate is semi-arid, with hot, dry summers and cool winters. The average annual precipitation is 6.7 inches with an average pan evaporation of 73.4 inches. The site is not within a 100-year floodplain according to FEMA maps.

The closest potential Holocene fault is the Kern Bluff Fault, approximately two miles east of the facility. The fault has offset modern soils by approximately two feet. Two historic earthquakes were recorded on the fault in 1954 and 1985 with Richter magnitude 2.5 and 2.4, respectively.

Land within 1,000 feet of the site is used for residential, non-irrigated open space, and commercial activities including oil production. Residential areas are located immediately south of the facility.

First encountered groundwater is over 600 feet below the native ground surface. Groundwater elevations range from approximately 103 feet to 121 feet AMSL. Only one groundwater monitoring well has been completed on site preventing site-specific

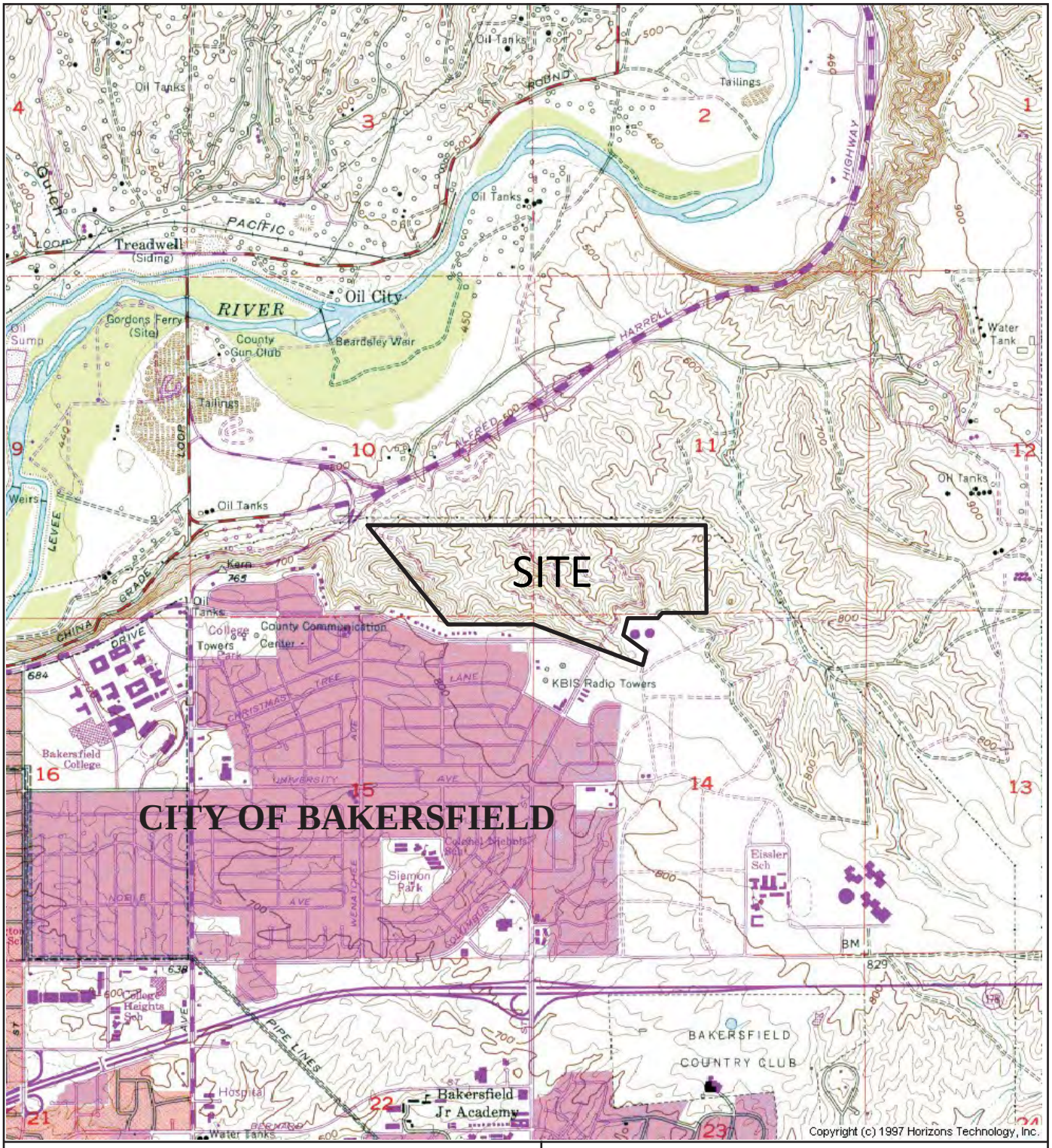
calculation of groundwater gradient and flow direction. At least one boring encountered natural gas before reaching any groundwater. The groundwater appears to be unconfined with a regional direction of flow to the south, away from the Kern River. Monitoring data indicates that groundwater has a total dissolved solid range of 262 to 302 mg/l.

The Discharger demonstrated that groundwater detection monitoring is not feasible due to the depth to groundwater, the thickness of the vadose zone, the presence of subsurface natural gas hazards, and the lack of evidence for landfill impacts to groundwater. The Discharger also demonstrated that site specific conditions preclude the operation of an effective vadose monitoring system. The landfill gas extraction system and the construction of a final cover system is the best management practice available for the containment of the waste and the removal of landfill gas entering the vadose zone.

The Discharger demonstrated that an evapo-transpirative (ET) cover utilizing soil from a nearby borrow source would be an appropriate engineered alternative to the prescriptive design. An engineered alternative final cover system for the Unit was completed in 2013 and consists of a minimum of three-foot thick ET vegetative layer. The Discharger demonstrated that the ET cover to be consistent with the performance goals of Title 27 and affords equivalent protection against water quality impairment. A pan lysimeter was constructed to monitor potential percolation through the ET cover.

Pursuant to Title 27, section 21090(e)(1), a survey of the final cover was conducted for later comparison with iso-settlement surveys and required to be conducted every five years. The Discharger shall produce an iso-settlement map accurately depicting the estimated total change in elevation of each portion of the final ET cover.

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 §21000, et seq., and the CEQA guidelines, in accordance with Title 14, CCR, §15301.



EXPLANATION

FACILITY BOUNDARY

N

0 0.5 MILE

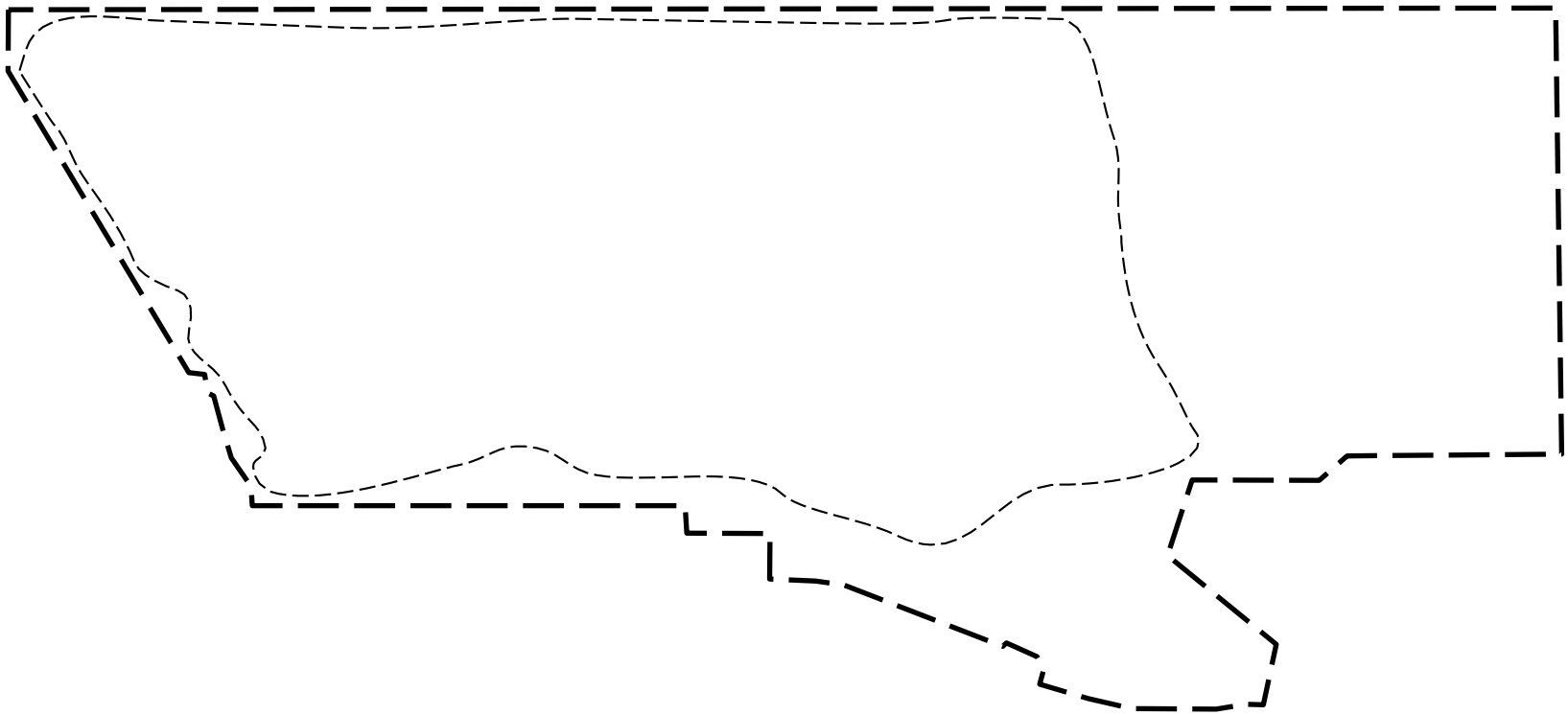
BASE MAP SOURCE: USGS 7.5' CITY OF BAKERSFIELD QUADRANGLES

(01/24/2017) (MM)

ATTACHMENT A

ORDER NO. R5-2017-0051
WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF BAKERSFIELD
BAKERSFIELD SANITARY LANDFILL
FOR POST-CLOSURE MAINTENANCE
KERN COUNTY

LOCATION MAP



EXPLANATION

LANDFILL FACILITY BOUNDARY

LIMIT OF WASTE

N

0 250 500 Feet

(01/24/2017)

(MM)

ATTACHMENT B

ORDER NO. R5-2017-0051

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF BAKERSFIELD
CITY OF BAKERSFIELD SANITARY LANDFILL
FOR POST-CLOSURE MAINTENANCE
KERN COUNTY

SITE MAP