

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER R5-2015-0739
FOR
CITY OF SACRAMENTO
28TH STREET LANDFILL
SACRAMENTO COUNTY

This Order is issued to City of Sacramento (Discharger) based on provisions of Water Code section 13304, which authorizes the California Regional Water Quality Control Board, Central Valley Region, (hereafter Central Valley Water Board or Board) to issue a Cleanup and Abatement Order (CAO), and Water Code section 13267, which authorizes the Board to require the submittal of technical reports.

The Assistant Executive Officer of the Central Valley Water Board finds, with respect to the Discharger's acts, or failure to act, the following:

1. The City of Sacramento owns and maintains the 28th Street Landfill (Facility), a closed Class III landfill at the northern end of 28th Street in downtown Sacramento. The 172-acre facility is in Section 32, T9N, R5E, MDB&M, corresponding to Assessor's parcel numbers 001-0170-018, 001-0170-021, and 001-0170-026.
2. Waste Discharge Requirements (WDRs) Order R5-2004-0039 was adopted by the Central Valley Water Board on 19 March 2004 to regulate Post-closure Maintenance and Corrective Action at the Facility. Among other things, the WDRs implement Title 27 of the California Code of Regulations (Title 27).
3. The landfill is bounded by the American River to the north, Business Interstate 80 to the south, Southern Pacific Railroad tracks to the east, and industrial properties to the west, including the Dellar Property landfill.
4. According to the WDRs, the Facility consists of two classified landfill units covering 107 acres east of 28th Street (WMUs A and B), and two older, unclassified fill areas west (22.5 acres) and north (16 acres) of 28th Street. WMU A is a 79.5-acre unlined unit in the northern part of the site and WMU B is a 27.5-acre clay-lined expansion unit immediately south of WMU A. The unclassified fill areas are unlined and known as the West Site and the North Site, and underlie the Bell Marine/Harbor Sand and Gravel property. This Order applies to the entire Facility regulated by the WDRs, as described in this paragraph.
5. Land within 1,000 feet of the facility is used for domestic housing, industry, agriculture, recreation, and open space.
6. Migration of landfill gas (LFG) from the Facility was identified in 1987. In response to the migration of LFG, the Discharger constructed a passive LFG collection trench east of the active site. An active LFG collection system was installed in 1990 and has been upgraded in phases over time. The LFG system includes interior and perimeter extraction wells to control LFG migration.

7. To monitor groundwater in the vicinity of the landfill, the Discharger installed up to 19 groundwater monitoring wells. Volatile Organic Compound (VOCs) contamination in groundwater was detected in the monitoring wells as early as 1987.
8. In March 2000, the Discharger prepared a Corrective Action Plan (CAP) for the landfill due to an ongoing release of VOCs to groundwater. The CAP identified three release mechanisms that may have caused the VOC impact including: migration of landfill leachate directly to groundwater; waste from the unlined units in direct contact with groundwater; and landfill gas migration and partitioning into groundwater. In its 18 September 2015 letter, the Discharger states that the CAP may not reflect current conditions; this Order requires a further site evaluation and an update to the CAP.
9. A complete site description and chronology of the release to groundwater is included in WDR R5-2004-0039.

VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

10. In a letter dated 23 July 2015, staff issued a Notice of Violation (NOV) for detections of VOCs and inorganic compounds detected in groundwater. Staff based the NOV on a review of the Discharger's Second Semester 2014 Monitoring Report and determined that groundwater has been and continues to be affected by both LFG and leachate emanating from the Facility. This is consistent with previous findings submitted in the March 2000 Corrective Action Plan. However, the City of Sacramento contends that sources other than the landfill may be impacting groundwater. This Order allows the City to investigate the potential for other sources.
11. The July 2015 NOV also discussed the fact that the Discharger submits groundwater reports that do not meet the standard required under the WDRs, MRP, or Standard Provisions and Reporting Requirements, and that future reports must comply with the requirements.
12. As shown in the table below, data presented by the Discharger in the Annual 2014 Monitoring Report shows that wells located both onsite and offsite exceed the concentration limits, as calculated by the Discharger, for VOCs, chloride, specific conductance, bicarbonate, and total dissolved solids (TDS). These levels are consistent with historical monitoring events.

Concentration Limit Exceedences Reported During December 2014 Groundwater Sampling Event

Well ID*	Total VOCs ²	Bicarbonate (CL= 276 mg/L)	Chloride (CL=22.1 mg/L)	EC (CL=767µmhos/c)	TDS (CL=614 mg/L)
B-1	19.00	300	130	1,000	520
C-11S*	4.10³	410	18	620	400
C-11D*	10.00³	200	40	550	400
C-12*	----	1,100	8.7	1,300	1,100
C-13	----	390	32	720	330

C-14*	1.41	670	96	1,500	790
D-16*	----	370	58	760	550
D-17*	22.60	130	11	270	210
D-18*	----	530	130	1,100	770
D-19*	----	360	21	650	450
D-20*	0.90	560	35	1,300	930

1. Bolded values indicate exceedance of concentration limit. * Wells with asterisks are located offsite. Wells C11S and C11D are located at the McKinley Village project site.
2. Total VOCs reported in micrograms/Liter (µg/L). Concentration Limit (CL) for VOCs is Non-Detect.
3. Total VOCs have not been confirmed in these wells.
4. Concentration limits are presented in the Annual 2014 Monitoring Report, Table 1, Well Compliance Summary.

The groundwater plume is not defined and the aerial extent is not known. The plume can be identified offsite by constituents that are typically are result of landfill gas (i.e., bicarbonate) and landfill leachate (i.e., chloride), as well as VOCs, which are known to migrate into groundwater beneath landfills. Board staff’s review finds that multiple wells, spanning properties south and west of the site, contain these constituents, indicating the plume has moved offsite and is detected in several wells located greater than 1,000 feet from the landfill¹.

13. Staff’s review also indicated the Discharger failed to meet requirements described in WDRs Facility Specification B.10., which states... *The unclassified fill areas north and west of 28th Street ceased accepting wastes prior to the revision of Chapter 15 in November 1984. Therefore, these areas were not required to close with prescriptive cover materials. However, this does not relieve the Discharger from any more stringent requirements of the CIWMB, nor from the responsibility to take corrective action to prevent or clean up groundwater and/or surface water contamination related to this landfill unit in accordance with Section 20080(g) of Title 27* (emphasis added).
14. Provision E.7 of the WDRs requires the Discharger to “...take all reasonable steps to minimize adverse impact to the waters of the State...”
15. Provision E.8 of the WDRs requires “*The Discharger shall have the continuing responsibility to assure protection of waters of the State from discharged wastes and from gases and leachate generated by discharged waste during the post-closure maintenance period of the Unit(s) as long as the wastes pose a threat to water quality.* Based on the methane detections and groundwater data shown above, the discharged waste is a threat to water quality.
16. The extent of contamination in groundwater has not been fully defined south-southwest of WMU-A and the West Site. Additional groundwater monitoring wells are necessary between well C-12 and D-18, south of the West Site, and between C-12 and D-16, just

¹ The Discharger disagrees with this evaluation and suggests that other sources in the vicinity of the landfill could be impacting groundwater. The purpose of this Order is to fully evaluate the lateral and vertical extent of the contamination, and to define the source of the plume.

east of 28th Street. Wells without detectable concentrations of VOCs have not been installed downgradient of C-12, C-14, D-18, D-17 or D-20.

17. Borings recently installed within the West Site indicate that groundwater is in contact with refuse. This increases the generation of LFG, and subsequently increases the potential for impacts to groundwater. This is also a violation of Provision E.2 of the WDRs, which states "*The Discharger shall comply with all applicable provisions of Title 27 CCR and 40 Code of Federal Regulations Part 258 (Subtitle D) that are not specifically referred to in this Order.*" Section 20240(c) of Title 27 requires that existing landfills be operated to maintain five feet of separation between waste and groundwater.

LANDFILL GAS INVESTIGATION

18. At the request of the Local Enforcement Agency (LEA) and Cal Recycle, the City of Sacramento developed a LFG monitoring well replacement work plan to address deficiencies of the existing landfill gas monitoring network. Between October and December 2014, the City of Sacramento installed 19 multi-stage LFG probes designated S-1, S-2, S-4, and S-5, and S-7 through S-21 to replace existing perimeter probes at the landfill. This included installing probes (S-2, -4, -5, and -7) at the perimeter of the unlined West Site. Access to the North Site has not been granted by the property owner and consequently, gas is not monitored at the northern or western boundary of the Facility.
19. Based on the exceedences of methane gas levels detected in the newly installed probes, the LEA issued a Stipulated Notice and Order dated 2 March 2015 for violation of Title 27, Section 20921(a)(2), requiring the Discharger to reduce methane levels at the landfill's permitted boundary to less than 5% by volume. The LEA and Cal Recycle have concerns that LFG is migrating south into the adjacent neighborhood endangering human health and the environment.
20. In accordance with an approved Work Plan, between March and May 2015, the Discharger completed expansion and repairs of the LFG monitoring system, which included the installation of perimeter probes S-3 and S-3A at the southern boundary of the West Site, and installation of five LFG extraction wells. Wells No. 100, 101, 102, 104, and 105 were installed within the West Site to address methane concentrations detected in probes S-2, -4, -5, and S-7. Landfill gas extraction wells 103 and 106 were also installed to address methane detections in probes S-19 and S-20. These probes are located at the southern boundary of WMU-A, adjacent to Business I-80.
21. Weekly methane monitoring of the soil gas probes has been ongoing since May 2015. Multiple probes located within the unlined West Site have reported methane concentrations above 5% by volume as shown in the table below. Methane concentrations above 5% by volume have also been reported for Probes S-19 and S-20. (According to the Discharger's 18 September 2015 letter, methane in probe S-19 is now below 5% by volume).

Soil Gas Probe ID	Sample Date	Methane Percentage by volume
S-4D	8/4/2015	5.9
S-5D	8/4/2015	31.4
S-5M	8/4/2015	41.1
S-5S	8/4/2015	34.9
S-7D	8/4/2015	29.4
S-7M	8/4/2015	26.2
S-7S	8/4/2015	23.5
S-19	8/4/2015	41.2 ¹
S-20D	8/4/2015	50.9

22. To address the methane exceedances at the southern boundary of the West Site, on 6 August 2015 the Discharger installed three additional LFG extraction wells designated 107, 108, and 109. Well 109 was installed east of 28th Street at the southern terminus of WMU-A.
23. Additional probes and landfill gas extraction wells have been proposed by the Discharger in a Work Plan dated 7 August 2015. Three soil gas monitoring probes (25, 26, and 27) will be installed south of the Union Pacific Railroad track if the newly installed extraction wells cannot reduce methane concentrations at the southern boundary below 5% by volume. In addition to the soil gas monitoring probes, five extraction wells (110 through 114) will also be installed if the concentration of methane in the soil gas probes is not reduced.
24. Based on Water Board staff's review, groundwater beneath and south (offsite) of the Landfill is degraded. The Discharger's groundwater monitoring data from the offsite monitoring wells shows that both leachate and LFG indicators (i.e. TDS, chloride, bicarbonate, EC and VOCs) continues to affect water quality south of the Facility. Elevated methane concentrations are being reported along the southern boundary of the West Site, and recent borings indicate that groundwater is in contact with refuse. Regulatory agencies are concerned about the migration of landfill gas away from the landfill. Therefore, this Order requires the Discharger to conduct appropriate soil and groundwater investigations to define the nature and extent of the contamination and then implement corrective action measures to address the release emanating from the Facility (i.e., WMU-A, WMU-B, the West Side, and the North Side).
25. The Facility is regulated under waste discharge requirements which implement Title 27 of the CCR. Sections 20420 and 20425 of Title 27 require specific actions when a release has been confirmed, including (1) establishment of an Evaluation Monitoring Program to assess the nature and extent of the release, (2) submittal of results and assessment of the Evaluation Monitoring Program, (3) an updated Engineering Feasibility Study for Corrective Action, and (4) implementation of the Corrective Action. This Order requires the Discharger to complete these items.

REGULATORY CONSIDERATIONS

26. Prohibition A.2 of the WDRs prohibits any increase in the concentration of waste constituents in soil-pore gas, soil-pore liquid, soil, or other geologic materials outside of the Unit if such waste constituents could migrate to waters of the State – in either the liquid or the gaseous phase – and cause a condition of nuisance, degradation, contamination, or pollution. Groundwater and landfill gas monitoring data confirm that a release has taken place and that waste constituents have migrated to waters of the State.
27. The discharge from the Facility has caused waste constituents to enter groundwater where it has created, or threatens to create, a condition of nuisance or pollution.
28. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.
29. Surface water from the Facility drains to the American River at two locations along the north side of the Facility. The American River is a tributary to the Sacramento River.
30. The designated beneficial uses of the American River, as specified in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial service supply and power supply; recreation; freshwater habitat; migration; spawning, and wildlife habitat.
31. The designated beneficial uses of groundwater, as specified in the Basin Plan, are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.
32. Water Code section 13304(a) states, in relevant part:

Any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board, clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including, but not limited to, overseeing cleanup and abatement efforts.

33. The State Water Resources Control Board (hereafter State Board) has adopted Resolution No. 92-49, the *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. This Policy sets forth the policies and procedures to be used during an investigation or cleanup of a polluted site and requires that cleanup levels be consistent with State Board Resolution No. 68-16, the *Statement of Policy With Respect to Maintaining High Quality of Waters in California*. Resolution No. 92-49 and the Basin Plan establish the cleanup levels to be achieved. Resolution No. 92-49 requires the waste to be cleaned up to background, or if that is not reasonable, to an alternative level that is the most stringent level that is economically and technologically feasible in accordance with Title 23, California Code of Regulations (CCR) Section 2550.4. Any alternative cleanup level to background must (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Board.

34. Water Code section 13267 subdivision (b)(1) states, in relevant part:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

35. The technical reports required by this Order are necessary for staff to evaluate compliance with this Order and WDRs Order R5-2004-0039, and are required to ensure the protection of water quality. The City of Sacramento owns and operates the 28th Street Landfill that discharges waste subject to this Order and WDRs Order R5-2004-0039.

36. The issuance of this Order is being taken for the protection of the environment and as such is exempt from provisions of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) pursuant to California Code of Regulations, title 14, sections 15061 subdivision (b)(3), 15306, 15307, 15308, and 15321 subdivision (a)(2).

IT IS HEREBY ORDERED that, pursuant to Water Code sections 13304 and 13267, the City of Sacramento shall cleanup and abate the release to groundwater from the 28th Street Landfill (Facility) in accordance with the scope and schedule set forth below in order to return to compliance with WDRs Order R5-2004-0039.

1. The Discharger shall forthwith comply with all aspects of WDRs Order R5-2004-0039 including complying with Provisions E.7 and E.8 of the WDRs.
2. The Discharger shall forthwith comply with the reporting requirements of the WDRs and submit reports in accordance with the MRP and SPRRs. All reports submitted shall be signed and certified by a California Professional Geologist or Civil Engineer. Failure to submit reports that comply may result in the imposition of civil monetary liability.
3. **By 31 October 2015**, the Discharger shall submit an *Updated Evaluation Monitoring Work Plan* to define the vertical and lateral extent of volatile organic compounds and inorganics constituents affecting groundwater south of the Facility. The *Updated Evaluation Monitoring Work Plan* shall include the following information:
 - Installation of permanent monitoring wells to define the lateral and vertical extent of contamination:
 - i. A description of how the location of the monitoring wells will be determined to define the vertical and lateral extent of contamination in all zones affected by the release².
 - ii. A monitoring well installation work plan, which shall follow the requirements in Attachment A to this Order.
 - iii. If the Discharger wishes to investigate whether the groundwater contamination is due to sources other than the landfill, then a discussion as to how that investigation will be completed.
 - The new monitoring wells shall be incorporated into the Monitoring and Reporting Program R5-2004-0039 and shall be sampled beginning with the First Quarter 2016.
 - A scope of work to evaluate current corrective action system components (i.e landfill gas collection system, LFG flare, landfill cover, corrective action monitoring network, etc.) and recommend enhancements and upgrades.
 - Provisions for conducting a *Sensitive Receptor* Survey to identify all drinking water wells within one mile from the edges of the Facility.
 - Provisions for conducting a *Waste Separation to Groundwater* study to evaluate whether there is a five foot separation between waste and groundwater beneath all WMUs including the unlined West and North Sites. The workplan shall consider installation of piezometers through the waste in the areas in which the least separation is known or suspected.

² The extent of the release is defined when certified laboratory data confirms that Volatile Organic Compounds are below the approved method detection limit and the concentration of inorganic constituents of concern are below or equal to background concentrations.

4. By **30 March 2016** the Discharger shall submit an *Updated Evaluation Monitoring Report of Results and an Updated Engineering Feasibility Study*. The report shall consist of two parts:
 - The *Updated Evaluation Monitoring Report of Results* shall include a description of all field work conducted, and a determination of the spatial distribution and concentration of each constituent of concern throughout each zone affected by the release. The report must provide interpretations of the data and correlated illustrations, both plan view and cross-section, that depict the vertical and lateral extent of the contamination for zones affected by the release, the well installation report for any newly installed monitoring points must also be submitted. For the *Sensitive Receptor Survey*, include a table with the well ID and completion information, as well as a map. For the *Waste Separation to Groundwater* study, the results of the study.
 - The *Updated Engineering Feasibility Study* shall evaluate different corrective action measures to remediate the groundwater VOC and inorganic plumes as defined in the *Updated Evaluation Monitoring Report* for all zones affected by the release. For each corrective action measure that is evaluated, there shall be an estimation of the length of time to clean up the release. This study shall be based on the data collected to delineate the release as well as the data collected from the ongoing monitoring program required under the WDRs. If the *Waste Separation to Groundwater* study found that there is the potential for less than five feet of separation, then the EFS must also include a proposal to maintain this separation. The EFS shall propose additional corrective action measure(s) to be meet the requirements of Title 27 Section §20430 for all zones effected by the release.
5. By **30 October 2016** the Discharger shall submit an *Additional Corrective Action Implementation Report* documenting that the proposed corrective action(s) have been implemented.
6. The Discharger shall submit semiannual *Corrective Action Progress Reports* containing (a) an evaluation of the effectiveness of the site-wide corrective action measures, (b) an estimation of the length of time to clean up the release, and (c) a discussion of whether additional corrective actions, or fine-tuning of existing corrective actions, are necessary. The first *Progress Report* is due by **31 January 2017**. The *Progress Reports* shall continue to be submitted semiannually until this Order is rescinded.
7. In accordance with Title 27, §20425(e) and (e)(1), the Discharger shall continue to monitor all site wells during the assessment period and install additional wells as necessary to comply with §20415.

Additional Requirements

8. All data, technical reports and plans, and monitoring reports prepared by the Discharger after the date of this Order shall be uploaded to the State Water Resources Control Board's web-based Geotracker database system (<http://geotracker.waterboards.ca.gov>), in compliance with the requirements of Title 23 Section 3890 et seq. This includes uploading all reports, plans, and data required under this Order and under any Order or permit issued by the State Water Quality Control Board.
9. As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all reports shall be prepared by, or under the supervision of, a California Registered Engineer or Professional Geologist and signed by the registered professional. Each technical report submitted by the Discharger shall contain the professional's signature and/or stamp of the seal.
10. As required by WDR R5-2004-0039, Reporting Requirements D.11., and the Standard Provisions and Reporting Requirements, all reports and transmittal letters shall be signed by either a principal executive officer, ranking elected or appointed official, or a duly authorized representative, and any person signing a document which is submitted to comply with this Order shall make the following certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

If the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Assistant Executive Officer, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. Any extension request shall be submitted as soon as a delay is recognized and prior to the compliance date. An extension may be granted by revision of this Order or by a letter from the Assistant Executive Officer.

If the Discharger fails to comply with the provisions of this Order, the Assistant Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability. Failure to comply with this Order may result in the assessment of administrative civil liability up to \$10,000 per violation per day, pursuant to the Water Code sections 13268, 13350, and/or 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

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 of this Order, except that if the thirtieth day following the date of this Order 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.

This Order is effective upon the date of signature.

Original signed by:

ANDREW ALTEVOGT, Assistant Executive Officer

29 September 2015

(Date)

Attachment A: Monitoring Well Installation Workplan and Monitoring Well Installation Report Requirements
