

PROPOSED ENGINEERING EVALUATION

Facility ID No. 4618

Keller Canyon Landfill Company

901, Bailey Road, Pittsburg, CA 94565

Application No. 29941

BACKGROUND

Keller Canyon Landfill Company (KCLC) has applied for a Change of Permit Conditions for the following source:

S-1 Keller Canyon Landfill – Waste Decomposition Process

KCLC, a Republic Services Company, owns and operates the Keller Canyon landfill facility (Facility ID # A4618) in Pittsburg, CA. This facility includes an active Class II municipal solid waste (MSW) landfill (S-1, S-4, and S-5), yard and green waste stockpiles (S-3), and two enclosed flares (A-1 and A-2) to abate the collected landfill gas. KCLC may also divert collected landfill gas to an independent company, Ameresco Keller Canyon, LLC (Facility # 17667), which produces energy for sale to the grid by burning landfill gas in internal combustion (IC) engines.

The landfill is currently permitted to accept 3,500 tons/day of refuse and is permitted to dispose 38.4 million tons of decomposable waste in the landfill. As of July 31, 2019, the landfill contained 21 million tons of decomposable waste. In addition to MSW, this site is allowed to accept designated wastes including petroleum contaminated soils. From July 2018-July 2019, Keller reported accepting 18,447 tons of contaminated soil.

Landfill gas is collected through a system of vertical wells and horizontal laterals and sent to two on-site flares A-1 and A-2 and also to an off-site landfill gas to energy facility, Ameresco (Facility ID # 17667). A-1 and A-2 have maximum permitted capacities of 72.7 MM BTU/hour and 76 MM BTU/hour of landfill gas, respectively. From July 2018-July 2019, 2.17 trillion ft³ of landfill gas was collected. 1.5 trillion ft³ was sent to flares A-1 and A-2 and the remaining was sent off-site to the Ameresco landfill gas to energy facility.

Current Project:

KCLC has been exceeding its permitted limit for fugitive precursor organic compounds (POC) emissions for the last six years. Fugitive POC emissions have been steadily increasing and are in violation of Permit Condition # 17309, Part 33, according to which the fugitive POC emissions from S-1 shall not exceed 40.05 tons per year (tpy). [Note: While reviewing older application evaluations, it was found that the permitted fugitive POC emissions should have been 40.59 tpy instead of 40.059 tpy, which was entered incorrectly in the permit conditions at the time of the evaluation of that application (Application # 11386). This mistake was not detected until now. The Bay Area Air Quality Management District (BAAQMD) staff will therefore be making this

administrative change in the permit conditions.] In response to this violation, KCLC submitted Application # 29941 to request a change of permit conditions that would allow an alternative limit to the fugitive emissions. Specifically, KCLC has requested to increase the fugitive POC limit from 40.59 tpy to 98.57 tpy. This proposal is discussed in more detail in the Emissions and Statement of Compliance sections of this report.

EMISSION CALCULATIONS

As discussed above, KCLC has requested to modify the fugitive POC limits for landfill gas that are identified in Condition # 17309, Part 33. The current emission limits, the limits requested by the applicant, and the District proposed limits for this project are identified in Table 1 below. The applicant has agreed to the District's proposed limits.

Table 1. Current, Requested and Proposed Landfill gas limits for fugitive POCs

Pollutant	Current Limit in Condition # 17309, Part 33 (tpy)	Limit Requested by applicant (tpy)	Limit proposed by BAAQMD (tpy)
POC	40.59	98.57	95.80

Basis for the Initial POC limit: The following provides a brief background on how the initial POC limit was calculated for this site.

Decomposition waste produces landfill gas, which consists of POCs, non-precursor organic compounds (NPOCs), and toxic air contaminants. The amount of landfill gas produced depends on various factors such as amount of waste disposed of, moisture content, temperature, degree of compaction, and many other site-specific factors such as amount of vacuum applied, climate, etc. The maximum potential gas production rate is limited by the landfill's design capacity i.e. a total of waste that can be put into the landfill. For KCLC, this number is 38.4 million tons. For active landfills, the landfill gas production rates increase over time, and reach a peak shortly after the landfill's closure and then gradually decline over the next 50 years or more.

The original application for this landfill was submitted on November 30, 1989 (Application # 4243). At that time, the District evaluated the particulate emissions from the landfill but did not calculate or evaluate organic or toxic emissions due to waste decomposition. On September 30, 1994, KCLC submitted an application for a landfill gas collection system and a landfill gas flare (Application # 14134). District staff attributed no emission increases to this application. However, staff did calculate and evaluate the organic and toxic emissions due to waste in place at the time of the application (1 million tons) and the secondary combustion emissions from the flare. The flare (A-1) and the landfill gas collection system started operating on October 7, 1995.

On December 30, 1999, KCLC submitted an application to expand the landfill gas collection system (Application #758). In this application, District staff evaluated the POC, NPOC and toxic air emissions as they had not been fully evaluated before. For this purpose, Chapter 2.4 (11/98 revision) of the Air Pollutant Emission Factors (AP-42) was

used. This was done using the following equation (this equation later became the basis for Landfill Gas Emissions (LandGEM) model):

$$Q_{CH4} = k * L_0 * M_i * (e^{-kt_i})$$

where Q_{CH4} is the amount of methane generated each year, $m^3 CH_4/yr$
 k is the methane generation rate constant, $0.04 yr^{-1}$
 L_0 is the methane generation potential, $100 m^3 CH_4/Mg$ refuse
 M_i is the mass of the decomposable waste placed in the i^{th} section, Mg/yr
 t_i is the age of the i^{th} section

The AP-42 recommended default values were used for methane generation rate (k value = $0.04 yr^{-1}$), assumption that 55% of landfill gas is methane, methane generation potential ($L_0 = 100 m^3 CH_4/Mg$ refuse), and landfill gas NMOC concentration of 595 ppmv of non-methane organic compounds (NMOC), expressed as hexane, were used. The projected peak landfill gas flow rate was used (7,415 cfm), the actual waste-in-place from 1992-1999 and an increase in waste acceptance rate by 2% each year was used for the future years (2000+). At the time, the landfill was expected to close in 2059 and gas production rates were calculated for an additional 40 years after closure. This application resulted in 46.092 tpy of POC from the landfill and flare A-1 (44.4 tpy of POC from S-1 alone). Also, District staff noted in this application that the fugitive landfill emissions and flare emissions shall be recalculated every five years (concurrent with the Title V renewal) to ensure compliance with this permit limit. The following is stated in the engineering evaluation of this application:

“If the POC emissions had been calculated and evaluated pursuant to the new source review regulation in effect at the time landfill was permitted, then offsets would have been required if the facility’s total POC emissions exceeded 40 tpy. At that time, the landfill was the only POC emission source for the facility. Therefore, this 40 tpy is really an implied emission limit for the landfill.”

On December 8, 2004, Application # 11386 was submitted for installation of a new flare (A-2) and a change of permit conditions. The 46.092 tpy limit was revised in order to more clearly attribute each emission to each permitted source. In order for the facility to remain below the 50 tpy POC offset threshold (which was the Regulation 2, Rule 2 trigger level for offsets from Small Facility Banking Account (SFBA)), the k value for arid areas ($k = 0.02 yr^{-1}$ for arid areas as Pittsburg receives less than 25 inches of precipitation annually) and a NMOC concentration of 411 ppmv of NMOC, expressed as hexane, were proposed by KCLC. The new fugitive POC limit for S-1 was calculated by subtracting the other POC emission rates (from S-2, A-1, and A-2) from 50 tpy. The closure date was also revised in application to be 2035. This calculation amounted to 40.59 tpy of fugitive POCs for S-1. Unfortunately, this was incorrectly entered as 40.059 in the permit conditions and missed detection until this current application and renewal. As this mistake has been detected, the calculations in this evaluation will be based on 40.59 tpy.

In the current application, a site-specific NMOC concentration was used to determine the fugitive POC limit. The site specific NMOC value was based on an average of last 4 years of source tests, shown in Appendix A. In addition, District calculated the 95% confidence interval for this NMOC concentration. This extra step has been taken to ensure that KCLC can meet the emission limit under uneven circumstances when the landfill gas collection system is not operating at its maximum. Specifically, in 2019, the NMOC concentration from flare A-2 was much higher than had been reported in the previous 7 years. In order to provide some buffer for circumstances like these, the average NMOC from 2015-2019 (4987 ppm) plus the 95% confidence interval (620 ppm) has been used to calculate a total site-specific NMOC concentration of 5607 ppm (expressed as methane). In the application materials submitted, KCLC proposed using only the average NMOC concentrations (4987 ppm, expressed as methane), but the District strongly recommends using the average + 95% confidence to account for future increases.

Environmental Protection Agency's (EPA) LandGEM model, version 3.02 was used to predict the peak landfill gas collected throughout the life of the landfill. According to the LandGEM model results submitted in the application, the peak landfill gas collected would be in the year 2050 at 7,260 ft³/min. However, this model used a methane generation rate (k value) of 0.04 yr⁻¹. District recommends using a k value of 0.02 yr⁻¹ to better represent the arid area conditions of Pittsburg. This will result in lower leak landfill gas rates. Results of the District-run LandGEM model are shown in Appendix B and show that the maximum landfill gas production rate would be 6,268 ft³/min in the year 2051. A default landfill gas collection efficiency of 75% was assumed as is the case for all the landfills in BAAQMD's jurisdiction. As a result, the fugitive landfill gas would be 25% of 6,268 scfm = 1,567 scfm.

Fugitive POC emissions in lbs/yr were calculated as

$$G_p = Q_{LFG} \times 60 \times 24 \times 365 \times C_p \times \frac{MW_p}{V}$$

where, G_p = generation rate of pollutant, lbs/yr
 Q_{LFG} = landfill gas flow rate, ft³/min
 V = Molar Volume, ft³/lb-mol
 C_p = concentration of pollutant in landfill gas, ppmv
 MW_p = molecular weight of the pollutant, lbs/lb-mol

$$\begin{aligned} POC, \frac{lbs}{yr} &= \frac{1,567 \text{ ft}^3 \text{ of LFG}}{\text{min}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{24 \text{ hrs}}{\text{day}} \times \frac{365 \text{ days}}{\text{yr}} \times \frac{5,607 \text{ ft}^3 \text{ of NMOC}}{10^6 \text{ ft}^3 \text{ of LFG}} \\ &\quad \times \frac{16 \frac{\text{lb}}{\text{mol}}}{385.6 \frac{\text{ft}^3 \text{ of NMOC}}{\text{lb-mol}}} \\ &= 191,618.68 \text{ lbs/yr} = 95.80 \text{ tpy} \end{aligned}$$

Best Available Control Technology (BACT)

Since this application results in an increase in emissions and the maximum daily emissions of POC are 524.98 lb/day, the source triggers BACT. BACT(1) is not determined for landfills. At this time, the District is unaware of any other BACT technologies other than those listed as BACT(2). *BACT (2) for POC from Landfill Gas Gathering System* is the installation of horizontal and vertical gas collection lines vented to IC engines or enclosed flares with a minimum of 0.6 seconds retention time at 1400°F, and automatic combustion air control and automatic shut-off and restart system. As KCLC has an active landfill gas collection system consisting of vertical wells and horizontal laterals and two on-site enclosed flares, A-1 and A-2, BACT(2) requirements are satisfied. Part of the landfill gas collected is also diverted to off-site IC engines operated by Ameresco Keller Canyon.

Offsets

The proposed condition change will increase the maximum permitted fugitive POC emission rate from 40.59 tpy to 95.80 tpy. The facility has previously been provided offsets for 41.33 tpy for POC emissions from SFBA. An increase of 54.47 tpy (95.80 – 41.33) from this application is, therefore, subject to offset requirements. As the increase is more than 35 tpy, the facility will have to reimburse the SFBA for the 41.33 tpy of POC and provide federally enforceable offsets at 1.15:1 ratio for any un-offset cumulative increase in emissions.

$$\text{Offsets Required} = (41.33 * 1.0) + (54.47 * 1.15) = 103.971 \text{ tpy}$$

PLANT CUMULATIVE INCREASE

Table 3 summarizes the cumulative increase in criteria pollutant emissions (nitrogen oxides (NO_x), POCs, carbon monoxide (CO), particulate matter (PM), and sulfur oxides (SO₂)) that will result from this application. As the landfill gas control devices (flares at the landfill and engines at Plant # 12101) were permitted at their maximum capacities, there is no increase in combustion emissions.

Table 3. Plant Cumulative Emissions Increase Post 4/5/91

Pollutant	Existing Emissions Post 4/5/91	Offsets provided from SFBA to date	Current Application Increase	Cumulative Increase	Offsets	New Cumulative Increase
	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)	(tons/yr)
NO _x	0.000	19.973	0.000	0.000	0.000	0.000
POC	0.000	41.330	54.47	95.80	103.971	0.000
CO	66.576	0.000	0.000	66.576	0.000	66.576
PM ₁₀ /PM _{2.5}	14.859	0.000	0.000	14.859	0.000	14.859
SO ₂	33.263	0.000	0.000	33.263	0.000	33.263

STATEMENT OF COMPLIANCE

The owner/operator is expected to comply with all applicable requirements. Key requirements are listed below:

Regulation 2, Rule 1, General Requirements:

This application involves a change of permit conditions at the S-1, Keller Canyon Landfill – Waste Decomposition Process, that modifies the maximum permitted fugitive POC emissions for the existing landfill. This application revises the calculation methodology by using site-specific concentrations and actual data instead of the AP-42 default values. This recalculation results in an increase of 54.47 tpy of fugitive POC.

California Environmental Quality Act (CEQA)

This application concerns only existing permitted source, S-1, and does not involve any physical modifications of this source. There is no change in design capacity or total amount of waste accepted at the landfill. The facility has completed an Appendix H for this application. This project will have no possibility of any significant adverse environmental impacts as the landfill is already emitting close to 80 tpy of fugitive POCs. This project is to update the emission limits based on actual site-specific data to bring the facility into compliance. Since this project will satisfy the District's "no net increase" Regulation 2-2, the requirements of Regulations 2-1-312.11.2 are also satisfied, and the project is categorically exempt from CEQA review.

The project is over 1,000 feet from the nearest school and is therefore not subject to the public notification of Regulation 2-1-412.

Regulation 2, Rule 2, New Source Review:

This application triggers new source review as the permit condition changes will result in an increase of 54.47 tpy for POC and the maximum daily emissions are greater than 10 pounds per highest day.

Regulation 2-2-301, BACT:

The maximum daily fugitive POC emissions, after updating the calculations, will be 524.98 lbs/day, thus triggering BACT. BACT(1) is not determined for landfills. At this time, the District is unaware of any other BACT technologies other than those listed as BACT(2). *BACT(2) for POC from Landfill Gas Gathering System* is the installation of horizontal and vertical gas collection lines vented to IC engines or enclosed flares. BACT(2) for flares for non-hazardous waste landfills is an enclosed flare with 0.6 seconds retention time at 1400°F, and automatic combustion air control and automatic shut-off and restart system. The flares at Keller Canyon satisfy the BACT(2) requirements. As KCLC has an active landfill gas collection system consisting of vertical wells and horizontal laterals and two on-site enclosed flares, A-1 and A-2, both of which have destruction efficiencies of more than 98%, BACT requirements are satisfied. Part of the landfill gas collected is also diverted to off-site IC engines operated by Ameresco Keller Canyon.

Regulation 2-2-302, Offsets:

The proposed condition change will increase the maximum permitted fugitive POC emission rate from 40.59 tpy to 95.80 tpy. The facility has previously been provided offsets for 41.33 tpy for POC emissions from SFBA. An increase of 54.47 tpy (95.80 – 41.33) from this application is, therefore, subject to offset requirements. As the increase is more than 35 tpy, the facility will have to reimburse the SFBA for the 41.33 tpy of POC which were previously provided from SFBA at 1:1 ratio and provide federally enforceable offsets at 1.15:1 ratio for any un-offset cumulative increase in emissions. The facility will provide a total of 103.971 tpy of POC offsets prior to the issuance of the A/C.

Regulation 2-2-304, Prevention of Significant Deterioration (PSD), Regulation 2-2-305, (PSD Source Impact Analysis Requirement) through Regulation 2-2-308 (National Ambient Air Quality Standards (NAAQS) Protection Requirement):

This facility is a Title V major facility for CO emissions (as it is over 100 tpy) and because it is a designated facility by BAAQMD. However, Regulation 2-2-305.1 does not apply because landfills are not one of the 28 PSD source categories that are subject to the lower PSD threshold of 100 tpy and CO emissions will not exceed the PSD major facility threshold of 250 tpy. Regulation 2-2-305.2 does not apply because this application will not result in more than 100 tpy of CO emission increases. Therefore, the modeling analysis of Regulation 2-2-305.3 is not required.

In addition, although the increase in emissions is significant as per Regulation 2-2-227.2, it is not subject to the NAAQS Protection requirement of Regulation 2-2-308 because VOCs (considered equivalent to POCs) are precursors to ozone, and ozone modeling is specifically excluded from 2-2-308.

Regulation 2-2-404, Publication of Notice and Opportunity for Public Comment:

Regulation 2-2-404 requires publication of notice for public comments if the application is for any modification that will involve a significant increase in emissions of CO, NO_x, SO₂, PM_{10/2.5}, volatile organic compounds (VOC), or lead. According to Regulation 2-2-227.2, significant increase is defined as 40 tpy for VOCs (as POCs are precursor organic compounds aiding in the development of ozone, VOC limit has been used here) and 50 tpy for MSW landfill emissions. As the proposed emissions increase surpasses both these limits, this increase will be considered significant and is subject to the public notice requirements.

Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants (TACs):

This application is updating the fugitive POC limit in permit condition # 17309, Part 33. There is no change to the emissions of TACs as the emissions are based on the cumulative waste-in-place and are not determined based on gas generation rates. At the time when the landfill was first permitted, TAC emissions were calculated based on the

total waste capacity of the landfill. As the waste design capacity of the landfill has not changed, the toxic emissions remain the same and thus, do not trigger a health risk assessment. The fugitive emissions, however, changed due to the change in methodology using a site-specific k-value and a site-specific NMOC concentrations. NMOC concentrations will keep changing as more waste is added each year. As such, this POC limit should be recalculated every 5 years based on site specific source test data. TAC emissions will be reviewed as part of the Regulation 11, Rule 18: Reduction of Risk from Air Toxic Emissions at Existing Facilities.

Regulation 2, Rule 6, Major Facility Review:

This facility is subject to the Operating Permit Requirements of Title V of Federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review (MFR) because it is a designated facility as defined by BAAQMD Regulation 2-6-204. The New Source Performance Standards (NSPS) for MSW Landfills (40 CFR, Part 60, Subpart WWW) requires the owner or operator of a landfill that is subject to this part and that has a design capacity of greater than or equal to 2.5 million megagrams and 2.5 million cubic meters to obtain an operating permit pursuant to Part 70. Therefore, a Title V permit is required pursuant to Regulation 2-6-301 as well as Regulation 2-6-304.

The initial MFR Permit for this facility was issued on September 20, 2001 with the most recent revision in progress under Application #29942. This application will not satisfy any of the requirements of Regulation 2-6-226 to be considered a significant permit revision and thus, this will constitute a minor revision of the MFR permit and will be discussed in the Statement of Basis for the minor revision in Appendix C.

Regulation 8, Rule 34, Solid Waste Disposal Sites:

Regulation 8-34-301, Landfill Gas Collection and Emissions Control System Requirements:

KCLC will comply with this regulation by operating the landfill gas collection system continuously and by having leak detection and control system components. Currently, this facility is complying with Regulation 8-34-301.3 by venting the collected landfill gas to on-site flares A-1 and A-2 and off-site Ameresco Keller canyon facility's IC engines. The flares, A-1 and A-2, achieve at least 98% control by weight of total hydrocarbons and more than 98% NMOC destruction efficiency, based on source test results. As of August 30, 2019, the landfill gas collection system for the landfill includes a total of 156 vertical wells, 2 horizontal collectors and 2 leachate cleanout riser systems.

The facility is expected to be in compliance with this regulation.

Regulation 8-34-303, Landfill Surface Requirements:

The landfill is expected to continue to comply with Regulation 8-34-303 by having no surface leaks in excess of 500 ppmv as methane. To ensure there are no surface leaks, the facility will need sufficient operating capacity to process the landfill gas generated from S-1. As discussed above, KCLC will have sufficient capacity to process the landfill gas using their existing landfill gas recovery and control devices.

Federal Requirements:

NSPS for MSW Landfills, 40 CFR Part 60, Subpart WWW:

Regulation 8, Rule 34 is at least as stringent as the NSPS for MSW landfills. Therefore, compliance with Regulation 8, Rule 34 constitutes compliance with NSPS requirements.

National Emission Standards for Hazardous Air Pollutants (NESHAPs) for MSW Landfills:

This landfill is also subject to the NESHAPs for MSW Landfills (40 CFR, Part 63, Subpart AAAA). This NESHAP requires that subject facilities prepare and implement startup, shutdown, malfunction plans (SSM Plans) and comply with additional reporting requirements. All applicable requirements are contained in the existing MFR permit. This facility is expected to continue to comply with these requirements.

State Requirements:

This facility is subject to California Air Resources Board's (CARB) Landfill Methane Capture Rule (CCR, Title 17, Sections 95460-95476), which requires landfills to collect and control landfill gas and establish surface leak limits and methane control efficiency requirements for control devices. Section 95464(c) requires each wellhead to be operated under vacuum (negative pressure). The facility is in compliance with these requirements with the operation of the landfill gas collection system.

PERMIT CONDITIONS

I recommend that a change of permit conditions be issued for the Permit Condition # 17309, Part 33. Only the parts of Condition # 17309 with revisions will be displayed below. A full copy of the permit conditions with the revisions is presented in Appendix D. The revisions are shown below in the strike through and underline formatting:

Condition # 17309

For S-1 KELLER CANYON LANDFILL – WASTE DECOMPOSITION PROCESS, ABATED BY: A-1 LANDFILL GAS FLARE AND A-2 LANDFILL GAS FLARE; S-4 KELLER CANYON LANDFILL – WASTE AND COVER MATERIAL DUMPING; AND S-5 KELLER CANYON LANDFILL – EXCAVATING, BULLDOZING, AND COMPACTING ACTIVITIES:

33. The owner/operator of S-1 shall ensure that the fugitive emissions of Precursor Organic Compounds (POC) from the S-1 Landfill not exceed 40.5995.80 tons per consecutive 12-month period (expressed as methane). Fugitive POC emissions from the landfill shall be determined using the procedures and assumptions described in Parts 33a-f below. The owner/operator of S-1 shall calculate the POC emissions from the landfill at least once every five years or whenever the capacity of the landfill gas emissions control system, A-1 and A-2 Flares, is expanded, whichever is sooner. (Basis: Offsets)
- a. The current methane generation rate and uncontrolled POC emissions from the S-1 Landfill shall be calculated using the equations described in the most recent revision of AP-42 Chapter 2.4.
 - b. The methane generation rate shall be based on the total amount of waste accepted at the landfill to date. The Permit Holder may use either average annual or year-to-year waste acceptance rates.
 - c. The Permit Holder shall use the AP-42 recommended default values for the methane generation potential and methane generation rate constant. As of April 1, 2005, these default values were:
 $L_o = 100 \text{ m}^3 \text{ CH}_4/\text{Mg}$ and $k = 0.02 \text{ year}^{-1}$ for arid areas.
 - d. When calculating uncontrolled POC emissions (UEPOC, pounds/year of POC), the Permit Holder shall use site-specific NMOC, NPOC, and methane concentrations (after correcting for air infiltration) and the site-specific landfill gas temperature. The site-specific values shall be the average of at least three previous years of data collected pursuant to Part 31 above.
 - e. Total non-methane organic compounds (NMOC) measured in the landfill gas pursuant to Part 31 may be assumed to be 100% POC, or a site specific POC concentration (CPOC) can be calculated using data from Part 33d above, where $CPOC = NMOC - NPOC$ (all concentrations expressed as methane).
 - f. The fugitive POC emissions from the landfill (FEPOC, pounds/year of POC) shall be calculated using the equation below:
 $FEPOC = 0.25 * UEPOC$

RECOMMENDATION

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue a change of permit conditions for the equipment listed below:

S-1 Keller Canyon Landfill – Waste Decomposition Process

Prepared by: Nimrat Sandhu
Air Quality Engineer I

Date

Appendix A

Table A-1. NMOC Concentrations from Source Test from 2015-2019

Year, flare	NMOC Concentrations
	as methane (ppmv)
2019 A-2	6456
2018 A-1	5208
2018 A-2	5814
2017 A-1	5040
2017 A-2	4212
2016 A-1	5040
2016 A-2	3894
2015 A-1	3552
2015 A-2	5664
Average	4987
Std. Dev	949
95% CI	620
Avg + 95% CI	5607

Appendix B



Summary Report

Input Review

LANDFILL CHARACTERISTICS

Landfill Open Year	1992	
Landfill Closure Year (with 80-year limit)	2050	
Actual Closure Year (without limit)	2050	
Have Model Calculate Closure Year?	No	
Waste Design Capacity	34,800,000	<i>megagrams</i>

MODEL PARAMETERS

Methane Generation Rate, k	0.020	<i>year¹</i>
Potential Methane Generation Capacity, L _o	100	<i>m³/Mg</i>
NMOC Concentration	5,607	<i>ppmv as methane</i>
Methane Content	50	<i>% by volume</i>

GASES / POLLUTANTS SELECTED

Gas / Pollutant #1:	Total landfill gas
Gas / Pollutant #2:	Methane
Gas / Pollutant #3:	Carbon dioxide
Gas / Pollutant #4:	NMOC

WASTE ACCEPTANCE RATES

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1992	275,000	302,500	0	0
1993	286,000	314,600	275,000	302,500
1994	297,440	327,184	561,000	617,100
1995	287,263	315,989	858,440	944,284
1996	373,476	410,824	1,145,703	1,260,273
1997	390,556	429,612	1,519,179	1,671,097
1998	305,644	336,208	1,909,735	2,100,709
1999	416,288	457,917	2,215,379	2,436,917
2000	609,591	670,550	2,631,667	2,894,834
2001	717,553	789,308	3,241,258	3,565,384
2002	715,479	787,027	3,958,811	4,354,692
2003	789,458	868,404	4,674,290	5,141,719
2004	804,847	885,332	5,463,748	6,010,123
2005	842,629	926,892	6,268,595	6,895,455
2006	860,049	946,054	7,111,224	7,822,346
2007	800,502	880,552	7,971,273	8,768,400
2008	774,463	851,909	8,771,775	9,648,953
2009	807,797	888,577	9,546,238	10,500,862
2010	781,099	859,209	10,354,035	11,389,439
2011	706,540	777,194	11,135,134	12,248,647
2012	724,011	796,412	11,841,674	13,025,841
2013	961,658	1,057,824	12,565,685	13,822,254
2014	1,002,477	1,102,725	13,527,343	14,880,077
2015	983,616	1,081,978	14,529,820	15,982,802
2016	821,676	903,844	15,513,436	17,064,780
2017	776,137	853,751	16,335,112	17,968,623
2018	911,108	1,002,219	17,111,249	18,822,374
2019	660,574	726,631	18,022,357	19,824,593
2020	660,574	726,631	18,682,931	20,551,224
2021	660,574	726,631	19,343,505	21,277,856
2022	660,574	726,631	20,004,079	22,004,487
2023	660,574	726,631	20,664,653	22,731,118
2024	660,574	726,631	21,325,227	23,457,750
2025	660,574	726,631	21,985,801	24,184,381
2026	660,574	726,631	22,646,375	24,911,013
2027	660,574	726,631	23,306,949	25,637,644
2028	660,574	726,631	23,967,523	26,364,275
2029	660,574	726,631	24,628,097	27,090,907
2030	660,574	726,631	25,288,671	27,817,538
2031	660,574	726,631	25,949,245	28,544,170

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
2032	660,574	726,631	26,609,819	29,270,801
2033	660,574	726,631	27,270,393	29,997,432
2034	660,574	726,631	27,930,967	30,724,064
2035	660,574	726,631	28,591,541	31,450,695
2036	660,574	726,631	29,252,115	32,177,327
2037	660,574	726,631	29,912,689	32,903,958
2038	660,574	726,631	30,573,263	33,630,589
2039	660,574	726,631	31,233,837	34,357,221
2040	660,574	726,631	31,894,411	35,083,852
2041	660,574	726,631	32,554,985	35,810,484
2042	660,574	726,631	33,215,559	36,537,115
2043	660,574	726,631	33,876,133	37,263,746
2044	660,574	726,631	34,536,707	37,990,378
2045	660,574	726,631	35,197,281	38,717,009
2046	660,574	726,631	35,857,855	39,443,641
2047	660,574	726,631	36,518,429	40,170,272
2048	660,574	726,631	37,179,003	40,896,903
2049	660,574	726,631	37,839,577	41,623,535
2050	660,574	726,631	38,500,151	42,350,166
2051	0	0	39,160,725	43,076,798
2052	0	0	39,160,725	43,076,798
2053	0	0	39,160,725	43,076,798
2054	0	0	39,160,725	43,076,798
2055	0	0	39,160,725	43,076,798
2056	0	0	39,160,725	43,076,798
2057	0	0	39,160,725	43,076,798
2058	0	0	39,160,725	43,076,798
2059	0	0	39,160,725	43,076,798
2060	0	0	39,160,725	43,076,798
2061	0	0	39,160,725	43,076,798
2062	0	0	39,160,725	43,076,798
2063	0	0	39,160,725	43,076,798
2064	0	0	39,160,725	43,076,798
2065	0	0	39,160,725	43,076,798
2066	0	0	39,160,725	43,076,798
2067	0	0	39,160,725	43,076,798
2068	0	0	39,160,725	43,076,798
2069	0	0	39,160,725	43,076,798
2070	0	0	39,160,725	43,076,798
2071	0	0	39,160,725	43,076,798

Results

Year	Total landfill gas		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)
1992	0	0	0
1993	1.361E+03	1.090E+06	7.325E+01
1994	2.750E+03	2.202E+06	1.480E+02
1995	4.168E+03	3.338E+06	2.243E+02
1996	5.508E+03	4.411E+06	2.963E+02
1997	7.248E+03	5.804E+06	3.900E+02
1998	9.038E+03	7.237E+06	4.863E+02
1999	1.037E+04	8.305E+06	5.580E+02
2000	1.223E+04	9.791E+06	6.579E+02
2001	1.500E+04	1.201E+07	8.072E+02
2002	1.826E+04	1.462E+07	9.824E+02
2003	2.144E+04	1.717E+07	1.153E+03
2004	2.492E+04	1.996E+07	1.341E+03
2005	2.841E+04	2.275E+07	1.529E+03
2006	3.202E+04	2.564E+07	1.723E+03
2007	3.565E+04	2.854E+07	1.918E+03
2008	3.890E+04	3.115E+07	2.093E+03
2009	4.197E+04	3.361E+07	2.258E+03
2010	4.514E+04	3.614E+07	2.428E+03
2011	4.811E+04	3.852E+07	2.588E+03
2012	5.065E+04	4.056E+07	2.725E+03
2013	5.324E+04	4.263E+07	2.864E+03
2014	5.694E+04	4.560E+07	3.064E+03
2015	6.078E+04	4.867E+07	3.270E+03
2016	6.444E+04	5.160E+07	3.467E+03
2017	6.723E+04	5.384E+07	3.617E+03
2018	6.975E+04	5.585E+07	3.753E+03
2019	7.288E+04	5.836E+07	3.921E+03
2020	7.470E+04	5.982E+07	4.019E+03
2021	7.649E+04	6.125E+07	4.116E+03
2022	7.825E+04	6.266E+07	4.210E+03
2023	7.997E+04	6.404E+07	4.303E+03
2024	8.166E+04	6.539E+07	4.393E+03
2025	8.331E+04	6.671E+07	4.482E+03
2026	8.493E+04	6.801E+07	4.569E+03
2027	8.652E+04	6.928E+07	4.655E+03
2028	8.808E+04	7.053E+07	4.739E+03
2029	8.960E+04	7.175E+07	4.821E+03
2030	9.110E+04	7.295E+07	4.901E+03
2031	9.256E+04	7.412E+07	4.980E+03
2032	9.400E+04	7.527E+07	5.058E+03
2033	9.541E+04	7.640E+07	5.133E+03
2034	9.679E+04	7.751E+07	5.208E+03
2035	9.815E+04	7.859E+07	5.280E+03
2036	9.947E+04	7.965E+07	5.352E+03

Year	Total landfill gas		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2038	1.020E+05	8.172E+07	5.490E+03
2039	1.033E+05	8.272E+07	5.558E+03
2040	1.045E+05	8.370E+07	5.624E+03
2041	1.057E+05	8.466E+07	5.688E+03
2042	1.069E+05	8.560E+07	5.751E+03
2043	1.081E+05	8.652E+07	5.814E+03
2044	1.092E+05	8.743E+07	5.874E+03
2045	1.103E+05	8.832E+07	5.934E+03
2046	1.114E+05	8.919E+07	5.992E+03
2047	1.124E+05	9.004E+07	6.050E+03
2048	1.135E+05	9.088E+07	6.106E+03
2049	1.145E+05	9.169E+07	6.161E+03
2050	1.155E+05	9.250E+07	6.215E+03
2051	1.165E+05	9.328E+07	6.268E+03
2052	1.142E+05	9.144E+07	6.144E+03
2053	1.119E+05	8.963E+07	6.022E+03
2054	1.097E+05	8.785E+07	5.903E+03
2055	1.075E+05	8.611E+07	5.786E+03
2056	1.054E+05	8.441E+07	5.671E+03
2057	1.033E+05	8.274E+07	5.559E+03
2058	1.013E+05	8.110E+07	5.449E+03
2059	9.927E+04	7.949E+07	5.341E+03
2060	9.731E+04	7.792E+07	5.235E+03
2061	9.538E+04	7.637E+07	5.132E+03
2062	9.349E+04	7.486E+07	5.030E+03
2063	9.164E+04	7.338E+07	4.930E+03
2064	8.982E+04	7.193E+07	4.833E+03
2065	8.805E+04	7.050E+07	4.737E+03
2066	8.630E+04	6.911E+07	4.643E+03
2067	8.459E+04	6.774E+07	4.551E+03
2068	8.292E+04	6.640E+07	4.461E+03
2069	8.128E+04	6.508E+07	4.373E+03
2070	7.967E+04	6.379E+07	4.286E+03
2071	7.809E+04	6.253E+07	4.201E+03
2072	7.654E+04	6.129E+07	4.118E+03
2073	7.503E+04	6.008E+07	4.037E+03
2074	7.354E+04	5.889E+07	3.957E+03
2075	7.209E+04	5.772E+07	3.878E+03
2076	7.066E+04	5.658E+07	3.802E+03
2077	6.926E+04	5.546E+07	3.726E+03
2078	6.789E+04	5.436E+07	3.653E+03
2079	6.654E+04	5.328E+07	3.580E+03
2080	6.523E+04	5.223E+07	3.509E+03
2081	6.393E+04	5.120E+07	3.440E+03
2082	6.267E+04	5.018E+07	3.372E+03
2083	6.143E+04	4.919E+07	3.305E+03
2084	6.021E+04	4.821E+07	3.240E+03

Appendix C

Title V Statement of Basis

This is significant permit revision pursuant to Regulation 2, Rule 6, Section 266.5.

Section I

There will be no revisions to this section.

Section II

There will be no revisions to this section.

Section II

There will be no revisions to this section.

Section IV

There will be no revisions to this section.

Section V

There will be no revisions to this section.

Section VI

Condition #17309 Part 33 will be updated per NSR Application #29941.

Section VII

Table VII-A will be revised to show updated fugitive POC emission limit as per Application # 29941.

Section VIII

There will be no revisions to this section.

Section IX

There will be no revisions to this section.

Section X

This section will include the changes to the Title V Minor Revision Application #29942

Section XI

There will be no revisions to this section.

Appendix D

Permit Conditions for Facility # A4618

Any condition that is preceded by an asterisk is not federally enforceable.

Condition # 16462

For S-3 YARD AND GREEN WASTE STOCKPILES:

1. The total amount of yard and green waste received at S-3 shall not exceed 1,000 tons during any day nor 70,200 tons during any consecutive 12-month period. (Basis: Cumulative Increase)
2. The yard and green waste stockpiles shall be watered down as necessary to prevent visible dust emissions during loading or unloading. Dry, dusty material shall be watered down before unloading from truck beds as necessary to prevent visible emissions. To ensure compliance with this part, the Permit Holder shall visually observe all unloading, stockpiling, and loading operations and shall immediately initiate corrective actions if any visible dust emissions are detected. (Basis: Regulations 6-1-301, 6-1-305, and 2-6-503)
- *3. Yard and green waste shall be removed from the stockpiles within 4 days of the time it is received to prevent decomposition and odors. If any stockpiles are deemed to be odorous by a District inspector, the allowable stockpile storage time shall be reduced from 4 days to 72 hours. (Basis: Regulation 1-301)
- *4. Any stockpile that is deemed to be odorous by a District inspector shall be removed within 24 hours. (Basis: Regulation 1-301)
- *5. If the plant receives two or more Violation Notices from the District for "Public Nuisance" in any consecutive 12-month period, the owner/operator of this facility shall submit to the District, within 30 days, an application to modify the Permit to Operate to include the following control measures, as applicable, or any other measures that the District deems necessary and appropriate.
 - a. Require the application of odor inhibitor solutions,
 - b. Reduce the allowable stockpile time, or
 - c. Discontinue use of green waste stockpiles during the ozone season or other appropriate time period.(Basis: Regulation 1-301)

Condition # 16462

For S-3 YARD AND GREEN WASTE STOCKPILES:

6. In order to demonstrate compliance with Parts 1, 2 and 3, the owner/operator shall maintain the following records:
 - a. Record the date, time, and amount of yard and green waste received at a stockpile.
 - b. Summarize the amount of yard and green waste received on a monthly basis.
 - c. Record the date, time, and amount of yard and green waste removed from the stockpile.
 - d. Record the date and time that water was applied to the stockpiles or associated loading or unloading operations.

All records shall be kept on site for a minimum of 5 years from the date of entry and shall be made available to District staff upon request. (Basis: Cumulative Increase and Regulations 2-6-501, 6-1-301, and 6-1-305)

Condition # 17309

For S-1 KELLER CANYON LANDFILL – WASTE DECOMPOSITION PROCESS, ABATED BY:
A-1 LANDFILL GAS FLARE AND A-2 LANDFILL GAS FLARE
S-4 KELLER CANYON LANDFILL – WASTE AND COVER MATERIAL DUMPING; AND
S-5 KELLER CANYON LANDFILL – EXCAVATING, BULLDOZING, AND COMPACTING
ACTIVITIES:

1. All landfill operations, including the acceptance and placement of waste and earthmoving and construction activities, shall be restricted to six days per week, Monday through Saturday. No operation shall take place on Sunday. (Basis: Cumulative Increase)
2. The Permit Holder shall apply for and receive written authorization from the District (in the form of an MFR Permit Revision and either a District Authority to Construct or Change of Permit Conditions) prior to exceeding any of the waste acceptance or waste disposal limits listed in subparts a-c below, unless the subpart below specifically states otherwise. Any changes in waste acceptance rates, types of waste accepted, or other practices that will result in emissions increases above the maximum permitted emission rates at the Keller Canyon Landfill (S-1) or the Landfill Gas Flares (A-1 and A-2) shall be considered a modification of S-1, A-1, or A-2 as defined in Regulation 2-1-234. (Basis: Cumulative Increase and Regulation 2-1-301)
 - a. Total waste accepted and placed at the landfill shall not exceed 3,500 tons in any single day (except during temporary emergency situations approved by the Local Enforcement Agency).
 - b. The total cumulative amount of all wastes placed in the landfill shall not exceed 38.4 million tons. However, an exceedance of this amount is not a violation of the permit and does not trigger the requirement to obtain an NSR permit, if the Permit Holder provides documentation to the District, within 30 days of the date of discovery of the exceedance, that demonstrates

to the satisfaction of the APCO that the higher cumulative tonnage in place will not result in an increase of the Part 33 emission limit.

- c. The maximum design capacity of the landfill (total volume of all wastes and cover materials placed in the landfill, excluding final cover) shall not exceed 75 million cubic yards.
3. All waste shall be covered on a daily basis with suitable cover material meeting the requirements of the CalRecycle. This cover frequency shall be increased as necessary for the control of odors and litter. Approved daily cover materials for this site include:
 - a. Clean soil compacted to a depth of least 6 inches,
 - b. Green waste compacted to a depth of at least 6 inches, but not exceeding an average depth of 12 inches, and
 - c. Geosynthetic blankets, provided that the working face is covered with clean soil at least once a week.
 - d. Upon receiving written approval from the District (in the form of a letter or email concurring that no permit revisions are required), the owner/operator of S-1 may use other Alternative Daily Cover (ADC) materials that have been approved by CalRecycle, provided that the use of these ADC materials do not result in odors, emission increases of any pollutant, the emission of any new pollutants, or contribute to a public nuisance. The owner/operator of S-1 shall apply for and receive an Authority to Construct before using any ADC materials that may result in odors, emission increases, the emission of any new pollutants, or that could contribute to a public nuisance.

(Basis: Regulation 1-301 and Cumulative Increase)
 4. All on-site parking and maintenance areas for vehicles and mobile equipment shall either be paved, or provided with a gravel surface, except parking areas for landfill operation employees located directly adjacent to the working face. (Basis: Cumulative Increase)
 5. All on-site roadways shall be paved, with the following exceptions:
 - a. A segment not exceeding 3,000' in length leading from the cover stockpiles to the midpoint of the working face.
 - b. A segment not exceeding 400' in length leading from the end of the main access haul road to the midpoint of the working face.
 - c. A segment not exceeding 750' in length leading from the end of the paved entrance roadway to the beginning of the unpaved 400' segment (exception b. above). This segment shall consist of a minimum of 12 inches of compacted gravel or crushed asphalt.
 - d. A segment not exceeding 1400' in length consisting of a secondary fire-access road southerly from the sedimentation basin perimeter roadway, starting from the graveled roadway surface to its southernmost point. Use of the roadway for maintenance and site patrol purposes shall not exceed an average of two vehicle trips per day.

(Basis: Cumulative Increase)

6. Speed of vehicles on unpaved roads shall not exceed 10 miles per hour. This speed limit shall be posted and enforced on unpaved roads at all times. Speed of vehicles on the fire access road shall not exceed 25 miles per hour. (Basis: Cumulative Increase)
7. All unpaved roads shall be provided with a gravel surface, excluding the fire access road, the 400-foot section of roadway from the end of the main access haul road to the working face, and the 3,000-foot scraper haul road segment from the working face to the soil stockpile area. (Basis: Cumulative Increase)
8. Operator shall control dust emissions from all unpaved roads, excluding the fire access road, by applying water as necessary and chemical dust suppressants at the following frequency and intensity:
 - a. Except as provided below, all applications of dust suppressant shall consist of 0.5 gallons per square yard of 10% $MgCl_2$ applied along the entire length of all unpaved roads.
 - b. Beginning May 1st and ending November 1st, dust suppressants shall be applied every 30 days.
 - c. From November 1 through May 1, dust suppressants shall be applied following any 30 consecutive dry days. For the purposes of this permit, a dry operating day shall be defined as any 24-hour period, midnight to midnight, with less than 0.09 inches of rain.
 - d. Upon written request of the operator, the above dust suppression program may be modified to allow for the use of dust suppressants other than $MgCl_2$ provided an 85% control efficiency for TSP can be demonstrated to the satisfaction of the APCO. All such changes must be approved by the APCO in writing (in the form of a letter or email concurring that no permit revisions are required) prior to implementation.(Basis: Cumulative Increase)
9. Operator shall maintain a fleet of at least two water trucks at all times to wash down paved roadway surfaces and wet unpaved roads (excluding the fire access road) and work areas. (Basis: Cumulative Increase)
10. On all dry operating days, all paved and AB roads shall be completely washed down at regular intervals throughout operating hours. Rinsing frequency shall average once every fifth heavy-duty vehicle (gross weight > 5 tons) pass, excluding water trucks. Averaging shall be done on a daily basis. (Basis: Cumulative Increase)
11. On-site traffic volume of the following heavy-duty vehicles shall not exceed the following number of round trips in any single day, calculated on an annual basis, except as otherwise provided in this permit:
 - a. 175 transfer truck trips
 - b. 4 leachate transfer truck trips

- c. 45 scraper trips
 - d. For all heavy-duty vehicles, such other on-site travel as may be approved in writing by the APCO.
- 'Annual Basis' shall be calculated by dividing the number of total truck trips by the number of operating days in any 365-day period. (Basis: Cumulative Increase)
12. For the following heavy-duty vehicles, one-way on-site trip length shall not exceed the following distances at any time during the life of the landfill except as otherwise provided by this permit:
 - a. Transfer trucks: 7,800 feet (7,400 feet paved and AB)
 - b. Leachate trucks: 3,600 feet (all paved)
 - c. Scrapers: 3,000 feet (all unpaved)A map shall be kept on site at all times identifying the paved and AB roads, clearly stating their length and the type of vehicles that use them. (Basis: Cumulative Increase)
 13. On all dry operating days, all off-road soil areas, including the active face area and the active portion of the cover stockpiles, trafficked or otherwise disturbed by vehicles, equipment or operations shall be wetted down with 0.5 gallons of water per square yard or 2,420 gallons of water per acre, at least twice per day. (Basis: Cumulative Increase)
 - *14. All inactive portions of the cover stockpiles shall either be covered by a latex sealer or revegetated. (Basis: CEQA, Dust Mitigation Measures)
 - *15. All completed landfill phases shall be revegetated as soon as possible. (Basis: CEQA, Dust Mitigation Measures)
 16. In order to demonstrate compliance with the above parts, the owner/operator of S-1 shall maintain the following records:
 - a. Daily records of the quantity of waste accepted and placed in the landfill.
 - b. Summarize the daily waste acceptance records for each calendar month.
 - c. Summarize monthly waste acceptance records for each preceding 12-month period.
 - d. For each area or cell that is not controlled by a landfill gas collection system, maintain a record of the date that waste was initially placed in the area or cell.
 - e. Record the cumulative amount of waste placed in each uncontrolled area or cell on a monthly basis.
 - f. If the Permit Holder plans to exclude an uncontrolled area or cell from the collection system requirement, the Permit Holder shall also record the types and amounts of all non-decomposable waste placed in the area and the percentage (if any) of decomposable waste placed in the area.
 - g. Record the initial operation date for each new landfill gas well and collector.
 - h. Maintain an accurate map of the landfill, which indicates the locations of all refuse boundaries and the locations of all wells and collectors (using

unique identifiers). Any areas containing only non-decomposable waste shall be clearly identified. This map shall be updated at least every six months to indicate changes in refuse boundaries and to include any newly installed wells and collectors.

- i. Daily records of the number of site trips made by heavy-duty vehicles by type of vehicle (transfer trucks, leachate trucks, scrapers, etc.)
- j. Daily records of the number of water truck rinses on paved and unpaved roads. Alternatively, the Permit Holder may maintain daily checklists instead of the records required by this subpart, provided the Permit Holder has received written approval from the District for the site's dust control plan, checklists, and implementation procedures.
- k. Records of all chemical dust suppressant applications including the date of treatment, length of roads treated, and amount of dust suppressant applied. Alternatively, the Permit Holder may maintain daily checklists instead of the records required by this subpart, provided the Permit Holder has received written approval from the District for the site's dust control plan, checklists, and implementation procedures.
- l. Daily records of all water applications to the working face, cover soil stockpiles, or other areas including the number of times that water was applied and the amount of water applied. Alternatively, the Permit Holder may maintain daily checklists instead of the records required by this subpart, provided the Permit Holder has received written approval from the District for the site's dust control plan, checklists, and implementation procedures.

All records required to be kept under the provisions of this permit must be maintained on site for a period of five years from the date of entry and be available for inspection by District staff upon request. (Basis: Cumulative Increase and Regulation 2-6-501)

17. The annual report required by BAAQMD Regulation 8-34-411 shall be submitted in two semi-annual increments. The reporting periods and report submittal due dates for the semi-annual increments of the Regulation 8-34-411 report and the MSW Landfill NESHAP report shall be synchronized with the reporting periods and report submittal due dates for the semi-annual MFR Permit monitoring reports that are required by Section I.F of the MFR Permit for this site. A single report may be submitted to satisfy the requirements of Section I.F, Regulation 8-34-411, and 40 CFR Part 63.1980(a), provided that all items required by each applicable reporting requirement are included in the single report. (Basis: Regulation 8-34-411 and 40 CFR Part 63.1980(a))
18. Landfill Gas Collection System Design and Alteration Requirements:
The Permit Holder shall have a properly operated and properly maintained active landfill gas collection system at the S-1 Keller Canyon Landfill that complies with the design and alteration requirements listed below. (Basis: Regulations 2-1-301, 8-34-301.1, 8-34-303, 8-34-304, 40 CFR 60.755(a) and 60.759)

a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below. Well and collector locations, depths, and lengths of associated piping are as described in detail in Permit Application #28398. The authorized number of landfill gas collection system components is the baseline count listed below plus any components installed and minus any components permanently decommissioned pursuant to Part 18b, as evidenced by start-up and decommissioning notification letters submitted to the District.

i. The following components constitute the main landfill gas collection system as of 08/05/2019.

Well Station	Vertical Wells
EW	156
ID	Horizontal Collectors
HC-2	1

ii. The following components have been installed to prevent or control landfill gas migration and are not part of the main landfill gas collection and control system.

	Horizontal Collectors
HC-3	1
	Other Components
LCRS-1	1
LCRS-2	1

b. The Permit Holder has been authorized to conduct the landfill gas collection system alterations listed below pursuant to Application #28398. All collection system alterations shall comply with subparts i-vii below. Components installed or decommissioned pursuant to Part 18b shall be added to or removed from Part 18a(i) in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415.

- i. The authorized collection system alterations are:
- Install up to 100 vertical gas collection wells.
 - Install up to 40 horizontal collectors.
 - Permanently decommission up to 100 vertical wells.
 - Permanently decommission up to 40 horizontal collectors.
 - Unlimited replacement of vertical wells.

ii. The Permit Holder shall apply for and receive a Change of Conditions from the District before implementing any changes to the landfill gas collection system described in Part 18a, other than those authorized by Part 18b. Installing, decommissioning, and relocating vertical wells and horizontal collectors are alterations that are subject to this requirement, unless this change constitutes a replacement as defined in subpart iii below.

iii. Replacement of landfill gas collection system components with identical or functionally equivalent components will not be deemed an alteration and will not be subject to the Authority to Construct requirement under the following circumstances. If a well or

collector will be shut down and replaced by a new well or collector in essentially the same location as the old component and this decommission/installation will be accomplished in accordance with Regulations 8-34-117 and 8-34-118, then this activity shall be considered a component replacement that is not subject to an Authority to Construct or Change of Conditions requirement. For each individual well or collector replacement, this subpart authorizes a maximum vacuum disconnection time of five consecutive days for compliance with Regulation 8-34-117.5. The disconnected component and the new component shall not be counted toward the Part 18b(i) component alteration limits; the numbers of replacement wells and replacement collectors are not limited. Alterations, repairs, or replacements of non-perforated piping sections (such as risers, laterals, or header pipes), piping connectors, or valves are not subject to the Authority to Construct requirement.

- iv. At least three days prior to initiating operation of a well or collector installed pursuant to Part 18b, the Permit Holder shall submit a start-up notice to the District that contains the component ID number for each new well or collector and the anticipated initial start-up date for each new component.
- v. For each well or collector that is permanently decommissioned after April 16, 2007, the Permit Holder shall submit a decommissioning notice to the District within no later than three working days after the component was disconnected from vacuum system. This decommissioning notice shall contain the component ID for each well or collector that was decommissioned, the date and time that each component was disconnected from the vacuum system, and the reason the component was decommissioned.
- vi. Within six months of installing a new component or permanently decommissioning an existing component, the Permit Holder shall prepare an updated map of the landfill gas collection system that identifies the ID numbers and locations of all operable wells and collectors. On this map or in accompanying documentation, the Permit Holder shall summarize all component changes that were made since the last map was prepared. The previous collection system map, the updated collection system map, and the component change summary shall be provided to District staff upon request.
- vii. If the Permit Holder has a net reduction (number of decommissioned components minus the number of installed components) of more than five components within a 120-day period, the Permit Holder shall submit a more comprehensive decommissioning notice to the District. In addition to the information required by subpart v, this comprehensive decommissioning notice shall include the maps and documentation

required by subpart vi, shall identify all component changes that have occurred but that are not included on the most recently updated map, shall identify any components that are temporarily disconnected from vacuum pursuant to Part 19c, shall provide estimated vacuum reconnection dates for these components, shall include a list of all well installations that are expected to occur within the next 120 days, and shall discuss the reasons why this reduction in gas collection components is not expected to result in surface emission leaks.

Upon request, the Permit Holder shall provide wellhead monitoring data, surface leak monitoring data, records of repair attempts made to date, and other information to support the need for a net component reduction of more than five wells. The District may require additional surface monitoring to verify that this net component reduction is not causing landfill surface leaks. The District will notify the Permit Holder in writing of any additional surface monitoring that is required pursuant to this subpart.

19. Operating Requirements for Landfill Gas Collection System and Collection System Components:
 - a. The landfill gas collection system described in Part 18a(i) shall be operated continuously. Each component that is subject to this continuous operation requirement shall not be shut off, disconnected, or removed from operation without prior written authorization from the District, unless the Permit Holder complies with Part 19c or with all applicable requirements of Regulation 8, Rule 34, Sections 113, 116, 117, and 118. (Basis: Regulation 8-34-301, 40 CFR 60.753(b and c) and 60.755(e))
 - i. The components identified in Part 18a(ii) are not required to operate continuously and may be connected to or disconnected from the main vacuum system at the operator's discretion, provided the owner/operator either connects each component to the vacuum system at least once per quarter or inspects each component to determine if vacuum connection is necessary at least once each quarter. The operator shall record the date, time, and reason for each vacuum connection/disconnection event and for each inspection.
 - b. Each landfill gas collection system component listed in Part 18a(i) shall be operated in compliance with the wellhead limits of Regulation 8-34-305, unless an alternative wellhead limit has been approved for that component, (as identified in subpart i below), and the Permit Holder complies with all of the additional requirements for that component, as identified in subparts ii-vii below. (Basis: Regulation 8-34-305)
 - i. The nitrogen and oxygen concentration limits in Regulation 8-34-305.3 and 8-34-305.4 shall not apply to the landfill gas collection wells listed below, provided that the oxygen concentration in each of the following wells does not exceed 15% by volume.

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- ii. The Permit Holder shall demonstrate compliance with the alternative wellhead oxygen limit in subpart i by monitoring each wellhead for oxygen on a monthly basis, in accordance with the provisions of Regulations 8-34-505 and 8-34-604.
- iii. All test dates, wellhead oxygen concentration data, any deviations from the subpart i limit, repair actions, repair dates, re-monitoring dates and results, and compliance restoration dates shall be recorded in a District approved log and made available to District staff upon request in accordance with Regulations 8-34-34-501.4, 8-34-501.9, and 8-34-414.
- iv. To demonstrate that the alternative wellhead oxygen limit in subpart i will not cause surface emission leaks, the Permit Holder shall conduct additional surface emission monitoring within a 15-meter vicinity of each component listed in subpart i at the specific locations discussed below. For each component in subpart i, the Permit Holder shall maintain a map showing the location of the buried collection component and identifying the approximate radius of influence for the component. For each component in subpart i, the Permit Holder shall monitor for landfill surface emissions – in accordance with Regulations 8-34-506 and 8-34-607 – at three representative points on the landfill surface that are within the radius of influence of the component and that are not more than 15 meters from the surface location of the component. This additional surface emission monitoring shall be conducted on a monthly basis for a period of at least six consecutive months.
- v. If no excesses of the Regulation 8-34-303 surface emission limit are detected within a 15-meter vicinity of a component for six consecutive months, the Permit Holder may discontinue the additional monthly surface emission monitoring in the vicinity of that component and shall continue with the routine quarterly surface emission monitoring requirements for that component.
- vi. If one or more excesses of the Regulation 8-34-303 surface emission limit are detected within a 15-meter vicinity of a component during a six consecutive month period, the Permit Holder shall follow all applicable requirements for recording and reporting the excess and shall follow the Regulation 8-34-415 repair schedule for landfill surface leak excesses. The additional monthly surface emission monitoring in the vicinity of that component shall continue until either the no surface excess requirements of subpart v have been achieved or the repair and compliance restoration requirements of subpart vii have been satisfied.
- vii. If excesses of the Regulation 8-34-303 surface emission limit are detected within a 15-meter vicinity of a component for three or more monitoring events during a six consecutive month period, the subpart i alternative wellhead oxygen limit shall be revoked for that

component. The Permit Holder shall conduct all necessary repairs to the landfill gas collection well, to any piping associated with the well or the remote wellhead monitoring system, to valves, flanges, or other connectors, and to any test ports or other openings that are necessary to eliminate air intrusion into the well or the monitoring point, to prevent impairment of vacuum application or vacuum adjustment at the collection well, and to restore the collection well and associated monitoring point to proper function. The Permit Holder shall complete all of the above repairs and any necessary landfill surface repairs and shall restore compliance with the Regulation 8-34-303 surface emission limit (at each location where an excess of the surface limit was measured) and the Regulation 8-34-305.4 wellhead oxygen concentration limit by the earlier of the following dates: (a) within 120 days of the date that the first excess was discovered if the three excess events are discovered within a single quarterly period pursuant to the re-monitoring requirements of 8-34-415 or (b) within 60 days of detection of the third excess.

- c. The Permit Holder may temporarily disconnect individual wells or collectors listed in Part 18a(i) from the vacuum system, provided that all requirements of this subpart are satisfied. (Basis: Regulation 8-34-404)
 - i. No more than five (5) landfill gas collection system components (wells or collectors) may be temporarily disconnected from the vacuum system at any one time pursuant to Part 19c.
 - ii. For each individual well or collector that is temporarily disconnected from the vacuum system pursuant to Part 19c, the total vacuum system disconnection time shall not exceed 120 days during any 12-month period.
 - iii. Collection system components that are disconnected from the vacuum system are not subject to wellhead limits (Regulation 8-34-305 or Part 19b) or to monthly wellhead monitoring requirements (Regulation 8-34-505) during this vacuum disconnection time.
 - iv. Wells or collectors that are temporarily disconnected from the vacuum system continue to be subject to the component leak limit (Regulation 8-34-301.2) and the quarterly leak testing requirement (Regulation 8-34-503) at all times. In addition, the Permit Holder shall conduct the following component leak monitoring at each component that has been disconnected from the vacuum system pursuant to Part 19c: test for component leaks using the procedures identified in Regulation 8-34-602 within 10 calendar days of disconnection from vacuum and again within 1 month of disconnection from vacuum. If a component leak is detected at the well, the Permit Holder shall take all steps necessary to reduce the leak below the applicable limit, including reconnecting the well to the vacuum system, if no other corrective action measures are successful within the time frames allowed by Rule 34.

- v. For each temporary component disconnection event, the Permit Holder shall record each affected well ID number, all well disconnection dates and times, all well reconnection dates and times, all related monitoring dates and monitoring results in a District approved log. This log shall also include an explanation of why the temporary vacuum disconnection was necessary and shall describe all adjustments or repairs that were made in order to allow this well to operate continuously, to reduce leaks, or to achieve compliance with an applicable limit. All records shall be retained for a minimum of five years and shall be made available to District staff upon request.
20. All landfill gas collected by the gas collection system for S-1 shall be abated at all times by the on-site enclosed flares, A-1 or A-2 or shall be vented off-site to the Ameresco Keller Canyon LLC facility (Site # B7667) for gas processing and control. A sufficient amount of landfill gas shall be collected at all times to prevent violation of the applicable landfill surface leak limits. If only one off-site landfill gas fired engine is operating, at least one on-site flare (A-1 or A-2) must also be operating. If both off-site engines are operating, collected landfill gas may be vented to these off-site engines alone – without concurrent operation of either on-site flare – until January 1, 2013. Effective January 1, 2013 through December 31, 2020, collected gas shall be vented to either a minimum of: (a) one on-site flare operating alone or (b) one on-site flare and two off-site engines operating concurrently. Effective January 1, 2021, collected landfill gas shall be vented to either a minimum of: (a) two on-site flares operating concurrently or (b) one on-site flare and two off-site engines operating concurrently. Under no circumstances shall raw landfill gas be vented to the atmosphere. This limitation does not apply to unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair performed in compliance with Regulation 8, Rule 34 Sections 113, 116, 117, or 118 or to inadvertent component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303. (Basis: Regulations 8-34-301, 8-34-303, 40 CFR 60.752(b)(2)(ii-iii), 60.753(d-f), and 60.755(e))
21. Each flare shall be operated continuously during any time that landfill gas is being vented to the flare. (Basis: Regulation 8-34-301, 40 CFR 60.752(b)(2)(iii), 60.753(e), and 60.755(e))
22. A temperature monitor with readout display and continuous recorder shall be installed and maintained on each flare. One or more thermocouples shall be placed in the primary combustion zone of the flare and shall accurately indicate flue gas temperature at all times. Temperature charts shall be retained for five years and made readily available to District Staff upon request. (Basis: Regulations 8-34-501 and 2-6-501 and 40 CFR 60.756(b))

23. The combustion zone temperature of the A-1 Flare shall be maintained at a minimum temperature of 1504 degrees F, averaged over any 3-hour period. The combustion zone temperature of the A-2 Flare shall be maintained at a minimum temperature of 1400 degrees F, averaged over any 3-hour period. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise these minimum temperature requirements in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415 and the following criteria. The minimum combustion zone temperature for the flare shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature is not less than 1400 degrees F. (Basis: Regulations 2-5-301 and 8-34-301, RACT, and 40 CFR 60.758(c)(1)(i))
24. NO_x emissions from either the A-1 Flare or the A-2 Flare shall not exceed 15 ppmv of NO_x, expressed as NO₂ at 15% oxygen on a dry basis. (Basis: RACT)
25. CO emissions from the A-1 Flare shall not exceed 114 ppmv of CO at 15% oxygen on a dry basis. CO emissions from the A-2 Flare shall not exceed 81 ppmv of CO at 15% oxygen on a dry basis. (Basis: RACT)
26. [deleted]
27. A flow meter to measure gas flow into each flare shall be installed prior to operation and maintained in good working condition. (Basis: Regulation 8-34-508 and 40 CFR 60.756(b))
28. Each flare shall be equipped with both local and remote alarms, automatic combustion air control, and automatic start/restart system. (Basis: Regulation 8-34-301)
29. [deleted]
30. In order to demonstrate compliance with Parts 24 and 25 above, Regulations 8-34-301.3 and 8-34-412, 40 CFR 60.8, and 40 CFR 60.752(b)(2)(iii)(B), the owner/operator shall conduct a source test at each flare once every year. The source tests shall be conducted no sooner than 9 months and no later than 12 months after the previous source test. The first source test for A-2 shall be conducted within 60 days of initial start-up of A-2. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 60 days of the test date. Each annual source test shall determine the following:
 - a. landfill gas flow rate to the flare (dry basis);

- b. concentrations (dry basis) of carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), methane (CH₄), and total non-methane organic compounds (NMOC) in the landfill gas;
 - c. stack gas flow rate from the flare (dry basis);
 - d. concentrations (dry basis) of NO_x, CO, NMOC, and O₂ in the flare stack gas;
 - e. NMOC destruction efficiency achieved by the flare;
 - f. NO_x and CO emission rates from the flare in units of pounds per MM BTU,
 - g. average combustion zone temperature in the flare during the test period.
- (Basis: Regulation 8-34-301.3, RACT, 40 CFR 60.752(b)(2)(iii))

31. The Permit Holder shall conduct a characterization of the landfill gas concurrent with the annual source test required by Part 30 above. The landfill gas sample shall be drawn from the main landfill gas header. In addition to the compounds listed in Part 30b, the landfill gas shall be analyzed for the organic and sulfur compounds listed below. All concentrations shall be reported on a dry basis. The sulfur compound data collected pursuant to this part may be used to determine the total reduced sulfur compound concentration expressed as H₂S (TRS) and the ratio (R) of total reduced sulfur content versus hydrogen sulfide content, where $R = \text{TRS} / \text{H}_2\text{S}$. This ratio (R) may be used in Part 34 below (in place of the default value of $R = 1.2$) to calculate TRS based on H₂S measured by the Draeger tube method. The test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 60 days of the test date. (Basis: Air Toxics Hot Spots Act, Regulations 2-5-501, 8-34-301, and 9-1-302, and 40 CFR 60.754(d))

Organic Compounds

- Acrylonitrile
- Benzene
- Carbon Tetrachloride
- Chloroform
- Ethylene Dibromide
- Ethylene Dichloride
- Methylene Chloride
- Perchloroethylene
- Trichloroethylene
- Vinyl Chloride

Sulfur Compounds

- Carbon Disulfide
- Carbonyl Sulfide
- Dimethyl Sulfide
- Ethyl Mercaptan
- Hydrogen Sulfide
- Methyl Mercaptan

*32. The owner/operator shall ensure that fugitive toxic air contaminant (TAC) emissions from S-1 do not exceed any of the emission rates listed below. The owner/operator shall demonstrate compliance with these emission rate limits by using the following procedures. (Basis: Air Toxics Hot Spots Act and Regulation 2-5-302)

- a. The owner/operator shall compare the concentration measured for each TAC, pursuant to the Part 31 landfill gas characterization analysis, to the concentration limit listed below. Compliance with the TAC concentration limits shall demonstrate compliance with the associated fugitive TAC emission rate limit.
- b. If the concentration of a TAC exceeds the concentration limit listed below, this excess shall be deemed to be a violation of this permit condition, unless the owner/operator satisfies the following requirement. The owner/operator shall, within 30 days of receiving test results showing an excess of a TAC concentration limit below, submit documentation to the District that demonstrates - to the District's satisfaction - that the higher measured concentration level has not resulted in an excess of the associated annual fugitive emission rate limit using District-approved calculation procedures.

<u>Compound</u>	<u>Concentration (ppbv)</u>	<u>Fugitive Emissions pounds/year</u>
Acrylonitrile	500	60
Benzene	20,000	3557
Carbon Tetrachloride	100	35
Chloroform	100	27
Ethylene Dibromide	100	40
Ethylene Dichloride	750	169
Methylene Chloride	7,600	1470
Perchloroethylene	3,300	1246
Trichloroethylene	1,500	449
Vinyl Chloride	1,700	242

33. The fugitive emissions of Precursor Organic Compounds (POC) from the S-1 Landfill shall not exceed ~~40.05~~ 95.80 tons **per consecutive 12-month period** (expressed as methane). Fugitive POC emissions from the landfill shall be determined using the procedures and assumptions described in Parts 33a-f below. POC emissions from the landfill shall be calculated at least once every five years or whenever the capacity of the landfill gas emissions control system, A-1 and A-2 Flares, is expanded, whichever is sooner. (Basis: Offsets)
 - a. The current methane generation rate and uncontrolled POC emissions from the S-1 Landfill shall be calculated using the equations described in the most recent revision of AP-42 Chapter 2.4.
 - b. The methane generation rate shall be based on the total amount of waste accepted at the landfill to date. The Permit Holder may use either average annual or year-to-year waste acceptance rates.
 - c. The Permit Holder shall use the AP-42 recommended default values for the methane generation potential and methane generation rate constant. As of April 1, 2005, these default values were:
 $Lo = 100 \text{ m}^3 \text{ CH}_4/\text{Mg}$ and $k = 0.02 \text{ year}^{-1}$.

- d. When calculating uncontrolled POC emissions (UEPOC, pounds/year of POC), the Permit Holder shall use site-specific NMOC, NPOC, and methane concentrations (after correcting for air infiltration) and the site-specific landfill gas temperature. The site-specific values shall be the average of at least three previous years of data collected pursuant to Part 31 above.
 - e. Total non-methane organic compounds (NMOC) measured in the landfill gas pursuant to Part 31 may be assumed to be 100% POC, or a site specific POC concentration (CPOC) can be calculated using data from Part 33d above, where $CPOC = NMOC - NPOC$ (all concentrations expressed as methane).
 - f. The fugitive POC emissions from the landfill (FEPOC, pounds/year of POC) shall be calculated using the equation below:
$$FEPOC = 0.25 * UEPOC$$
34. Total reduced sulfur (TRS) compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in control systems exhaust. The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed 300 ppmv (dry). In order to demonstrate compliance with this part, the Permit Holder shall measure the hydrogen sulfide (H₂S) content in collected landfill gas on a quarterly basis using the Draeger tube method. The TRS content of the landfill gas shall be calculated according to the following equation: $TRS = R * H_2S$ measured by Draeger tube method, where R is either (a) the ratio of TRS/H₂S that is determined from the sulfur compound data collected pursuant to Part 31 or (b) a default value of 1.2. The annual laboratory analysis for reduced sulfur compounds, which is required by Part 31 above, may be substituted for one quarterly Draeger tube analysis per year. The landfill gas sample shall be taken from the main landfill gas header. The Permit Holder shall follow the manufacturer's recommended procedures for using the Draeger tube and interpreting the results. (Basis: Cumulative Increase and Regulations 9-1-302 and 2-6-503)
35. The heat input to the flares shall not exceed the following limits: (a) 1744.8 million BTU per day and 636,852 million BTU per year for A-1 and (b) 1824 million BTU per day and 665,760 million BTU per year for A-2. In order to demonstrate compliance with this part, the Permit Holder shall calculate and record on a monthly basis the maximum daily and total monthly heat input to each flare based on the landfill gas flow rate recorded pursuant to Part 27, the average methane concentration in the landfill gas based on the most recent source test, and a high heating value for methane of 1013 BTU/scf. The records shall be retained for five years and shall be made available to the District staff upon request. (Basis: Offsets, Cumulative Increase, and Regulation 2-1-301)

~~36. The Permit Holder shall limit the quantity of VOC soil handled per day so that no more than 15 pounds of total carbon could be emitted to the atmosphere per day. VOC soil is any soil that contains volatile organic compounds, as defined in Regulation 8-40-213, at a concentration of 50 ppmw or less. Soil containing more than 50 ppmw of VOC is considered to be “contaminated soil” and is subject to Part 37 instead of Part 36. Soil containing only non-volatile hydrocarbons and meeting the requirements of Regulation 8-40-113 is not subject to Part 36. In order to demonstrate compliance with this condition, the Permit Holder shall maintain the following records in a District approved log.~~

- ~~a. Record on a daily basis the amount of VOC soil handled at the landfill. This total amount (in units of pounds per day) is Q in the equation in subpart e below.~~
- ~~b. Record on a daily basis the VOC content of all soils handled at the landfill. This VOC Content (C in the equation below) should be expressed as parts per million by weight as total carbon (or C_T).~~
- ~~c. Calculate and record on a daily basis the VOC Emission Rate (E) using the following equation:~~

$$~~E = Q * C / 1E6~~$$

~~All records shall be maintained on site or shall be made readily available to District staff upon request for at least 5 years from the date of entry. (Basis: Regulation 8-2-301)~~

37. Handling Procedures for Soil Containing Volatile Organic Compounds (Basis: Regulations 2-1-403, 8-40-301, 8-40-304 and 8-40-305)

- a. The procedures listed below in subparts b-l do not apply if the following criteria are satisfied. However, the record keeping requirements in subpart m below are applicable.
 - i. The Permit Holder has appropriate documentation demonstrating that either the organic content of the soil or the organic concentration above the soil is below the “contaminated” level (as defined in Regulation 8, Rule 40, Sections 205, 207, and 211). The handling of soil containing VOCs in concentrations below the “contaminated” level is subject to Part 36 above.
 - ii. The Permit Holder has no documentation to prove that soil is not contaminated, but source of the soil is known and there is no reason to suspect that the soil might contain organic compounds.
- b. The Permit Holder shall provide notification to the Compliance and Enforcement Division of the Permit Holder’s intention to accept contaminated soil at the facility at least 24 hours in advance of receiving the contaminated soil. The Permit Holder shall provide an estimate of the amount of contaminated soil to be received, the degree of contamination (range and average VOC Content), and the type or source of contamination.
- c. Any soil received at the facility that is known or suspected to contain volatile organic compounds (VOCs) shall be handled as if the soil were contaminated, unless the Permit Holder receives test results proving that

the soil is not contaminated. To prove that the soil is not contaminated, the Permit Holder shall collect soil samples in accordance with Regulation 8-40-601 within 24 hours of receipt of the soil by the facility. The organic content of the collected soil samples shall be determined in accordance with Regulation 8-40-602.

- i. If these test results indicate that the soil is still contaminated or if the soil was not sampled within 24 hours of receipt by the facility, the Permit Holder must continue to handle the soil in accordance with the procedures subparts d-l below, until the soil has completed treatment or has been placed in a final disposal location and adequately covered. Storing soil in a temporary stockpile or pit is not considered treatment. Co-mingling, blending, or mixing of soil lots is not considered treatment.
 - ii. If these test results indicate that the soil – as received at the facility – has an organic content of 50 ppmw or less, then the soil may be considered to be not contaminated and need not be handled in accordance with the procedures listed in subparts d-l below, but shall be handled in accordance with Part 36 above.
- d. Any contaminated soil received at the facility shall be clearly identified as contaminated soil, shall be handled in accordance with subparts e-l below, and shall be segregated from non-contaminated soil. Contaminated soil lots may not be co-mingled, blended, or otherwise mixed with non-contaminated soil lots prior to treatment, reuse, or disposal. Mixing soil lots in an attempt to reduce the overall concentration of the contaminated soil or to circumvent any requirements or limits is strictly prohibited.
- e. On-site handling of contaminated soil shall be limited to no more than 2 on-site transfers per soil lot. For instance, unloading soil from off-site transport vehicles into a temporary storage pile is considered one transfer. Moving soil from a temporary storage to a staging area is considered one transfer. Moving soil from a temporary storage pile to a final disposal site is considered one transfer. Moving soil from a staging area to a final disposal site is considered one transfer. Therefore, unloading soil from off-site transport into a temporary storage pile and then moving the soil from that temporary storage pile to the final disposal site is allowed. Unloading soil from off-site transport into a staging area and then moving the soil from that staging area to the final disposal site would be allowed. However, unloading soil from off-site transport to a temporary storage pile, moving this soil to a staging area, and then moving the soil again to a final disposal site would be 3 on-site transfers and is not allowed.
- f. If the contaminated soil has an organic content of less than 500 ppmw, the contaminated soil shall be either treated or deposited in a final disposal site or transported off-site for treatment, within 90 days of receipt at the facility.
- g. If the contaminated soil has an organic content 500 ppmw or more, the contaminated soil shall be either treated or deposited in a final disposal site or transported off-site for treatment, within 45 days of receipt at the facility.

- h. All active storage piles shall meet the requirements of Regulation 8-40-304 by using water sprays, vapor suppressants or approved coverings to minimize emissions. The exposed surface area of any active storage pile (including the active face at a landfill) shall be limited to 6000 ft². The types of storage piles that may become subject to these provisions include (but are not limited to) truck unloading areas, staging areas, temporary stockpiles, soil on conveyors, bulldozers or trucks, the active face of a landfill, or other permanent storage pile at the final disposal location.
- i. All inactive storage piles shall meet the requirements of Regulation 8-40-305 including the requirement to cover contaminated soil during periods of inactivity longer than one hour. The types of storage piles that may become subject to these provisions include (but are not limited to) soil on trucks or other on-site equipment, staging areas, temporary stockpiles, and the permanent storage pile at the final disposal location. District approved coverings for inactive storage piles include continuous heavy-duty plastic sheeting (in good condition, joined at the seams, and securely anchored) or encapsulating vapor suppressants (with re-treatment as necessary to prevent emissions).
- j. The Permit Holder must:
 - i. Keep contaminated soil covered with continuous heavy-duty plastic sheeting (in good condition, joined at the seams, and securely anchored) whenever soil is to be stored in temporary stockpiles or during on-site transport in trucks. Soil in trucks shall not be left uncovered for more than 1 hour.
 - ii. Establish a tipping area for contaminated soils near the active face that is isolated from the tipping area for other wastes.
 - iii. Spray contaminated soil with water or vapor suppressant immediately after dumping the soil from a truck at the tipping area.
 - iv. Ensure that all contaminated soil is transferred from the tipping area to the active face immediately after spraying with water or vapor suppressant.
 - v. Ensure that contaminated soil in the tipping area is not disturbed by subsequent trucks. Trucks shall not drive over contaminated soil in the tipping area or track contaminated soil out of the tipping area on their wheels.
 - vi. Spray contaminated soil on the active face with water or vapor suppressant (to keep the soil visibly moist) until the soil can be covered with an approved covering.
 - vii. Limit the area of exposed soil on the active face to no more than 6000 ft².
 - viii. Ensure that contaminated soil spread on the active face is completely covered on all sides with one of the following approved coverings: at least 6 inches of clean compacted soil, at least 12 inches of compacted garbage, or at least 12 inches of compacted green waste.

- ix. Ensure that covering of soil on the active face is completed within one hour of the time that the soil was first dumped from a truck at the tipping area.
- k. Contaminated soil shall not be used as daily, intermediate, or final cover material for landfill waste operations unless the requirements of Regulation 8, Rule 40, Sections 116 or 117 have been satisfied.
- l. Contaminated soil is considered to be a decomposable solid waste pursuant to Regulation 8, Rule 34. All contaminated soil disposed of at a site shall be included in any calculations of the amount of decomposable waste in place for annual reporting requirements or for purposes of 8-34-111 or 8-34-304.
- m. The Permit Holder shall keep the following records for each lot of soil received, in order to demonstrate on-going compliance with the applicable provisions of Regulation 8, Rule 40.
 - i. For all soil received by the facility (including soil with no known contamination), record the arrival date at the facility, the soil lot number, the amount of soil in the lot, the organic content or organic concentration of the lot (if known), the type of contamination (if any), and keep copies of any test data or other information that documents whether the soil is contaminated (as defined in 8-40-205) or not contaminated, with what, and by how much.
 - ii. If the soil is tested for organic content after receipt by the facility, a report with the sampling date, test results, and the date results were received.
 - iii. For all on-site handling of contaminated soil, use a checklist or other approved method to demonstrate that appropriate procedures were followed during all on-site handling activities. One checklist shall be completed for each day and for each soil lot (if multiple lots are handled per day).
 - iv. For soil aerated in accordance with 8-40-116 or 117 record the soil lot number, the amount of soil in the lot, the organic content, the final placement date, the final placement location, and describe how the soil was handled or used on-site.
 - v. For final disposal at a landfill, record on a daily basis the soil lot number, the amount of soil placed in the landfill, the disposal date, and the disposal location.

All records shall be retained for at least 5 years from the date of entry and shall be made available for District inspection upon request.