

Bay Area Air Quality Management District

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**Statement of Basis
for
MAJOR FACILITY REVIEW PERMIT
RENEWAL**

**for
Keller Canyon Landfill Company
Facility #A4618**

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Pittsburg, CA 94565

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TV Renewal Application: 29655
Significant and Minor Revision Applications: 29942, 30223, 28399

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STATEMENT of BASIS

Keller Canyon Landfill Company; SITE # A4618

APPLICATION #29655

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A. BACKGROUND

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Title 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review, because it is a major facility as defined by BAAQMD Regulation 2-6-212.1. It is a major facility because it has the “potential to emit,” as defined by BAAQMD Regulation 2-6-218, of more than 100 tons per year of a regulated air pollutant (in this case, carbon monoxide). Therefore, this facility is required to have a MFR permit pursuant to Regulation 2-6-301.

In addition, it is a designated facility as defined by BAAQMD Regulation 2-6-204. The Standards of Performance for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart WWW) require 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. This facility is subject to this NSPS because it commenced construction after May 30, 1991 and has design capacities that are larger than 2.5 million Mg and larger than 2.5 million m³. Therefore, this facility is required to have a MFR permit pursuant to Regulation 2-6-304.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A4618.

This facility received its initial Title V permit on September 20, 2001. The permit was revised twelve times during 2002-2018 and was last renewed on June 12, 2014. This

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application is for a permit renewal. Although the current permit expired on November 19, 2019, it continues in force until the District takes final action on the permit renewal. The standard sections of the permit have been upgraded to include new standard language used in all Title V permits. The proposed renewal permit clearly shows all proposed changes to the permit in strikeout/underline format.

B. FACILITY DESCRIPTION

Keller Canyon Landfill Company (KCLC), a subsidiary of Allied Waste Industries, Inc., owns and operates the Keller Canyon Landfill Facility (Facility # A4618) in Pittsburg, CA. This facility includes: an active Class II 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).

The Keller Canyon Landfill began accepting waste in 1992 and has a current expected closure date of 2034. The maximum design capacity for this landfill is approximately 64 million cubic yards. The landfill is currently permitted to accept a maximum of 3500 tons/day of refuse and to dispose of a total of 38.4 million tons of decomposable materials. As of July 31, 2019, KCLC reported that the landfill contained 21 million tons of decomposable waste (about 55% of total capacity). In addition to MSW, this site is allowed to accept designated wastes including petroleum-contaminated soils. From July 2018-July 2019, KCLC reported that 18,447 tons of contaminated soil were accepted at this site.

As required by District, state, and federal regulations, the Keller Canyon Landfill – Waste Decomposition Process (S-1) is equipped with landfill gas collection and control systems that are designed to reduce the emissions of methane, precursor organic compounds (POC), toxic air contaminants (TAC), and greenhouse gases (GHG) from the landfill. All areas of the landfill that contain decomposable waste include vertical wells or horizontal collectors (perforated piping systems) that are buried in the waste and connected to blowers. The blowers operate continuously to maintain a vacuum within the piping systems, which draws the landfill gas into the piping systems, and then vent this collected landfill gas to the control systems. As of July 2019, this gas collection system was collecting an average of 4,130 cfm of landfill gas.

The landfill gas control systems for this site include both on-site controls (A-1 and A-2 Enclosed Landfill Gas Flares) and off-site controls (Ameresco Keller Canyon LLC Landfill Gas to Energy Plant (Site # B7667). During 2019, an average of 2,944 cfm of landfill gas or about 71% of the total gas collected was vented to the on-site flares for control.

The enclosed landfill gas flares (A-1 and A-2) destroy at least 98% of the non-methane organic compounds (NMOC), sulfur compounds, and toxic air contaminants (TACs) that are present in the collected landfill gas and at least 99% of the methane in the landfill gas. The flares produce secondary emissions of nitrogen oxides (NO_x), carbon monoxide

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(CO), sulfur dioxide (SO₂), particulate matter (PM₁₀), formaldehyde (a TAC) and acid gases (such as hydrogen chloride and hydrogen fluoride).

The remainder of the collected landfill gas (about 29% during 2019) is vented to the independently owned and operated landfill gas energy plant. Although the landfill gas energy plant is located on property owned by KCLC, it is owned and operated by an independent company: Ameresco Keller Canyon LLC (Site # B7667). Therefore, this energy plant is not part of this Title V permit for Keller Canyon Landfill Company. The landfill gas energy plant includes a landfill gas treatment system, two lean-burn IC engines that are fired exclusively on treated landfill gas, and a small, enclosed waste gas flare. This energy plant will be discussed in detail in a separate Title V permit for Site # B7667 (see Application # 17615 for the Initial Title V permit for this site).

KCLC also operates Yard and Green Waste Stockpiles (S-3) that are permitted to accept up to 70,200 tons/year of yard waste material for recycling. For 2018, KCLC reported that S-3 accepted 0 tons of materials.

Two sources, S-4 and S-5, were added to this facility in 2011 to represent various particulate emitting activities at the landfill. S-4 is for waste and cover material dumping operations. From July 2018 to July 2019, 18,447 tons of contaminated organic soil and 744,550 tons of other non-spec solid waste was accepted at the facility. S-5 is for bulldozing, compacting, and excavating activities.

District Permit Applications Included in This Proposed Permit:

After the Title V permit for this facility was renewed on June 12 2014, the District issued a Minor Revision (Application # 26271) in January 2015 for this site that updated the landfill gas collection system description, updated the amendment date for BAAQMD Regulation 5, revised the allowable gas collection system alterations, and updated the list of wellheads subject to alternative oxygen content limits. An Administrative Amendment (AA) (Application # 27143) was also issued in March 2016 that revised TAC limits and updated record keeping procedures in Condition # 17309, Part 32. This AA also authorized alterations in Condition # 17309, Part 18. A New Source Review (NSR) application (Application # 28398) for an administrative change of permit conditions was approved on September 5, 2017 to revise the allowable well counts. Application # 30222 was submitted for alternate wellhead standards for twelve wells. The twelve wells were historically observed to have higher temperatures, so the application requested change of permit conditions to allow a higher operating value of temperature at 145F. NSR Application # 29941 was for a change of permit conditions for increasing the fugitive POC emission limit for the landfill. This change of conditions has been issued and will change Condition # 17309, Part 33. Another NSR application (Application # 28642) is currently incomplete. The District is proposing to incorporate of the approved gas collection system alterations and other permit condition changes in this Title V renewal permit by revising the landfill gas collection system descriptions in Table II and in Condition # 17309, Parts 18, 19, and 33.

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Emission Changes for Site # A4618:

As discussed in the Engineering Evaluation Report for Application # 28398, well counts were revised for the landfill gas collection system. The current maximum permitted emission levels for Site # A4618 are presented below in Table 1.

Table 1. Maximum Permitted Emissions for Site # A4618

(Emissions, tons/year)	CO	PM ₁₀	NO _x	POC	SO ₂	GHG*
A-1 Landfill Gas Flare	95.5	5.4	19.1	4.4	31.8	26,030
A-2 Landfill Gas Flare	66.6	11.2	20.0	4.6	33.3	27,220
S-1 KCL – Waste Decomposition Process				40.6		190,270
S-3 Yard and Green Waste Stockpiles		0.1				
S-4 KCL – Waste and Cover Material Dumping		24.5				
S-5 KCL – Bulldozing, Compacting, and Excavating Activities						
Facility Wide Permitted Emissions	162.1	41.2	39.1	49.7	65.1	243,520

* GHG emissions are expressed as CO₂ equivalent emissions and include both biogenic and non-biogenic GHGs.

The changes in actual emissions from this facility since the permit was last renewed are presented in Table 2. Overall, the actual landfill emissions from this site have increased due to the increases in the total amount of waste that has been placed in this landfill. Since this permit was last renewed in January 2014, much of the landfill gas combustion emissions shifted to the off-site landfill gas energy plant. However, the gas generation rate for this site now exceeds the energy plant capacity, and the District expects flare emissions to continue to increase in the future as more waste is placed in the landfill.

Table 2. Changes in Actual Emissions for Site # A4618 Since Last Renewal

Facility Wide Actual Emissions	Emissions (tons/year)				
	CO	PM ₁₀	NO _x	POC	SO ₂
as of June 30, 2013	38.5	26.8	11.9	85.1	5.0
as of June 30, 2019	76.9	32.2	23.6	95.0	10.1
Actual Emission Changes	+38.4	+ 5.4	+ 11.7	+ 9.9	+ 5.1

C. PERMIT CONTENT

The legal and factual basis for the permit follows. The permit sections are described in the order that they are presented in the permit. Routine changes to the standard permit text in Sections I “Standard Conditions”, III “Generally Applicable Requirements”, and X “Glossary” are not considered part of the Title V permit renewal process but may be made at the discretion of the District during the term of this permit.

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I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for certain fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. This permit does not include Title IV or accidental release provisions.

Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

Changes to Permit, Section I:

- The District is updating the amendment dates for several BAAQMD rules in Standard Condition 1.A.
- The District is updating the permit issuance date, expiration data, and renewal application due dates in Standard Condition I.B.1.
- The District is updating the District's office address in Standard Condition I.F.
- The District is adding the email address for EPA's Enforcement Division in Standard Condition I.G.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, per year or 400 pounds of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210, per year. This facility has no unpermitted significant sources.

All abatement (control) devices that control permitted or significant sources are listed. Each abatement device whose primary function is to reduce emissions is identified by an A and a number (e.g., A-24). If a source is also an abatement device, such as when an engine controls VOC emissions, it will be listed in the abatement device table but will have an "S" number. An abatement device may also be a source (such as a thermal oxidizer that burns fuel) of secondary emissions. If the primary function of a device is to

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control emissions, it is considered an abatement (or “A”) device. If the primary function of a device is a non-control function, the device is considered to be a source (or “S”).

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District’s regulations. The capacities in the permitted sources table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-403.

Between the date that the Title V permit was last renewed (June 2014) and the permit proposal date, no new sources were added.

Changes to Permit, Section II:

- In Table II-A, the District is revising the capacity of S-3. Yard and green waste stockpiles were permitted to have a capacity of 1,000 tons/day in September 2003 in response to NSR Application # 2379. Table II-A had not been updated at the time.
- In Table II-A, the District is revising the number of vertical wells to 175, 2 leachate cleanout risers, and three horizontal LFG collection wells.
- In Table II-B, the description of A-2 is being changed. The previous description stated that A-2 was “not constructed yet”. This phrase is being removed as A-2 is operational.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Title V permit if they are considered significant sources pursuant to the definition in BAAQMD Rule 2-6-239. This facility has no unpermitted significant sources.

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On May 30, 2017, California Air Resources Board submitted the State of California's Section 111(d) Plan for Existing Municipal Solid Waste Landfills, including 17 CCR 95460-95476 (collectively, subarticle 6 entitled "Methane Emissions from Municipal Solid Waste Landfills," also called Landfill Methane Regulation (LMR)) to US EPA to implement 40 CFR Part 60, Subpart Cf. This plan was partially approved by the US EPA on February 10, 2020 and is now a federally enforceable plan. However, this plan does not include federal provisions relating to 40 CFR 60.34f(c) (wellhead temperature limit), 60.36f(a)(5) (operating parameter for temperature), 60.37f(a)(2) (oxygen or nitrogen monitoring) and (3) (temperature monitoring), 60.38f(k) (corrective action and corresponding timeline), and 60.39f(e)(2) (temperature monitoring records) and (5) (records of corrective action). Once finalized, a federal plan will additionally apply the missing requirements to affected landfills. Until then, the Air District's Regulation 8-34 has provisions for the above missing provisions and thus will continue to be in compliance with 40 CFR Part 60, Subpart Cf. As Keller Canyon Landfill is an existing MSW landfill for which construction, reconstruction, or modification was commenced on or before July 17, 2014, this plan is applicable to this landfill as per 40 CFR 60.31f(a). The sections of this Rule applicable to Keller Canyon Landfill have been included.

Changes to Permit, Section III:

- The District is updating the website address for SIP requirements.
- The District is adding the website address for CARB LMR requirements.
- For Table III, the District is amending dates of adoption or approval of the rules, correcting the "federal enforceability" status for these rules, and adding or deleting rules and standards to conform to current practice. The rules that are being amended, added, or removed are listed below:
 - Updating amendment date for BAAQMD Regulation 2, Rule 1, General Requirements
 - Adding SIP Regulation 2, Rule 1, Permits – General Requirements
 - Updating amendment date for BAAQMD Regulation 2, Rule 5, Permits – New Source Review of Toxic Air Contaminants
 - Adding SIP Regulation 4, Table 1, Episode Staging Criteria
 - Updating amendment date for BAAQMD Regulation 6, Rule 1, Particulate Matter - General Requirements
 - Adding BAAQMD Regulation 6, Rule 6, Particulate Matter – Prohibition of Trackout
 - Adding BAAQMD Regulation 8, Rule 16, Organic Compounds – Solvent Cleaning Operations
 - Adding BAAQMD Regulation 9, Rule 2, Inorganic Gaseous Pollutants – Hydrogen Sulfide
 - Adding BAAQMD Regulation 11, Rule 18, Reduction of Risk from Air Toxics Emissions at Existing Facilities
 - Adding BAAQMD Regulation 14, Rule 1, Mobile Source Emissions Reduction Methods – Bay Area Commuter Benefits Program
 - Adding CARB's LMR

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- Updating amendment dates for EPA Regulation 40 CFR, Part 61, Subparts A and M

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan. SIP rules are “federally enforceable” and a “Y” (yes) indication will appear in the “Federally Enforceable” column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the “Federally Enforceable” column will have a “Y” for “yes”. If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- CARB LMR requirements
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all the applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District’s or EPA’s websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements. A discussion of monitoring is included in Section C.VII of this permit evaluation/statement of basis.

Complex Applicability Determinations:

S-1 Keller Canyon Landfill – Waste Decomposition Process; abated by A-1 and A-2 Landfill Gas Flares; S-4 Keller Canyon Landfill – Waste and Cover Material Dumping; and S-5 Keller Canyon Landfill – Excavating, Bulldozing, and Compacting Activities

The waste decomposition related landfill emissions at this site are subject to BAAQMD Regulation 8, Rule 34, because the Keller Canyon Landfill has accepted waste within the last 30 years and contains more than 1,000,000 tons of decomposable refuse. S-1 is also subject to the NSPS for MSW Landfills (40 CFR, Part 60, Subpart WWW) and the NESHAP for MSW Landfills (40 CFR, Part 63, Subpart AAAA), because (1) it commenced construction on the landfill after May 30, 1991, (2) it has accepted waste

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after November 8, 1987, (3) it has a design capacity of greater than 2.5 million cubic meters and greater than 2.5 million megagrams, and (4) the uncontrolled NMOC generation rate from the landfill exceeds 50 Mg/year. There have been no significant changes to these applicable requirements since the Title V permit was last revised. The District is updating amendment dates for several applicable requirements and adding new rules promulgated in 2018 and 2020.

There are numerous other applicable District requirements for the Landfill Gas Flares (A-1 and A-2) and the landfill's particulate emitting activities (S-4 and S-5). All of these requirements have been identified in Table IV-A.

Changes to Permit, Section IV:

- The District is updating the website address for SIP requirements.
- In Table IV-A:
 - The District is updating the amendment date for BAAQMD Regulation 6, Rule 1.
 - The District is adding new BAAQMD Regulation 6, Rule 6 – Prohibition of Trackout.
 - Adding 60.756(b)(2)(ii)
 - Adding 63.1945 and 63.1945(b)
 - Added a new subpart, Part 38, to Condition # 17309.
 - Adding various sections of CARB's LMR 95460-95476.
- In Table IV-B:
 - The District is adding BAAQMD Regulation 6, Rule 1, subsection 6-1-311.1.
 - The District is adding SIP Regulation 6, Rule 1, subsection 6-1-311.
 - The District is adding new BAAQMD Regulation 6, Rule 6 – Prohibition of Trackout.

V. Schedule of Compliance

A schedule of compliance is required in all Title V permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

- 10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;
- 10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and
- 10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

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Since the District has not determined that the facility is out of compliance with an applicable requirement, the schedule of compliance for this permit contains only sections 2-6-409.10.1 and 2-6-409.10.2.

Changes to Permit, Section V:

- None

VI. Permit Conditions

During the Title V permit development, the District has reviewed the existing permit conditions, deleted the obsolete conditions, and, as appropriate, revised the conditions for clarity and enforceability. Each permit condition is identified with a unique numerical identifier, up to five digits.

When necessary to meet Title V requirements, additional monitoring, recordkeeping, or reporting has been added to the permit.

All changes to existing permit conditions are clearly shown in “strike-out/underline” format in the proposed permit. When the permit is issued, all “strike-out” language will be deleted, and all “underline” language will be retained, subject to consideration of comments received.

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions are revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

Conditions that are obsolete or that have no regulatory basis have been deleted from the permit.

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO which limits a source’s operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.

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- **Offsets:** This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- **PSD:** This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- **TRMP:** This term is used for a condition imposed by the APCO to ensure compliance with limits that arose from the District's Toxic Risk Management Policy and that were imposed prior to adoption of Regulation 2, Rule 5 NSR for Toxic Air Contaminants.

Under previous Title V permit applications, parameter monitoring was added for each abatement device. Additional monitoring was added, where appropriate, to assure compliance with the applicable requirements.

As discussed previously, the District is including the new source descriptions for S-1, S-4, and S-5 throughout this permit. S-4 and S-5 were added to the list of sources subject to Condition # 17309. The other proposed permit conditions changes are explained below.

Changes to Permit, Section VI:

- In Condition # 17309, Part 3, California Integrated Waste Management Board (CIWMB) is updated to CalRecycle.
- In Condition # 17309, Part 18a (i. & ii.), the District is updating the gas collection system descriptions based on alterations completed as of 12/14/20 and reported by KCLC in well start-up and decommission notification letters. The list of remaining allowable gas collection system alterations in Part 18b(i) is also being updated.
- In Condition # 17309, Part 19(b)(i), District is adding the twelve wells which were approved for a higher operating value for temperature. CO monitoring will be added in Part 19(b)(iii). Recordkeeping requirement is also being added as Part 19(b)(viii).
- In Condition # 20, the phrase "a minimum of" is added to the existing paragraph.
- In Condition# 33, the fugitive POC emission limit is being changed to 112.828 tons per year in response to the NSR Application # 29941.
- District is adding a new permit condition, Permit Condition # 38, in response to the promulgation of the Regulation 6, Rule 6 - Prohibition of Trackout.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

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The District has reviewed all monitoring and has determined that the existing monitoring is adequate. The tables below contain only the federally enforceable limits for which there is no monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements. It follows that, although Title V calls for a re-examination of all monitoring, there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation. Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate.

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SO₂ Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-1 and A-2 Landfill Gas Flares	BAAQMD 9-1-301	Property Line Ground Level Limits: ≤ 0.5 ppm for 3 minutes, AND ≤ 0.25 ppm for 60 minutes, AND <0.05 ppm for 24 hours	None

SO₂ Discussion:

Potential to Emit Calculations for the A-1 and A-2 Landfill Gas Flares:

Maximum potential SO₂ emissions are based on the maximum permitted total reduced sulfur compound concentration of 300 ppmv as H₂S from BAAQMD Condition # 17309, Part 34 and the maximum permitted heat input limits for these flares in BAAQMD Condition # 17309, Part 35. All calculations below assume that the landfill gas contains 50% methane with an HHV of 497 BTU/scf LFG and that the standard volume of gas at 70 °F is 387 scf/lbmol. The calculation equations are shown below for each flare.

A-1 Landfill Gas Flare:

$$\begin{aligned} & (636,852 \text{ MM BTU/year}) / (497 \text{ MM BTU/MM scf LFG}) * (300 \text{ scf H}_2\text{S/MM scf LFG}) / \\ & (387 \text{ scf H}_2\text{S/1 lbmol H}_2\text{S}) * (1 \text{ lbmol SO}_2/1 \text{ lbmol H}_2\text{S}) * (64.06 \text{ pounds SO}_2/\text{lbmol SO}_2) / \\ & (2000 \text{ pounds SO}_2/\text{ton SO}_2) \\ & = 31.816 \text{ tons SO}_2/\text{year} \end{aligned}$$

A-2 Landfill Gas Flare:

$$\begin{aligned} & (665,760 \text{ MM BTU/year}) / (497 \text{ MM BTU/MM scf LFG}) * (300 \text{ scf H}_2\text{S/MM scf LFG}) / \\ & (387 \text{ scf H}_2\text{S/1 lbmol H}_2\text{S}) * (1 \text{ lbmol SO}_2/1 \text{ lbmol H}_2\text{S}) * (64.06 \text{ pounds SO}_2/\text{lbmol SO}_2) / \\ & (2000 \text{ pounds SO}_2/\text{ton SO}_2) \\ & = 33.260 \text{ tons SO}_2/\text{year} \end{aligned}$$

Based on the theoretical flue gas generation rate of 4.785 scf of flue gas per scf of landfill gas containing 50% methane and the landfill gas H₂S limit above, the maximum SO₂ concentration in the exhaust gases from the flares will be: 63 ppmv of SO₂ at 0% oxygen. At typical exhaust gas oxygen concentrations of 10% or higher, the outlet SO₂ concentration will be less than 33 ppmv.

BAAQMD Regulation 9-1-301: This facility is subject to federally enforceable limits that will ensure compliance with the Regulation 9-1-302 gas stream emission limit of 300 ppmv of SO₂ in the exhaust from each flare. As shown above, the flares will have an

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outlet concentration of less than 33 ppmv of SO₂, which is no more than 11% of the Regulation 9-1-302 limit.

Based on modeling analyses conducted at another landfill site, sources complying with the Regulation 9-1-302 limit are not expected to result in an excess of the ground level concentration limits listed in Regulation 9-1-301. Since the A-1 and A-2 Flares are subject to permit condition limits that will ensure that the outlet SO₂ is no more than 11% of the Regulation 9-1-302 limit, the District expects that these flares will result in ground level SO₂ concentrations that are far below the Regulation 9-1-301 ground level SO₂ limits.

Monitoring for ground level SO₂ concentrations is very expensive. The District routinely monitors exhaust gas SO₂ levels and fuel sulfur content in lieu of conducting ground level SO₂ monitoring unless a compliance issue is suspected. Since the margin of compliance is high and no compliance problems are expected, the District has determined that routine monitoring of the landfill gas sulfur content is adequate to demonstrate on-going compliance and that ground level SO₂ monitoring would not be appropriate. Therefore, the District has not proposed any ground level SO₂ monitoring for this site.

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-1 and A-2 Landfill Gas Flares	BAAQMD 6-1-301 and SIP 6-301	≤ Ringelmann No. 1 for 3 minutes in any hour	None
A-1 and A-2 Landfill Gas Flares	BAAQMD 6-1-310 and SIP 6-310	≤ 0.15 grains/dscf	None

PM Discussion:

Potential to Emit Calculations for the A-1 and A-2 Landfill Gas Flares:

Maximum potential PM emissions for A-1 are based on the AP-42 emission factor for landfill gas fired flares (17 lbs PM₁₀/MM dscf of methane). Maximum potential PM emissions were determined using this factor and the maximum permitted landfill gas flow rate. This factor has also been converted to units of grains/dscf of exhaust as shown below. All calculations assume that the landfill gas contains 50% methane with an HHV of 497 BTU/scf LFG and that this landfill gas produces 4.785 dscf of exhaust at 0% oxygen per scf of landfill gas burned.

A-1 Landfill Gas Flare:

$$\begin{aligned}
 & (636,852 \text{ MM BTU/year}) / (497 \text{ MM BTU/MM scf LFG}) * (0.5 \text{ MM scf CH}_4/\text{MM scf LFG}) \\
 & * (17 \text{ lbs PM}_{10}/\text{MM dscf CH}_4) / (2000 \text{ pounds PM}_{10}/\text{ton PM}_{10}) \\
 & = 5.446 \text{ tons PM}_{10}/\text{year}
 \end{aligned}$$

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$$(0.0171 \text{ lbs PM}_{10}/\text{MM BTU}) * (7000 \text{ grains PM}_{10}/\text{lb PM}_{10}) / (1\text{E}6 \text{ BTU}/\text{MM BTU}) * (497 \text{ BTU}/\text{scf LFG}) / (4.785 \text{ dscf exhaust}/\text{scf LFG}) = 0.012 \text{ grains}/\text{dscf exhaust at } 0\% \text{ O}_2$$

Maximum permitted PM emissions for A-2 were based on a manufacturer's guaranteed emission limit of 0.001 pounds/hour of PM₁₀ per scfm of landfill gas burned. Maximum potential PM emissions were determined using this factor and the maximum permitted landfill gas flow rate. This factor has also been converted to units of grains/dscf of exhaust as shown below. All calculations assume that the landfill gas contains 50% methane with an HHV of 497 BTU/scf LFG and that this landfill gas produces 4.785 dscf of exhaust at 0% oxygen per scf of landfill gas burned.

A-2 Landfill Gas Flare:
 $(76 \text{ MM BTU}/\text{hour}) / (60 \text{ min}/\text{hour}) * (1\text{E}6 \text{ BTU}/\text{MM BTU}) / (497 \text{ BTU}/\text{scf})$
= 2548.6 scfm of LFG

$$(0.001 \text{ pounds PM}_{10}/\text{hour} / \text{scfm of LFG}) * (2548.6 \text{ scfm of LFG}) * (24 \text{ hrs}/\text{day}) * (365 \text{ days}/\text{year}) / (2000 \text{ pounds PM}_{10}/\text{ton PM}_{10})$$

= 11.163 tons PM₁₀/year

$$(0.0335 \text{ lbs PM}_{10}/\text{MM BTU}) * (7000 \text{ grains PM}/\text{lb PM}) / (1\text{E}6 \text{ BTU}/\text{MM BTU}) * (497 \text{ BTU}/\text{scf LFG}) / (4.785 \text{ dscf exhaust}/\text{scf LFG}) = 0.024 \text{ grains}/\text{dscf exhaust at } 0\% \text{ O}_2$$

BAAQMD 6-1-301 and SIP 6-301: Visible particulate emissions are not normally associated with combustion of gaseous fuels, such as natural gas, propane, or landfill gas. Since particulate emissions from these flares are not substantial (16.6 tons/year combined), and it is highly unlikely that violations of the Ringelmann 1.0 limit would occur, periodic monitoring for the Ringelmann 1.0 limit is not justified.

BAAQMD Regulation 6-1-310 and SIP 6-310: Regulations 6-1-310 and 6-310 limit filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. As shown above in the potential to emit calculations for these devices, the flares will emit less than 0.024 gr/dscf of exhaust at 0% oxygen. The actual flare exhaust will contain at least 10% O₂. The ratio of exhaust volumes for 10% O₂ versus 0% O₂ is 1.913:1. Therefore, the grain loading in the actual flare exhaust will be: (0.024/1.913) < 0.013 gr/dscf for exhaust at 10% oxygen. The compliance ratio (limit/emissions or 0.15/0.013) for the landfill gas flares is more than 11 to 1. Since the Regulation 6-1-310 and 6-310 grain loading limits are far above any expected PM emissions and total potential PM emissions from the flares are fairly low, it would not be appropriate to add periodic monitoring for this standard.

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POC Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S-1, S-4, and S-5 Keller Canyon Landfill	BAAQMD 8-40-117	Soil Contaminated by Accidental Spillage of ≤ 5 gallons of Liquid Organic Compounds	None

POC Discussion:

Potential to Emit Calculations for Keller Canyon Landfill: During the aeration of soil, all organic compounds are assumed to be emitted into the atmosphere. For a maximum spill volume of five gallons and an average density for organic liquids of 7.0 pounds/gallon, the maximum potential to emit per aeration event is:

$$(5 \text{ gals/event}) * (7.0 \text{ pounds POC/gal}) / (2000 \text{ pounds POC/ton POC})$$

$$= 0.018 \text{ tons of POC/event}$$

The aeration of soil contaminated by small spills is expected to be a rare occurrence (no more than once per year). Therefore, the annual potential to emit associated with BAAQMD 8-40-117 is 0.018 tons/year of POC.

BAAQMD 8-40-117: If this facility plans to employ the Regulation 8-40-117 exemption to allow the aeration of soil that has been contaminated by a spill, the spill volume cannot exceed five gallons. For such rare and unpredictable aeration events, it may be difficult to obtain accurate records of spill volumes and maintaining such records would be burdensome. In addition, the maximum potential emissions from such an event are very small (0.018 tons/year of POC). Since the likelihood of non-compliance is low and the consequences of non-compliance are insignificant, it would not be appropriate to add periodic monitoring for this spill volume limit.

Changes to Permit, Section VII:

- In Table VII-A, the District is updating the fugitive POC limit for Condition # 17309, Part 33 in response to Application # 29941.
- In Table VII-A, District is adding the alternate wellhead standards for the twelve wells as per Condition # 17309, Part 19(b)(i) in response to NSR Application No. 30222.
- In Table VII-A, District is adding CARB’s LMR standards.
- In Table VII-A, District is adding trackout and visible emissions limits as per Regulation 6-6.
- In Table VII-B, the District is revising the waste received limit of S-3. Yard and green waste stockpiles were permitted to have a capacity of 1,000 tons/day in September 2003 in response to NSR Application # 2379. The table will reflect this change.

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VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

Changes to Permit, Section VIII:

- Added test methods for CARB's LMR.

IX. Permit Shield:

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit explaining that specific federally enforceable regulations and standards do not apply to a source or group of sources, or (2) A provision in a major facility review permit explaining that specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Title V permits. The District's program does not allow other types of streamlining in Title V permits.

This facility has no permit shields. This permit has no streamlining.

Changes to Permit, Section IX:

- None

X. Revision History

This section of the permit summarizes each revision to the permit.

Changes to Permit, Section X:

- The District is adding the summary of each permit revision associated with this proposed MFR Renewal Permit (Application # 27143, Application # 28398, Application # 30222) to Section X.

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XI. Glossary

This section of the permit defines and explains acronyms, abbreviations, and other terms that are used in this permit.

Changes to Permit, Section XI:

- None

D. ALTERNATIVE OPERATING SCENARIOS

No alternate operating scenarios have been requested for this facility.

E. COMPLIANCE STATUS

The responsible official for Keller Canyon Landfill Company submitted a signed Certification Statement form with submittal of the application for renewal of the Title V permit, dated December 10, 2018, and a signed Certification Statement, dated May 25, 2021. On this form, the responsible official certified that the following four statements are true:

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form that is(are) in compliance will continue to comply with the applicable requirement(s);

Based on information and belief formed after reasonable inquiry, the source(s) identified in the Applicable Requirements and Compliance Summary form will comply with future-effective applicable requirement(s), on a timely basis;

Based on information and belief formed after reasonable inquiry, information on application forms, all accompanying reports, and other required certifications is true, accurate, and complete;

All fees required by Regulation 3, including Schedule P have been paid.

F. DIFFERENCES BETWEEN THE APPLICATION AND THE PROPOSED PERMIT

The Title V permit renewal application was received on December 11, 2018. This application and the previous permit are the basis for constructing the proposed Title V permit. All differences between the Title V renewal application and the proposed permit have been discussed in this Permit Evaluation and Statement of Basis. The Applicant did not request any specific changes to this permit other than corrections to the gas collection system descriptions, which the District has incorporated into this proposed permit.

The following NSR applications have been discussed in this Statement of Basis and included in the proposed renewal of the Title V Permit:

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- Permit Application # 28398 in which the District updated the gas collection system description and authorized alternative wellhead standards for several individual wells, which were subsequently decommissioned.
- Permit Application # 29941 in which the District issued a change of permit conditions for an increase in the fugitive POC emission limit.
- Permit Application # 30222 in which District permitted alternate wellhead standard for a higher operating value of temperature for twelve wells.

There is one outstanding NSR application for this site. Application # 28642 was received on May 3, 2017 to remove and replace flare A-1 with A-3 (new flare). The application was stalled because the facility was found to be violating its fugitive POC's limit. Offsets were triggered with the increase in emissions and another application for change in permit condition was proposed. The District received the application for change of permit conditions (Application # 29941) on May 24, 2019 and the change of permit conditions was issued on December 2, 2020. All applications reviewed to date have been included in this proposed permit renewal.

APPENDIX A

GLOSSARY

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ACT

Federal Clean Air Act

AP-42

An EPA Document "Compilation of Air Pollution Emission Factors" that is used to estimate emissions from numerous source types. It is available electronically from EPA's web site at: <https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors>

APCO

Air Pollution Control Officer: Head of Bay Area Air Quality Management District

API

American Petroleum Institute

ARB

Air Resources Board (same as CARB)

ASTM

American Society for Testing and Materials

ATC

Authority to Construct

ATCM

Airborne Toxic Control Measure

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

BARCT

Best Available Retrofit Control Technology

Basis

The underlying authority that allows the District to impose requirements.

C1

An organic chemical compound with one carbon atom, for example: methane

C3

An organic chemical compound with three carbon atoms, for example: propane

C5

An organic chemical compound with five carbon atoms, for example: pentane

C6

An organic chemical compound with six carbon atoms, for example: hexane

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CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CAPCOA

California Air Pollution Control Officers Association

CARB

California Air Resources Board (same as ARB)

CCR

California Code of Regulations

CEC

California Energy Commission

CEM

A "continuous emission monitor" is a monitoring device that provides a continuous direct measurement of some pollutant (e.g. NO_x concentration) in an exhaust stream.

CEQA

California Environmental Quality Act

CFR

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CH₄ or CH₄

Methane

CI

Compression Ignition

CIWMB

California Integrated Waste Management Board

CO

Carbon Monoxide

CO₂ or CO₂

Carbon Dioxide

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CO₂e

Carbon Dioxide Equivalent. A carbon dioxide equivalent emission rate is the emission rate of a greenhouse gas compound that has been adjusted by multiplying the mass emission rate by the global warming potential of the greenhouse gas compound. These adjusted emission rates for individual compounds are typically summed together, and the total is also referred to as the carbon dioxide equivalent (CO₂e) emission rate.

CT

Combustion Zone Temperature

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Used to determine whether threshold-based requirements are triggered.

District

The Bay Area Air Quality Management District

E 6, E 9, E 12

Very large or very small number values are commonly expressed in a form called scientific notation, which consists of a decimal part multiplied by 10 raised to some power. For example, 4.53 E 6 equals $(4.53) \times (10^6) = (4.53) \times (10 \times 10 \times 10 \times 10 \times 10 \times 10) = 4,530,000$. Scientific notation is used to express large or small numbers without writing out long strings of zeros.

EG

Emission Guidelines

EO

Executive Order

EPA

The federal Environmental Protection Agency.

ETP

Effluent Treatment Plant

Excluded

Not subject to any District Regulations.

Federally Enforceable, FE

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain), and also including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP

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Filterable particulate as measured by BAAQMD Method ST-15, Particulate.

FR

Federal Register

GDF

Gasoline Dispensing Facility

GHG

Greenhouse Gas

GLM

Ground Level Monitor

grains

1/7000 of a pound

GWP

Global Warming Potential. A comparison of the ability of each greenhouse gas to trap heat in the atmosphere relative to that of carbon dioxide over a specific time period.

H₂S or H₂S

Hydrogen Sulfide

H₂SO₄ or H₂SO₄

Sulfuric Acid

H&SC

Health and Safety Code

HAP

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

Hg

Mercury

HHV

Higher Heating Value. The quantity of heat evolved as determined by a calorimeter where the combustion products are cooled to 60F and all water vapor is condensed to liquid.

KCLC

Keller Canyon Landfill Company

LEA

Local Enforcement Agency

LFG

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Landfill gas

LHV

Lower Heating Value. Similar to the higher heating value (see HHV) except that the water produced by the combustion is not condensed but retained as vapor at 60 °F.

Long ton

2200 pounds

Major Facility

A facility with potential emissions of: (1) at least 100 tons per year of any regulated air pollutant, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MAX or Max.

Maximum

MFR

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MIN or Min.

Minimum

MOP

The District's Manual of Procedures.

MSDS

Material Safety Data Sheet

MSW

Municipal solid waste

MTBE

methyl tertiary-butyl ether

MW

Molecular weight

N2 or N₂

Nitrogen

NA

Not Applicable

NAAQS

National Ambient Air Quality Standards

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NESHAPs

National Emission Standards for Hazardous Air Pollutants contained in 40 CFR Parts 61 and 63.

NMHC

Non-methane Hydrocarbons (same as NMOC).

NMOC

Non-methane Organic Compounds (same as NMHC).

NO₂ or NO₂

Nitrogen Dioxide.

NO_x or NO_x

Oxides of nitrogen.

NSPS

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by both 40 CFR Part 60 and District Regulation 10.

NSR

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

O₂ or O₂

Oxygen

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NO_x, PM₁₀, and SO₂.

PERP

Portable Equipment Registration Program

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and by virtue of certain other characteristics (defined in Regulation 2, Rule 6) is subject to Titles IV and V of the Clean Air Act.

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POC

Precursor Organic Compounds

PM

Total Particulate Matter

PM10 or PM₁₀

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PM2.5 or PM_{2.5}

Particulate matter with aerodynamic equivalent diameter of less than or equal to 2.5 microns.

PSD

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

PV or P/V Valve or PRV

Pressure/Vacuum Relief Valve

Regulated Organic Liquid

"Regulated organic liquids" are those liquids which require permits, or which are subject to some regulation, when processed at a liquid-handling operation. For example, for refinery marine terminals, regulated organic liquids are defined as "organic liquids" in Regulation 8, Rule 44.

RICE

Reciprocating Internal Combustion Engine

RMP

Risk Management Plan

RWQCB

Regional Water Quality Control Board

S

Sulfur

SCR

A "selective catalytic reduction" unit is an abatement device that reduces NO_x concentrations in the exhaust stream of a combustion device. SCRs utilize a catalyst, which operates at a specific temperature range, and injected ammonia to promote the conversion of NO_x compounds to nitrogen gas.

Short ton

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2000 pounds

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO₂ or SO₂

Sulfur dioxide

SO₃ or SO₃

Sulfur trioxide

SSM

Startup, Shutdown, or Malfunction

SSM Plan

A plan, which states the procedures that will be followed during a startup, shutdown, or malfunction, that is prepared in accordance with the general NESHAP provisions (40 CFR Part 63, Subpart A) and maintained on site at the facility.

TAC

Toxic Air Contaminant (as identified by CARB)

TBACT

Best Available Control Technology for Toxics

THC

Total Hydrocarbons includes all NMHC plus methane (same as TOC).

therm

100,000 British Thermal Unit

Title V

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC

Total Organic Compounds includes all NMOC plus methane (same as THC).

TPH

Total Petroleum Hydrocarbons

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TRMP

Toxic Risk Management Policy: In 1987, BAAQMD adopted a “Toxic Risk Management Policy” to implement the District’s new source review requirements for new and modified sources of toxic air contaminants. The TRMP was replaced by BAAQMD Regulation 2, Rule 5 on June 15, 2005. The previous TRMP and the subsequent rule are not federally enforceable.

TRS

Total Reduced Sulfur, which is a measure of the amount of sulfur-containing compounds in a gas stream, typically a fuel gas stream, including, but not limited to, hydrogen sulfide. The TRS content of a fuel gas determines the concentration of SO₂ that will be present in the combusted fuel gas, since sulfur compounds are converted to SO₂ by the combustion process.

TSP

Total Suspended Particulate

TVP

True Vapor Pressure

VMT

Vehicle Miles Traveled

VOC

Volatile Organic Compounds

Symbols:

<	=	less than
>	=	greater than
≤	=	less than or equal to
≥	=	greater than or equal to

Units of Measure:

atm	=	atmospheres
bbl	=	barrel of liquid (42 gallons)
bhp	=	brake-horsepower
btu	=	British Thermal Unit
BTU	=	British Thermal Unit
°C	=	degrees Centigrade
cfm	=	cubic feet per minute
dscf	=	dry standard cubic feet
°F	=	degrees Fahrenheit
ft ³	=	cubic feet
g	=	grams
gal	=	gallon

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gpm	=	gallons per minute
gr	=	grains
hp	=	horsepower
hr	=	hour
in	=	inches
kW	=	kilowatts
lb	=	pound
lbmol	=	pound-mole
m ²	=	square meter
m ³	=	cubic meters
Mg	=	mega grams
min	=	minute
mm	=	millimeter
mm Hg	=	millimeters of mercury (pressure)
MM	=	million
MM BTU	=	million BTU
M cf	=	one thousand cubic feet
M scf	=	one thousand standard cubic feet
MM cf	=	one million cubic feet
MM scf	=	one million standard cubic feet
MW	=	megawatts
ppb	=	parts per billion
ppbv	=	parts per billion, by volume
ppm	=	parts per million
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scf	=	standard cubic feet
scfm	=	standard cubic feet per minute
sdcf	=	standard dry cubic feet
sdcfm	=	standard dry cubic feet per minute
yd	=	yard
yd ³	=	cubic yards
yr	=	year

APPENDIX B

**ENGINEERING EVALUATION
FOR
APPLICATION # 28398**

Engineering Evaluation
Landfill Gas Collection System Alterations
at S-1 Keller Canyon Landfill Company

Keller Canyon Landfill Company; SITE # A4618
APPLICATION # 28398

BACKGROUND

Keller Canyon Landfill Company (KCLC), a Republic Services company, owns and operates the Keller Canyon Landfill Facility (Facility # A4618) in Pittsburg, CA. This facility includes: an active Class II 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 (Plant # 17667), which produces energy for sale to the grid by burning landfill gas in IC engines. In 2014, KCLC diverted about 37% of the collected landfill gas to this energy plant.

As described in the District's March 17, 2016 Major Facility Review Permit for Facility Number A4618, Condition # 17309, Part 18(a), the landfill gas collection system for the S-1 Keller Canyon Landfill consists of 120 vertical wells, 1 horizontal collectors. As described in Application # 26269 issued on August 06, 2014, the authorized collection system alterations were:

- Install up to 100 new vertical gas collection wells,
- Install up to 20 horizontal collectors,
- Decommission up to 48 vertical wells,
- Decommission up to 10 horizontal collectors.

Since the approval of Application Number 26269, 62 vertical wells were installed, and 29 vertical wells were decommissioned. The remaining gas collection system alterations pursuant to Application #26269:

- Install up to 38 new vertical gas collection wells,
- Install up to 20 horizontal collectors,
- Decommission up to 19 vertical wells,
- Decommission up to 10 horizontal collectors.

KCLC requests the well actions remaining in Application Number 26269 be closed and that the allowable well counts be revised as follow in this application 28398:

- Install up to 100 new vertical gas collection wells,
- Install up to 40 horizontal collectors,
- Decommission up to 100 vertical wells,
- Decommission up to 40 horizontal collectors.

These proposed changes in this application 28398 will not result in an increase of total collection wells and therefore, no increase of LFG from the extraction wells.

COLLECTION SYSTEM DESCRIPTION

As of June 9, 2017, the landfill gas collection system for the S-1 Keller Canyon Landfill consisted of the following collection system components: 146 active vertical wells (18 wells at stations A-S and 128 wells identified as "EW") and 1 horizontal collector (HC-2). KCLC also operates 1 horizontal collector (HC-3) and 2 leachate clean-out risers (LCRS-1 and LCRS-2) on an intermittent basis to control unintended landfill gas migration into non-refuse areas or into piping used to collect and remove the liquid leachate from the landfill. Condition # 17309, Part 18(a)

Gas Collection System Alterations

reflects this current list of collection system components. Specific component identification numbers are listed in Table 1a, 1b.

Table 1a. Landfill Gas Collection System Components Installed as of June 9, 2017

GEM ID	Well ID	Collector Type	GEM ID	Well ID	Collector Type
KCEW129A	EW-129A	VW	KCLEW134	EW-134	VW
KCEW129B	EW-129B	VW	KCLEW13A	EW-13A	VW
KCEW131A	EW-131A	VW	KCLEW14A	EW-14A	VW
KCEW131B	EW-131B	VW	KCLEW15A	EW-15A	VW
KCEW133A	EW-133A	VW	KCLEW25A	EW-25A	VW
KCEW133B	EW-133B	VW	KCLEW26A	EW-26A	VW
KCEW22RR	K022R	VW	KCLEW28A	EW-28A	VW
KCEWA23R	A023R	VW	KCLEW32A	EW-32A	VW
KCEWE19R	E019R	VW	KCLEW35A	EW-35A	VW
KCEWQ09R	Q009R	VW	KCLEW36A	EW-36A	VW
KCLEW04A	EW-4A	VW	KCLEW38A	EW-38A	VW
KCLEW06A	EW-6A	VW	KCLEW42A	EW-42A	VW
KCLEW09A	EW-9A	VW	KCLEW45A	EW-45A	VW
KCLEW100	EW-100	VW	KCLEW48A	EW-48A	VW
KCLEW101	EW-101	VW	KCLEW55A	EW-55A	VW
KCLEW102	EW-102	VW	KCLEW60A	EW-60A	VW
KCLEW103	EW-103	VW	KCLEWHC2	HC-2	HC
KCLEW104	EW-104	VW	KCLEWHC3	HC-3	HC
KCLEW105	EW-105	VW	KCLEWK18	K018R	VW
KCLEW106	EW-106	VW	KCLEWLR1	LCRS-1	LCRS
KCLEW107	EW-107	VW	KCLEWLR2	LCRS-2	LCRS
KCLEW108	EW-108	VW	KCLEWM10	M010	VW
KCLEW109	EW-109	VW	KCLEWM11	M011	VW
KCLEW10A	EW-10A	VW	KCLEWM12	M012	VW
KCLEW110	EW-110	VW	KCLFEW01	EW-1	VW
KCLEW112	EW-112	VW	KCLFEW02	EW-2	VW
KCLEW113	EW-113	VW	KCLFEW03	EW-3	VW
KCLEW114	EW-114	VW	KCLFEW05	EW-5	VW
KCLEW115	EW-115	VW	KCLFEW08	EW-8	VW
KCLEW116	EW-116	VW	KCLFEW16	EW-16	VW
KCLEW117	EW-117	VW	KCLFEW17	EW-17	VW
KCLEW118	EW-118	VW	KCLFEW18	EW-18	VW
KCLEW119	EW-119	VW	KCLFEW19	EW-19	VW
KCLEW11A	EW-11A	VW	KCLFEW21	EW-21	VW
KCLEW120	EW-120	VW	KCLFEW22	EW-22	VW
KCLEW121	EW-121	VW	KCLFEW23	EW-23	VW
KCLEW122	EW-122	VW	KCLFEW24	EW-24	VW
KCLEW123	EW-123	VW	KCLFEW27	EW-27	VW
KCLEW124	EW-124	VW	KCLFEW30	EW-30	VW
KCLEW125	EW-125	VW	KCLFEW31	EW-31	VW
KCLEW126	EW-126	VW	KCLFEW33	EW-33	VW

Gas Collection System Alterations

KCLEW127	EW-127	VW	KCLFEW34	EW-34	VW
KCLEW128	EW-128	VW	KCLFEW37	EW-37	VW
KCLEW12A	EW-12A	VW	KCLFEW39	EW-39	VW
KCLEW130	EW-130	VW	KCLFEW40	EW-40	VW

Table 1b. Landfill Gas Collection System Components Installed as of June 9, 2017 continued

GEM ID	Well ID	Collector Type	GEM ID	Well ID	Collector Type
KCLFEW41	EW-41	VW	KCLFEW78	EW-78	VW
KCLFEW43	EW-43	VW	KCLFEW79	EW-79	VW
KCLFEW44	EW-44	VW	KCLFEW80	EW-80	VW
KCLFEW46	EW-46	VW	KCLFEW81	EW-81	VW
KCLFEW47	EW-47	VW	KCLFEW82	EW-82	VW
KCLFEW49	EW-49	VW	KCLFEW83	EW-83	VW
KCLFEW50	EW-50	VW	KCLFEW84	EW-84	VW
KCLFEW51	EW-51	VW	KCLFEW85	EW-85	VW
KCLFEW52	EW-52	VW	KCLFEW86	EW-86	VW
KCLFEW53	EW-53	VW	KCLFEW87	EW-87	VW
KCLFEW54	EW-54	VW	KCLFEW88	EW-88	VW
KCLFEW56	EW-56	VW	KCLFEW91	EW-91	VW
KCLFEW57	EW-57	VW	KCLFEW92	EW-92	VW
KCLFEW58	EW-58	VW	KCLFEW93	EW-93	VW
KCLFEW61	EW-61	VW	KCLFEW94	EW-94	VW
KCLFEW62	EW-62	VW	KCLFEW95	EW-95	VW
KCLFEW63	EW-63	VW	KCLFEW96	EW-96	VW
KCLFEW64	EW-64	VW	KCLFEW97	EW-97	VW
KCLFEW66	EW-66	VW	KCLFEW98	EW-98	VW
KCLFEW67	EW-67	VW	KCLFEW99	EW-99	VW
KCLFEW68	EW-68	VW	KCLFEWB3	B003	VW
KCLFEW69	EW-69	VW	KCLFEWB4	B004	VW
KCLFEW70	EW-70	VW	KCLFEWB5	B005	VW
KCLFEW71	EW-71	VW	KCLFEWB6	B006	VW
KCLFEW72	EW-72	VW	KCLFEWR1	R1	VW
KCLFEW73	EW-73	VW	KCLFEWR3	R3	VW
KCLFEW74	EW-74	VW	KCLFEWS3	S003	VW
KCLFEW75	EW-75	VW	KCLFIW01	I01	VW
KCLFEW76	EW-76	VW	KCLFIW02	I02	VW
KCLFEW77	EW-77	VW	KCLW27RR	E027R	VW

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1 (CEQA and Public Notice Requirements):

This application is for a change of permit conditions at the S-1 Landfill with Gas Collection System that involves some physical alterations of the gas collection system, but that will not involve any modifications to the source (S-1). The gas collection system is part of the landfill gas abatement systems for the landfill. The proposed alterations do not result in any emission increases. Therefore, this application is categorically exempt from CEQA review pursuant to Regulation 2-1-312.2. In addition, the Engineering

Gas Collection System Alterations

Evaluation for this application uses fixed standards and objective measurements and does not involve any element of discretion. Consequently, no further CEQA review is required.

The project is over 1000 feet from the nearest school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

Regulation 2, Rule 2:

Since this application does not result in any emission increases, this project is not subject to New Source Review (NSR). No new BACT, Offset or PSD requirements will apply.

New Source Review for Toxic Air Contaminants:

This application does not result in any increases of Toxic Air Contaminants (TACs). Therefore, NSR for TACs is not triggered, and no new T-BACT requirements will apply.

Regulation 2, Rule 6:

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act (40 CFR, Part 70) and BAAQMD Regulation 2, Rule 6, Major Facility Review (MFR), because it is a major facility for NO_x and CO emissions and also because it is a designated facility (since it is subject to the control requirements of the Emission Guidelines for MSW Landfills). Therefore, this facility is required to have an MFR permit pursuant to Regulations 2-6-301 and 2-6-304.

The MFR Permit for this facility was last revised on March 17, 2016. Since this application will result in permit condition modifications, a minor revision of the Title V permit will be required.

Regulation 8, Rule 34:

Keller Canyon Landfill (S-1) is subject to Regulation 8, Rule 34. S-1 is expected to comply with Regulation 8-34-301 by:

- (a) continuously operating the gas collection system and continuously operating gas control systems (including A-1 and A-2),
- (b) having no leaks (exceeding 1000 ppmv) from the gas collection system, and
- (c) processing all collected gases in control devices achieving at least 98% NMOC destruction efficiency (or emitting less than 20 ppmv of NMOC from the IC engines and gas turbines).

The S-1 Keller Canyon Landfill is also subject to Regulation 8-34-303, which limits leaks on the surface of the landfill to less than 500 ppmv as methane. This site has generally been complying with the surface leak requirements. However, surface leaks above the standard are occasionally discovered by the facility and are typically eliminated within a few days of discovery. The proposed collection system alterations will keep pace with the expected increases in gas production rate at this site and are expected to prevent excessive surface leaks at this landfill.

For deep interior wells, well spacing should be less than 300 feet with each well achieving a radius of influence of about 150 feet. For perimeter wells, well spacing should be less than 200 feet apart. Based on maps of the gas collection system, the current vertical wells are 150-300 feet apart and appear to be of sufficient density.

The proposed collection system alterations are necessary to maintain compliance with the collection system installation dates specified in Regulation 8-34-304. This site is complying with all applicable monitoring requirements (8-34-505-510).

Federal Requirements:

The landfill at this facility is subject to the 40 CFR Part 60, Subpart WWW NSPS for Municipal Solid Waste (MSW) Landfills. Compliance with the District's Regulation 8, Rule 34 operating requirements is expected to ensure compliance with all applicable federal NSPS operating provisions.

Gas Collection System Alterations

NESHAPs for MSW Landfills: Any landfills that are subject to the landfill gas collection and control requirements of either the NSPS for MSW Landfills or the EG for MSW Landfills are also subject to the NESHAPs for MSW Landfills (40 CFR, Part 63, Subpart AAAAA). This NESHAP requires that subject facilities prepare and implement startup, shutdown, malfunction plans and additional reporting requirements. All applicable requirements are contained in the existing MFR permit, and this facility is expected to comply with these requirements.

PERMIT CONDITION REVISIONS

The District is proposing to modify Condition # 17309, Part 18, as indicated below to reflect the landfill gas collection system alterations identified above.

Condition # 17309

For S-1 KELLER CANYON LANDFILL, A-1 LANDFILL GAS FLARE, AND A-2 LANDFILL GAS FLARE:

(no changes to Parts 1-17 or Parts 19-37)

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 #26269 and #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 6/9/2017.

Well Station	Vertical Wells
A-S	18
EW	128
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 #26269 and #28398. All collection system alterations shall comply with subparts

Gas Collection System Alterations

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.
- 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

Gas Collection System Alterations

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.

RECOMMENDATION

Issue an administrative Change of Permit Conditions for the following equipment, subject to Condition # 17309:

S-1 Keller Canyon Landfill; abated by Flares (A-1 and A-2):

By:

Davis Zhu
Air Quality Engineer

_____ Date

APPENDIX C
ENGINEERING EVALUATION
for
APPLICATION # 30222

ENGINEERING EVALUATION
Facility ID No. 4618
Keller Canyon Landfill Company
901, Bailey Road, Pittsburg, CA 94565
Application No. 30222

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 submitted Application # 30222 to request a Change of Conditions that would allow alternative standards to the Regulation 8-34-305 wellhead limits. Specifically, KCLC has requested to increase the higher operating value (HOV) of temperature for twelve landfill gas collection wells from 131°F to 150°F. This proposal is discussed in more detail in the Emissions and Statement of Compliance sections of this report.

EMISSIONS

In accordance with Regulation 8-34-305, the District may establish alternatives to the wellhead standards listed in Regulation 8-34-305.1-4. The wellhead temperature (8-34-305.2), nitrogen (8-34-305.3) and oxygen (8-34-305.4) are intended to prevent subsurface fires and are not expected to influence surface emission leaks from the landfill. The alternative standards are intended to give additional leeway in determining the proper operating levels for an adequately functioning well. The proper operating levels for temperature, nitrogen, and oxygen may vary considerably from site to site and even well to well, depending on ambient conditions, age and depth of the refuse, compaction density, cover practices, moisture content, porosity, and many other factors.

Keller Canyon has requested an alternative standard of 150°F for temperature for the following twelve wells: KCLEW-12A, KCLEW-148, KCLEW-14A, KCLEW-154, KCLEW-26A, KCLFEW-27, KCLFEW-34, KCLFEW-53, KCLFEW-54, KCLFEW-57, KCLFEW-68, and KCLFEW-73. The highest temperature recorded at any of these wells in the last six months was 138°F. In addition, the oxygen and carbon monoxide (CO) concentrations in all the wells remained well below 5% and 15 ppm, respectively, thereby showing that there is no apparent risk for subsurface fires.

According to the applicant, the operations and maintenance field technicians have historically adjusted the above twelve wells to ensure the well temperatures stay in compliance with the 131°F limit. Nonetheless, these wells have exhibited higher temperatures and adjusting them to stay in compliance has limited the LFG production potential of the wells. The first concern with a higher temperature is the risk of fires. Subsurface oxidation is usually indicated by CO concentrations of 500 ppm (by volume) or more. CO concentrations between 100 - 499 ppm (by volume) indicate a concern for subsurface fires. CO sampling done at the twelve wells revealed that the highest CO concentration was 15 ppm. The historical oxygen concentrations also do not exceed 2.3% at any of the wells. Therefore, there is no concern for subsurface oxidation at this time. Monthly temperature monitoring will be required as an enforceable permit condition to avoid non-detection of CO-build up and fire risk at the landfill.

Increasing the temperature from 131°F to 150°F is not expected to result in any emission increases as the wells will continue to collect gas as before. There is no change in waste throughput or design capacity of the landfill. There are no new wells being added or removed. As such, the emissions will remain unaffected.

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 will not require any physical changes and that will not result in any increase in emissions at this facility. This application modifies the Permit Condition # 17309, Part 19(b) to include alternative wellhead standards for twelve wells for temperature.

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. Therefore, this change of permit conditions is categorically exempt from CEQA review pursuant to Regulation 2-1-312.1, and no further CEQA review is required. Furthermore, the facility has submitted an Appendix H form stating that there is no potential for a significant adverse environmental impact.

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:

Since this project will not result in any new or modified sources, this project is not subject to New Source Review or the requirements of Regulation 2, Rule 2.

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

Since this project will not result in any new or modified sources of toxic air contaminant emissions, therefore, this project is not subject to New Source Review for Toxic Air Contaminants. In addition as there is no change in toxic emissions, a health risk assessment (HRA) is not required.

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 A.

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 December 20, 2019, the landfill gas collection system for the landfill includes a total of 152 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.

Regulation 8-34-305, Wellhead Requirements:

Regulation 8-34-305 states:

- 8-34-305 Wellhead Requirements:** Effective July 1, 2002 and except as provided in Sections 8-34-119 or 120, each wellhead in the gas collection system shall meet the requirements of Sections 8-34-305.1 and 305.2 and either 305.3 or 305.4, unless the operator has discovered the excess and has satisfied all of the requirements of Section 8-34-414; or the operator has received permit conditions containing alternative operating levels:
- 305.1 Each wellhead shall operate under a vacuum (negative pressure); and
 - 305.2 The landfill gas temperature in each wellhead shall be less than 55°C (131°F); and either
 - 305.3 The nitrogen concentration in each wellhead shall be less than 20% by volume; or
 - 305.4 The oxygen concentration in each wellhead shall be less than 5% by volume.

While 8-34-305.2 establishes a default wellhead temperature limit of 131°F, the preamble states that compliance with this limit may be demonstrated by meeting permit conditions containing alternative operating levels. The proposed permit conditions will establish an operating level of 150°F for twelve wells. This elevated temperature is not expected to cause fires or inhibit anaerobic decomposition. The permit holder will be required to demonstrate compliance with this alternative standard in accordance with Regulation 8-34-505, which requires monthly monitoring of all landfill gas wells for gauge pressure, temperature and oxygen or nitrogen content.

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.

The pertinent standard for the current application is 40 CFR 60.753(c), which states:

Operate each interior wellhead in the collection system with a landfill gas temperature less than 55 °C and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

As with Regulation 8-34-305, the NSPS allows for the establishment of alternative wellhead standards. These alternative standards must be approved by the administrator, which in this case is the District, prior to implementation. The MFR Permit review and approval process constitutes approval by the administrator of an alternative standard for 40 CFR 60.753(c). EPA will also have the opportunity to review the District's proposed alternative standards pursuant to the MFR Permit review process. KCLC is expected to continue to comply with all applicable NSPS monitoring and record keeping requirements for the twelve affected wellheads including: 40 CFR 60.755(a)(5), 60.756(a)(2), and 60.758(e).

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 CONDITION REVISIONS

The District is proposing to modify Permit Condition # 17309, Part 19 by adding the wellhead temperature limit to subpart (b)(i) and adding subpart (b)(iii) for temperature and CO monitoring, which is used to detect possible subsurface combustion. Part 19(b)(i) will identify the applicable regulation for temperature wellhead limit and authorize an alternative temperature value for twelve wells: KCLEW-12A, KCLEW-148, KCLEW-14A, KCLEW-154, KCLEW-26A, KCLFEW-27, KCLFEW-34, KCLFEW-53, KCLFEW-54, KCLFEW-57, KCLFEW-68, and KCLFEW-73. Subparts (iii)(A)-(C) describe the monitoring requirements that should be used to demonstrate compliance with the alternative temperature limit. Subpart (b)(viii) describes the recordkeeping requirements.

RECOMMENDATION

I recommend that a change of permit conditions be issued for the Permit Condition # 17309, Part 19. Only the parts of Condition # 17309 Part 19 with revisions will be displayed below. The revisions are shown below in the strike through and underline formatting:

Condition # 17309

No changes to Parts 1-18

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-viii below. (Basis: Regulation 8-34-305)
 - i. For each of the wells identified below, the Regulation 8-34-305.2 wellhead temperature shall not apply; and the landfill gas temperature at each wellhead listed below shall not exceed 150°F. The wells that are subject to this alternative wellhead temperature limit are:

KCLEW-12A, KCLEW-148, KCLEW-14A, KCLEW-154, KCLEW-26A, KCLFEW-27, KCLFEW-34, KCLFEW-53, KCLFEW-54, KCLFEW-57, KCLFEW-68, KCLFEW-73

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.

E027R
 - ii. The Permit Holder shall demonstrate compliance with the alternative wellhead temperature and oxygen limits in subpart i by monitoring each wellhead for temperature and oxygen on a monthly basis, in accordance with the provisions of Regulations 8-34-501.8, 501.9, 505 and 8-34-604.

- iii. If the temperature of the landfill gas in any of the above wellheads exceeds 145°F, the owner/operator shall investigate the possibility of a subsurface fire at the noncompliant wellhead by monitoring the CO concentration in the wellhead gases and by searching for smoke, smoldering odors, combustion residues, and other fire indicators in the wellhead and in the landfill area near the wellhead. Within 5 days of triggering a fire investigation, the owner/operator shall measure the CO concentration in the landfill gas at the noncompliant wellhead using a portable CO monitor, CO Draeger tube, or an EPA approved test method. CO monitoring shall continue according to the frequency specified below:
 - A. If the CO concentration is greater than 500 ppmv, the owner/operator shall immediately take all steps necessary to prevent or extinguish the subsurface fire, including disconnecting the well from the vacuum system if necessary. If the well is not disconnected from the vacuum system or upon reconnecting the well to the vacuum system, the owner/ operator shall monitor the well for CO concentration, wellhead temperature, and other fire indicators on at least a weekly basis until CO concentration drops to 500 ppmv or less.
 - B. If the CO concentration is less than or equal to 500 ppmv but greater than 100 ppmv, the owner/operator shall monitor for CO concentration at least twice per month (not less than once every 15 days) until the CO concentration drops to 100 ppmv or less. Wellhead temperature and other fire indicators shall be evaluated at each of these semi-monthly monitoring events.
 - C. If the CO concentration is less than or equal to 100 ppmv, the owner/operator shall monitor for CO concentration on a monthly basis. CO monitoring may be discontinued if three consecutive CO measurements are 100 ppmv or less and the wellhead temperature during each of these three monitoring events is 145°F or less. If a component has three or more CO measurements of 100 ppmv or less but the wellhead temperature was greater than 145°F, the owner/operator must receive written approval from the District before discontinuing the monthly CO monitoring for that component.
- 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 subject to the alternate wellhead oxygen limit, 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.
- viii. All test dates, wellhead oxygen concentration data, well head gas temperature data, any deviations from the subpart i limits, oxygen and CO monitoring data, 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 8-34-501.4, 8-34-501.9, and 8-34-414. If subpart (iii)(A) applies,

the permit holder shall also record all actions taken to prevent or extinguish the fires.

- 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.

By: _____ Date _____
Nimrat Sandhu
Air Quality Engineer I

Appendix A
Title V Statement of Basis

This is minor permit revision pursuant to Regulation 2, Rule 6, Section 215.

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 19 will be updated per NSR Application #30222.

Section VII

Table VII-A will be revised to show that wellhead temperature limit will not be applicable to wells identified in Permit Condition #17309 Part 19 as per Application # 30222.

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 #30222

Section XI

There will be no revisions to this section.

APPENDIX D
ENGINEERING EVALUATION
for
APPLICATION # 29941

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, 2020, the landfill contained 22.2 million tons of decomposable waste. In addition to MSW, this site is allowed to accept designated wastes including petroleum contaminated soils. From July 2019-July 2020, Keller reported accepting 7857 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 2019-July 2020, 2.13 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 seven 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	112.828

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):

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

where Q_{CH_4} 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_o 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 ($L_o = 100 m^3 CH_4/Mg$ 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 (4986 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 (4986 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. Results of the District-run LandGEM model are shown in Appendix B and show that the maximum landfill gas production rate would be 7,385 ft³/min in the year 2051. The facility recirculates leachate and as such a k-value of 0.04 yr⁻¹ has been used. 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 7,385 scfm = 1,846 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

$$\begin{aligned} POC, \frac{lbs}{yr} &= \frac{1,846 \text{ ft}^3 \text{ of LFG}}{\text{min}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{24 \text{ hrs}}{\text{day}} \times \frac{365 \text{ days}}{\text{yr}} \times \frac{5,605 \text{ ft}^3 \text{ of NMOC}}{10^6 \text{ ft}^3 \text{ of LFG}} \\ &\times \frac{16 \frac{\text{lb}}{\text{lb-mol}}}{385.6 \frac{\text{ft}^3 \text{ of NMOC}}{\text{lb-mol}}} \\ &= 225,655.3 \frac{\text{lbs}}{\text{yr}} = 112.828 \text{ tpy} \end{aligned}$$

Best Available Control Technology (BACT)

Since this application results in an increase in emissions and the maximum daily emissions of POC are 618.23 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 112.828 tpy. The facility has previously been provided offsets for 41.33 tpy for POC emissions from SFBA. An increase of 71.498 tpy (112.83 – 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.

$$\text{Offsets Required} = (41.33 * 1.0) + (71.498 * 1.15) = 123.553 \text{ tpy}$$

The facility will provide the offsets from the following Banking Certificates in the amounts shown below:

Banking Certificate #	Amount
1679	24.435 tpy
787, 1672, 1768	67.071 tpy
1254*	3.794 tpy
1513*	4.027 tpy
1634*	24.316 tpy

* These Certificate numbers correspond to transfer of POC emission reduction credits (ERC) from West Contra Costa Sanitary Landfill.

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	71.498	112.828	123.553	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 past and future expected site-specific concentrations and actual data instead of the AP-42 default values. This recalculation results in an increase of 71.498 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 95 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 71.498 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 618.23 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 112.828 tpy. The facility has previously been provided offsets for 41.33 tpy for POC emissions from SFBA. An increase of 71.498 tpy (112.828 – 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 has provided 91.506 tpy of POC offsets via Banking Certificate #s 787, 1672, 1679, and 1768. The remaining 32.137 tpy of POC offsets have been provided via a transfer of POC ERC from West Contra Costa Sanitary Landfill via Banking Certificate #s 1254, 1513, and 1634.

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. Comments were received from two entities and are shown in Appendix C.

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 D.

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 November 21, 2020, the landfill gas collection system for the landfill includes a total of 176 vertical wells, 3 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 E. 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 112.828 tons per any 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 $\text{CPOC} = \text{NMOC} - \text{NPOC}$ (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:
 $\text{FEPOC} = 0.25 * \text{UEPOC}$

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 II

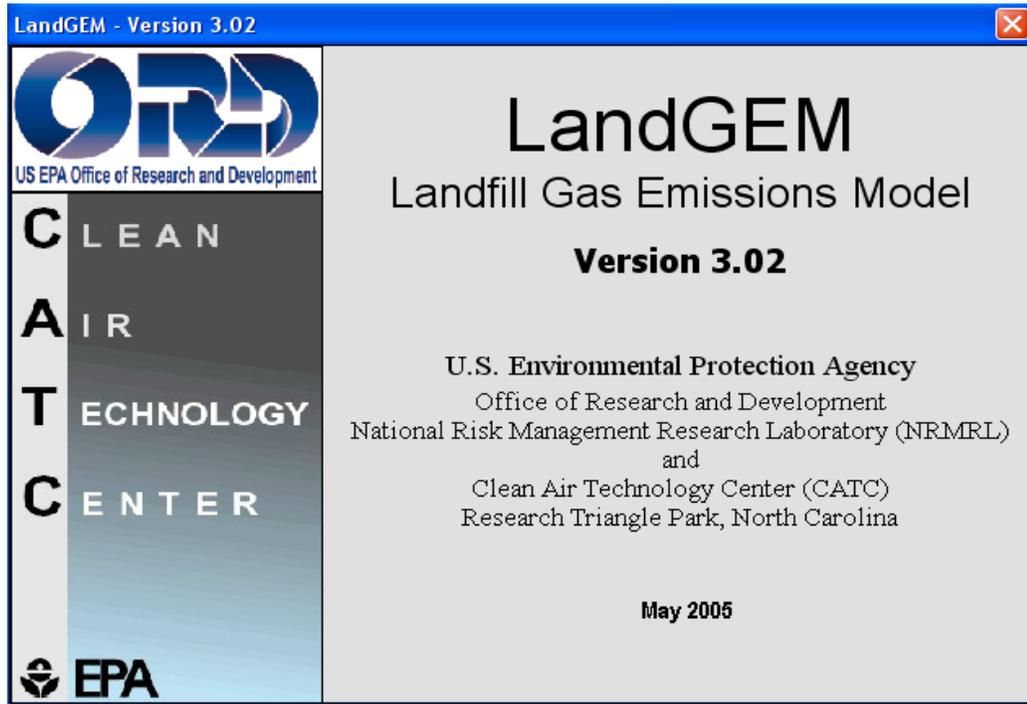
Date

Appendix A

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

Year, flare	NMOC Concentrations
	as methane (ppmv)
2019 A-2	6453
2018 A-1	5207
2018 A-2	5812
2017 A-1	5038
2017 A-2	4214
2016 A-1	5038
2016 A-2	3895
2015 A-1	3550
2015 A-2	5664
Average	4986
Std. Dev	948
95% CI	620
Avg + 95% CI	5605

Appendix B



Summary Report

Landfill
Name or Keller
Identifier: Canyon

Date: Tuesday, November 24,
2020

About LandGEM:

First-Order Decomposition Rate Equation:

$$Q_{CH_4} = \sum_{i=1}^n \sum_{j=0.1}^1 kL_o \left(\frac{M_i}{10} \right) e^{-kt_{i,j}}$$

Where,

Q_{CH_4} = annual methane generation in the year of the calculation ($m^3/year$)

i = 1-year time increment

M_i = mass of waste accepted in the i^{th} year (Mg)

n = (year of the calculation) - (initial year of waste acceptance)
 t_{ij} = age of the j^{th} section of waste mass M_i accepted in the i^{th} year (*decimal years*, e.g., 3.2 years)
 j = 0.1-year time increment
 k = methane generation rate (year^{-1})
 L_o = potential methane generation capacity (m^3/Mg)

LandGEM is based on a first-order decomposition rate equation for quantifying emissions from the decomposition of landfilled waste in municipal solid waste (MSW) landfills. The software provides a relatively simple approach to estimating landfill gas emissions. Model defaults are based on empirical data from U.S. landfills. Field test data can also be used in place of model defaults when available. Further guidance on EPA test methods, Clean Air Act (CAA) regulations, and other guidance regarding landfill gas emissions and control technology requirements can be found at <http://www.epa.gov/ttnatw01/landfill/landflpg.html>.

LandGEM is considered a screening tool — the better the input data, the better the estimates. Often, there are limitations with the available data regarding waste quantity and composition, variation in design and operating practices over time, and changes occurring over time that impact the emissions potential. Changes to landfill operation, such as operating under wet conditions through leachate recirculation or other liquid additions, will result in generating more gas at a faster rate. Defaults for estimating emissions for this type of operation are being developed to include in LandGEM along with defaults for conventional landfills (no leachate or liquid additions) for developing emission inventories and determining CAA applicability. Refer to the Web site identified above for future updates.

Input Review

LANDFILL CHARACTERISTICS

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

MODEL PARAMETERS

Methane Generation Rate, k	0.040	<i>year⁻¹</i>
Potential Methane Generation Capacity, L_o	100	<i>m³/Mg</i>
NMOC Concentration	934	<i>ppmv as hexane</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	250,000	275,000	0	0
1993	260,000	286,000	250,000	275,000

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short tons/year)	(Mg)	(short tons)
1994	270,400	297,440	510,000	561,000
1995	261,148	287,263	780,400	858,440
1996	339,524	373,476	1,041,548	1,145,703
1997	355,051	390,556	1,381,072	1,519,179
1998	277,858	305,644	1,736,123	1,909,735
1999	378,444	416,288	2,013,981	2,215,379
2000	554,174	609,591	2,392,425	2,631,667
2001	652,321	717,553	2,946,598	3,241,258
2002	650,435	715,479	3,598,919	3,958,811
2003	717,689	789,458	4,249,355	4,674,290
2004	731,679	804,847	4,967,044	5,463,748
2005	766,026	842,629	5,698,723	6,268,595
2006	781,863	860,049	6,464,749	7,111,224
2007	727,729	800,502	7,246,612	7,971,273
2008	704,057	774,463	7,974,341	8,771,775
2009	734,361	807,797	8,678,398	9,546,238
2010	710,090	781,099	9,412,759	10,354,035
2011	642,309	706,540	10,122,849	11,135,134
2012	658,192	724,011	10,765,158	11,841,674
2013	671,622	738,784	11,423,350	12,565,685
2014	640,920	705,012	12,094,972	13,304,469
2015	705,915	776,506	12,735,892	14,009,481
2016	716,736	788,410	13,441,806	14,785,987
2017	705,579	776,137	14,158,543	15,574,397
2018	828,280	911,108	14,864,122	16,350,534
2019	600,522	660,574	15,692,402	17,261,642
2020	600,522	660,574	16,292,924	17,922,216
2021	600,522	660,574	16,893,445	18,582,790
2022	600,522	660,574	17,493,967	19,243,364
2023	600,522	660,574	18,094,489	19,903,938
2024	600,522	660,574	18,695,011	20,564,512
2025	600,522	660,574	19,295,533	21,225,086
2026	600,522	660,574	19,896,055	21,885,660
2027	600,522	660,574	20,496,576	22,546,234
2028	600,522	660,574	21,097,098	23,206,808
2029	600,522	660,574	21,697,620	23,867,382
2030	600,522	660,574	22,298,142	24,527,956
2031	600,522	660,574	22,898,664	25,188,530
2032	600,522	660,574	23,499,185	25,849,104
2033	600,522	660,574	24,099,707	26,509,678
2034	600,522	660,574	24,700,229	27,170,252
2035	600,522	660,574	25,300,751	27,830,826
2036	600,522	660,574	25,901,273	28,491,400
2037	600,522	660,574	26,501,795	29,151,974
2038	600,522	660,574	27,102,316	29,812,548

WASTE ACCEPTANCE RATES (Continued)

Year	Waste Accepted		Waste-In-Place	
	(Mg/year)	(short	(Mg)	(short tons)

		tons/year)		
2039	600,522	660,574	27,702,838	30,473,122
2040	600,522	660,574	28,303,360	31,133,696
2041	600,522	660,574	28,903,882	31,794,270
2042	600,522	660,574	29,504,404	32,454,844
2043	600,522	660,574	30,104,925	33,115,418
2044	600,522	660,574	30,705,447	33,775,992
2045	600,522	660,574	31,305,969	34,436,566
2046	600,522	660,574	31,906,491	35,097,140
2047	600,522	660,574	32,507,013	35,757,714
2048	600,522	660,574	33,107,535	36,418,288
2049	600,522	660,574	33,708,056	37,078,862
2050	600,522	660,574	34,308,578	37,739,436
2051	0	0	34,909,100	38,400,010
2052	0	0	34,909,100	38,400,010
2053	0	0	34,909,100	38,400,010
2054	0	0	34,909,100	38,400,010
2055	0	0	34,909,100	38,400,010
2056	0	0	34,909,100	38,400,010
2057	0	0	34,909,100	38,400,010
2058	0	0	34,909,100	38,400,010
2059	0	0	34,909,100	38,400,010
2060	0	0	34,909,100	38,400,010
2061	0	0	34,909,100	38,400,010
2062	0	0	34,909,100	38,400,010
2063	0	0	34,909,100	38,400,010
2064	0	0	34,909,100	38,400,010
2065	0	0	34,909,100	38,400,010
2066	0	0	34,909,100	38,400,010
2067	0	0	34,909,100	38,400,010
2068	0	0	34,909,100	38,400,010
2069	0	0	34,909,100	38,400,010
2070	0	0	34,909,100	38,400,010
2071	0	0	34,909,100	38,400,010

Year	Total landfill gas		
	(Mg/year)	(m³/year)	(av ft³/min)
1992	0	0	0
1993	2.453E+03	1.964E+06	1.320E+02
1994	4.908E+03	3.930E+06	2.641E+02
1995	7.369E+03	5.901E+06	3.965E+02
1996	9.643E+03	7.722E+06	5.188E+02
1997	1.260E+04	1.009E+07	6.777E+02
1998	1.559E+04	1.248E+07	8.386E+02
1999	1.770E+04	1.418E+07	9.524E+02
2000	2.072E+04	1.659E+07	1.115E+03
2001	2.535E+04	2.030E+07	1.364E+03
2002	3.075E+04	2.463E+07	1.655E+03
2003	3.593E+04	2.877E+07	1.933E+03

Year	Total landfill gas		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2004	4.157E+04	3.328E+07	2.236E+03
2005	4.712E+04	3.773E+07	2.535E+03
2006	5.279E+04	4.227E+07	2.840E+03
2007	5.839E+04	4.675E+07	3.141E+03
2008	6.324E+04	5.064E+07	3.402E+03
2009	6.767E+04	5.419E+07	3.641E+03
2010	7.222E+04	5.783E+07	3.886E+03
2011	7.636E+04	6.114E+07	4.108E+03
2012	7.967E+04	6.379E+07	4.286E+03
2013	8.300E+04	6.646E+07	4.466E+03
2014	8.634E+04	6.914E+07	4.645E+03
2015	8.924E+04	7.146E+07	4.801E+03
2016	9.267E+04	7.421E+07	4.986E+03
2017	9.607E+04	7.693E+07	5.169E+03
2018	9.923E+04	7.946E+07	5.339E+03
2019	1.035E+05	8.285E+07	5.567E+03
2020	1.053E+05	8.432E+07	5.665E+03
2021	1.071E+05	8.573E+07	5.760E+03
2022	1.088E+05	8.709E+07	5.852E+03
2023	1.104E+05	8.839E+07	5.939E+03
2024	1.120E+05	8.965E+07	6.023E+03
2025	1.135E+05	9.085E+07	6.104E+03
2026	1.149E+05	9.201E+07	6.182E+03
2027	1.163E+05	9.312E+07	6.257E+03
2028	1.176E+05	9.418E+07	6.328E+03
2029	1.189E+05	9.521E+07	6.397E+03
2030	1.201E+05	9.620E+07	6.463E+03
2031	1.213E+05	9.714E+07	6.527E+03
2032	1.225E+05	9.805E+07	6.588E+03
2033	1.235E+05	9.893E+07	6.647E+03
2034	1.246E+05	9.977E+07	6.703E+03
2035	1.256E+05	1.006E+08	6.758E+03
2036	1.266E+05	1.013E+08	6.810E+03
2037	1.275E+05	1.021E+08	6.860E+03
2038	1.284E+05	1.028E+08	6.908E+03
2039	1.292E+05	1.035E+08	6.954E+03
2040	1.301E+05	1.042E+08	6.998E+03
2041	1.309E+05	1.048E+08	7.041E+03
2042	1.316E+05	1.054E+08	7.082E+03
2043	1.324E+05	1.060E+08	7.121E+03
2044	1.331E+05	1.066E+08	7.159E+03
2045	1.337E+05	1.071E+08	7.195E+03
2046	1.344E+05	1.076E+08	7.230E+03
2047	1.350E+05	1.081E+08	7.264E+03
2048	1.356E+05	1.086E+08	7.296E+03
2049	1.362E+05	1.091E+08	7.327E+03
2050	1.367E+05	1.095E+08	7.357E+03
2051	1.373E+05	1.099E+08	7.385E+03

Year	Total landfill gas		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2052	1.319E+05	1.056E+08	7.096E+03
2053	1.267E+05	1.015E+08	6.818E+03
2054	1.217E+05	9.749E+07	6.550E+03
2055	1.170E+05	9.367E+07	6.293E+03
2056	1.124E+05	8.999E+07	6.047E+03
2057	1.080E+05	8.647E+07	5.810E+03
2058	1.037E+05	8.308E+07	5.582E+03
2059	9.968E+04	7.982E+07	5.363E+03
2060	9.577E+04	7.669E+07	5.153E+03
2061	9.201E+04	7.368E+07	4.951E+03
2062	8.841E+04	7.079E+07	4.757E+03
2063	8.494E+04	6.802E+07	4.570E+03
2064	8.161E+04	6.535E+07	4.391E+03
2065	7.841E+04	6.279E+07	4.219E+03
2066	7.534E+04	6.033E+07	4.053E+03
2067	7.238E+04	5.796E+07	3.894E+03
2068	6.954E+04	5.569E+07	3.742E+03
2069	6.682E+04	5.350E+07	3.595E+03
2070	6.420E+04	5.141E+07	3.454E+03
2071	6.168E+04	4.939E+07	3.319E+03
2072	5.926E+04	4.745E+07	3.188E+03
2073	5.694E+04	4.559E+07	3.063E+03
2074	5.470E+04	4.381E+07	2.943E+03
2075	5.256E+04	4.209E+07	2.828E+03
2076	5.050E+04	4.044E+07	2.717E+03
2077	4.852E+04	3.885E+07	2.610E+03
2078	4.662E+04	3.733E+07	2.508E+03
2079	4.479E+04	3.586E+07	2.410E+03
2080	4.303E+04	3.446E+07	2.315E+03
2081	4.134E+04	3.311E+07	2.224E+03
2082	3.972E+04	3.181E+07	2.137E+03
2083	3.817E+04	3.056E+07	2.053E+03
2084	3.667E+04	2.936E+07	1.973E+03
2085	3.523E+04	2.821E+07	1.896E+03
2086	3.385E+04	2.711E+07	1.821E+03
2087	3.252E+04	2.604E+07	1.750E+03
2088	3.125E+04	2.502E+07	1.681E+03
2089	3.002E+04	2.404E+07	1.615E+03
2090	2.885E+04	2.310E+07	1.552E+03
2091	2.771E+04	2.219E+07	1.491E+03
2092	2.663E+04	2.132E+07	1.433E+03
2093	2.558E+04	2.049E+07	1.376E+03
2094	2.458E+04	1.968E+07	1.322E+03
2095	2.362E+04	1.891E+07	1.271E+03
2096	2.269E+04	1.817E+07	1.221E+03
2097	2.180E+04	1.746E+07	1.173E+03
2098	2.095E+04	1.677E+07	1.127E+03
2099	2.012E+04	1.611E+07	1.083E+03

Year	Total landfill gas		
	(Mg/year)	(m ³ /year)	(av ft ³ /min)
2100	1.934E+04	1.548E+07	1.040E+03
2101	1.858E+04	1.488E+07	9.995E+02
2102	1.785E+04	1.429E+07	9.603E+02
2103	1.715E+04	1.373E+07	9.227E+02
2104	1.648E+04	1.319E+07	8.865E+02
2105	1.583E+04	1.268E+07	8.517E+02
2106	1.521E+04	1.218E+07	8.183E+02
2107	1.461E+04	1.170E+07	7.862E+02
2108	1.404E+04	1.124E+07	7.554E+02
2109	1.349E+04	1.080E+07	7.258E+02
2110	1.296E+04	1.038E+07	6.973E+02
2111	1.245E+04	9.972E+06	6.700E+02
2112	1.196E+04	9.581E+06	6.437E+02
2113	1.150E+04	9.205E+06	6.185E+02
2114	1.104E+04	8.844E+06	5.942E+02
2115	1.061E+04	8.497E+06	5.709E+02
2116	1.020E+04	8.164E+06	5.485E+02
2117	9.796E+03	7.844E+06	5.270E+02
2118	9.412E+03	7.536E+06	5.064E+02
2119	9.043E+03	7.241E+06	4.865E+02
2120	8.688E+03	6.957E+06	4.674E+02
2121	8.347E+03	6.684E+06	4.491E+02
2122	8.020E+03	6.422E+06	4.315E+02
2123	7.706E+03	6.170E+06	4.146E+02
2124	7.403E+03	5.928E+06	3.983E+02
2125	7.113E+03	5.696E+06	3.827E+02
2126	6.834E+03	5.473E+06	3.677E+02
2127	6.566E+03	5.258E+06	3.533E+02
2128	6.309E+03	5.052E+06	3.394E+02
2129	6.061E+03	4.854E+06	3.261E+02
2130	5.824E+03	4.663E+06	3.133E+02
2131	5.595E+03	4.481E+06	3.010E+02
2132	5.376E+03	4.305E+06	2.892E+02

Appendix C

TetraTech Comments

1. *The precursor organic compounds (POCs) for the landfill (Source S-1) limit was set in 1999 upon which the limit for 40.059 tons per year (tpy) was established. At that time, it was stated that the POC limit should be reevaluated every five years, yet the limit has not changed since issuance in 1999.*

While it is true that the District forecasted reevaluating the POC limit every five years, it was the responsibility of the Landfill to conduct that reevaluation concurrently with the TV Permit Renewal. The facility did not reevaluate this limit and it wasn't until the facility submitted an application for the replacement of Flare A-2 (Application # 28642), that it came to the District's attention that the fugitive POC emissions limit had been exceeded. Please note it is the responsibility of the facility to reevaluate this limit every five years, concurrent with the time of TV renewal application submittal, to determine compliance with this limit.

2. *When the BAAQMD reevaluated the POC limit during the review process for the A-2 Flare permit application submitted in December 2004, a non-methane organic compounds (NMOC) value of 411 parts per million by volume (ppmv) as hexane was utilized when calculating the POC emissions. It should be noted that United States Environmental Protection Agency (USEPA) AP-42 default NMOC as hexane is 595 ppmv. Additionally, per the current language of the Keller Title V Permit Part 33, requires the POC to be evaluated per NMOC as methane, not as hexane. BAAQMD recommends using the average +95 percent for the NMOC value, expressed as methane.*
 - a. *With the differentiation of NMOC as hexane at 411 ppmv, the estimated 2004 POC value did not result in a need to increase the POC emissions limit of 40.059 tpy.*

The AP-42 default NMOC concentration is for sites which do not have any site-specific data. As this site has its own site-specific data for NMOC concentrations, it should be used here instead of the default value.

411 ppmv value was proposed by KCLC. District staff, expressed in writing, concerns to KCLC regarding use of this figure. At the time, the District's proposed fugitive POC emissions limit was almost the same as what is being calculated now.

- b. *LandGEM model uses NMOC as hexane, not as methane. Therefore, the provided LandGEM appears not to be a direct output of the model.*

District will update the model to reflect NMOC as hexane

- i. *Please keep NMOC as methane to be consistent.*

District will amend the Permit Condition # 33 to state NMOC as methane to be consistent with Regulation 8-34.

3. *Keller completed the LandGEM with a k value of 0.0375 per year rather than the BAAQMD recommended 0.02 per year due to the amount of leachate recirculation which occurs onsite, however, Keller finds it agreeable to utilize a k value of 0.02 per year.*

District staff was unaware of leachate recirculation at the site and will use a k-value of 0.04 per year.

4. *Per previous correspondence, the BAAQMD will only allow for a collection efficiency (CE) of 75 percent to be utilized when calculating emissions. Multiple studies have suggested that a default CE value of 75 percent is outdated.*

- a. On December 10, 2019, Tetra Tech sent the October 2007 SWANA Landfill Gas Collection System Efficiencies as well as the September 2008 USEPA Background Information Document for Updating AP-42 Section 2.4 for Estimating Emissions from Municipal Solid Landfills documents on more recent CE studies to Nimrat Sandhu and Gregory Solomon for consideration.

District staff considered the suggestion to use an assumed collection efficiency of greater than 75%. Landfill collection efficiency has been to some extent speculative due to the historical lack of quantitative methodologies. However, there have been numerous recent studies, including one published in *Nature*¹ and conducted jointly by Scientific Aviation, Jet Propulsion Laboratory, CARB, California Institute of Technology, University of California Riverside, and University of Arizona, which show that landfills emit up to 40% more methane than previously assumed. These studies, which are more recent than and therefore are not accounted for in the 2007 and 2008 studies referenced in the comment, indicate that fugitive methane emissions from landfills are higher than has been assumed historically. Considering these findings, District staff believes an assumed 75% collection efficiency is likely an overestimate. In other words, an assumed 75% collection efficiency likely results in estimated emissions that are lower than actual emissions.

- b. *Keller again respectfully requests BAAQMD to revisit these documents as Keller has shown to have CEs greater than the USEPA default value of 75 percent. The documents were released in 2007 and 2008, respectively, further supporting the 75 percent CE has been considered outdated for an extended period of time.*

The District will re-evaluate the appropriate assumed landfill gas collection efficiency as new information becomes available. The 75% figure is currently being used for any Bay Area landfill application. If re-evaluation results in a more appropriate collection efficiency figure, that new figure will be applied even-handedly for all Bay Area landfills.

- c. *It is additionally requested that methane oxidation is taken into consideration. A methane oxidation rate of 10 percent in landfill cover soils is default per the Solid Waste Industry for Climate Solutions (SWICS) November 2009 Comment on the draft Landfill Project Protocol Version 3.0. Recent studies have suggested that methane oxidation ranges from 22 percent to 55 percent.*

The 10% oxidation rate is for the methane to be converted to carbon dioxide. Our emissions database already takes the 10% oxidation into consideration in its emissions calculations. As POCs are considered equivalent to non-methane organic compounds, the 10% oxidation rate is not applicable here.

5. *In review of the LandGEM calculations, it appears the BAAQMD has utilized the Keller Annual Updates for tonnages for 2013, 2014, 2015, and 2016. The Annual Updates have historically represented the waste intake for a 12-month period ending June 30th of each year therefore they do not represent a calendar year of waste intake. The LandGEM should be updated to represent the calendar year of waste intake.*

LandGEM will be updated to include calendar year of waste intake. Please note that the waste inputs will be taken from the facility's submitted documents for Application # 29941.

¹ Duren et. al, California's methane super-emitters. *Nature*, Volume 575, pp 180-185, 2019.

6. Keller Title V Permit Condition 36 (page 37 of 40 of Engineering Evaluation PDF) (VOC soil) has been completely removed within the proposed permit conditions revisions. It was not included in the COPC for this permit condition to be removed, and it should remain in the permit.

This was an oversight and Permit Condition # 36 will be included in the permit.

7. USEPA AP-42 Section 2.4 lists POC as only 39 percent of NMOC concentration, the engineering evaluation indicates NMOC are assumed as 100 percent POC.
 - a. Please keep POCs as 39 percent of NMOC concentration per USEPA AP-42 Section 2.4.

The AP-42 Table 2.4.2 value is for no or unknown sites i.e. the sites where the NMOC concentration is unknown. Keller has two decades of source test data. Based on the latest source test from 02/26/2019, POCs make up 94.5% of total NMOC concentration. Furthermore, as pointed out by the applicant that the NMOC concentrations in annual source tests are highly variable, thereby making it impossible for District staff to use the exact conversion from NMOC to POC. As such, District assumes POCs as being equivalent to 100% NMOC as a worst-case scenario for all of its applications. Individualized conversions will result in much more onerous monitoring and additional source testing permit conditions. In order to avoid more burdensome monitoring, POCs are considered equivalent to NMOCs.

8. Source Test results for 2015 through 2019, from which the NMOCs have been derived for the POC calculations, appear to be off by approximately 2 ppmv for both flares (A-1 and A-2) each year.

Calculations have been updated to show exact NMOC concentrations.

9. Offsets required for the COPC to be issued to Keller are confirmed at 103.971 tpy for the lifetime of the Keller, the estimated closure year is currently 2050.
 - a. Keller owes the Small Facility Banking Account 41.33 tpy in offsets, with a ratio 1:1.
 - b. Keller owes BAAQMD for 54.47 tpy in offsets, at a ratio of 1:1.15.
 - c. Keller must purchase 103.971 tpy of offsets for the revised permit conditions to be issued.

Based on the calendar waste inputs (taken from the submitted application), a k-value of 0.04 yr⁻¹, and NMOC concentration of 934 ppm as hexane (which is equal to 5,605 ppm as methane), the peak landfill gas generated is 7,385 cfm in 2051 (see attached LandGEM). Assuming 25% is fugitive, fugitive NMOC is 1,846 cfm. Fugitive POC emissions, then, are calculated as:

$$\begin{aligned}
 \text{POC, } \frac{\text{lbs}}{\text{yr}} &= \frac{1,846 \text{ ft}^3 \text{ of LFG}}{\text{min}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{24 \text{ hrs}}{\text{day}} \times \frac{365 \text{ days}}{\text{yr}} \times \frac{5,605 \text{ ft}^3 \text{ of NMOC}}{10^6 \text{ ft}^3 \text{ of LFG}} \\
 &\times \frac{16 \frac{\text{lb}}{\text{lb-mol}}}{385.6 \frac{\text{ft}^3 \text{ of NMOC}}{\text{lb-mol}}} \\
 &= 225,655.3 \text{ lbs/yr} = 112.828 \text{ tpy as methane}
 \end{aligned}$$

Offsets required would be:

$$[(41.33 \times 1) + ((112.828 - 41.33) \times 1.15)] = 123.553 \text{ tpy}$$

10. Keller has previously requested, and respectfully requests again, that offsets only be purchased through 2020/2021 for current operations, and respective offsets shall be purchased as needed in following years through closure.
 - a. The basis for this request is due to NMOC values detected in annual Source Tests are variable and therefore it is difficult to project the NMOC for the next thirty years.
 - b. As previously stated, Keller requested BAAQMD to reevaluate the CE when calculating the POC fugitive emissions from the landfill (Source S-1). Literature from approximately 12 to 13 years ago suggests a default value of 75 percent is outdated. Keller Canyon Landfill data indicates that the CE is likely higher than the default value, and therefore less POC fugitive emissions are generated.

District rules do not allow for tiered offsets submittals. All offsets owed must be provided for at the time of issuance of the Authority to Construct or Permit to Operate.

Note: There are plans for a separate entity to permit a high British Thermal Unit (BTU) facility to utilize the landfill gas (LFG) generated from Keller Canyon Landfill to produce pipeline quality renewal natural gas (RNG). With the permitting and operation of this new facility, it is planned that the existing flares at Keller (A-1 and A-2 Flares) will have additional support in abatement of the LFG. Once the facility is operating, Keller Canyon Landfill will want to revisit the sitewide POC limit. District understands this and will evaluate new applications upon receipt.

Additionally, on May 2, 2017, Tetra Tech submitted the Keller Canyon A-1 Flare Replacement Application to the BAAQMD. Tetra Tech received a request for additional information from the BAAQMD on January 4, 2018 and continues to follow-up as needed. The anticipated replacement to the A-1 Flare is a John Zink Ultra Low Emissions (ZULE) flare with best achievable control technology (BACT) for abating LFG from the wellfield. Tetra Tech is currently awaiting a response from the BAAQMD on the status of the A-1 Replacement Flare Application while the COPC for the POCs are finalized. Once the new language is issued for the POCs in Permit Condition Number 17309, Part 33 Keller requests that the A-1 Flare Replacement Application continue to be processed. District understands this and will continue to work on the flare replacement application. Once the POC emissions issues are resolved.

City of Pittsburg Comments

1. The District's document states that KCLC has been exceeding its permitted limit for fugitive POC emissions for the last six years, and that fugitive POC emissions have been steadily increasing over this time period. This is a clear violation of permit condition # 17309, Part 33, which states that fugitive POC emissions from S-1 shall not exceed 40.05 (tpy).

The District agrees that this is a violation of Permit Condition # 17309 Part 33. The violation came into light as the District was reviewing another application for KCLC and was calculating the potential to emit for the facility. This discovery prompted the facility to submit an application for change of permit conditions in order to address the fugitive POC emissions increase. A Notice of Violation (NOV) was also issued to the facility on June 19, 2019 (NOV # A58263).

2. The District's assertion that this project is categorically exempt under CEQA by virtue that the application does not involve any physical modification, will have "no possibility of any significant adverse environmental impacts", and thus will be satisfied under Regulation 2-2 (2-1-312-11.2) by virtue of a "no net increase" argument is patently incorrect. If a project action is deemed to be in non-compliance under CEQA, then disclosure to the public of significant environmental effects is required, and analyses designed to prevent or minimize damage to the environment through development of project engineering alternatives and mitigation measures is required.

KCLC is a unique landfill in the sense that it was permitted after the changes to the New Source Review Regulations came into effect in 1991. As such, this is the only landfill in the Bay Area which is regulated by all the current applicable requirements. In addition to best management practices such as placing adequate daily cover on exposed waste at the end of each day, finding and fixing leaks, etc. project engineering alternatives at a landfill consist of a properly maintained and properly operated landfill gas collection system. KCLC keeps its collection system operating properly and has two flares on-site to abate the landfill gas. Fugitive emissions of landfill gas usually occur through the surface of the landfill and the current BACT requirement for fugitive emissions is to maintain and run the collection system efficiently, which the landfill does.

As previously explained, the basis for the “no net increase” finding is that there is no physical change in the method or operation of the landfill nor has there been any increase in the waste acceptance rate. The increase in non-methane organic compounds is expected over the lifetime of a landfill as the waste undergoes decomposition. At the time of the initial permitting of the landfill, the District had asked the facility to reevaluate their fugitive POC emission limit every five years, which KCLC failed to do. While reviewing a separate application for the replacement of Flare A-2, it was determined that the fugitive POCs were not in compliance and it triggered the need for increasing the fugitive POC limit based on current NMOC concentrations at the landfill. Therefore, it satisfies the “no net increase” exemption under Regulation 2-1-312-11.2. Furthermore, the facility complies with the District’s Best Available Control Technologies for controlling fugitive emissions from a landfill which is the installation of a landfill gas gathering system consisting of horizontal and vertical gas collection lines vented to internal combustion engines or an enclosed flare (Document # 101.1, Revision 1, 10/1/91).

- 3. The presence of sensitive receptors within 250-feet, and downwind of S-1, creates a condition whereby a significant number of residences could be adversely exposed to high levels of POC emissions. Such significant public controversy would necessitate the need for a full CEQA review. More than double the permitted amount of POC emissions for the facility without doing a CEQA review is an alarming finding. The fact that the landfill has been emitting close to 80 tpy, when it was only permitted to emit 40.05 tpy, does not make the POC emissions any less harmful for the health of our residents.*

The District would like to clarify that the toxic emissions from POC emissions are based on the waste design capacity of the landfill. The waste design capacity of the landfill remains unchanged. Therefore, the toxic risk remains unchanged as the initial permitting of the landfill took the total waste design capacity into account to calculate the toxic air contaminant emissions and health risk to the receptors.

- 4. CEQA Section 21082.2 states that the Lead Agency “... shall determine whether a project may have a significant effect on the environment based on substantial evidence in light of the whole record.” Substantial evidence must include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts, and if there is substantial evidence that a project may have a significant effect on the environment, an environmental impact report shall be prepared. By the District’s own acknowledgement, the KCLC facility has been producing significant POC impacts above its permitted levels for years. Thus, CEQA requires an environmental impact report to develop project engineering alternatives, and mitigation measures, to reduce adverse health impacts to our residents.*

As stated earlier, District stands by its decision that this project meets the “no net increase” exemption under Regulation 2-1-312-11.2. While the emissions increase is significant as per Regulation 2-2- 227.2 and triggered the public noticing requirement of Regulation 2-2-404, it did not trigger any impact analysis as it is not a PSD facility.

5. *Finally, in Appendix D of the District's application under permit conditions for Facility #A4618, Condition #17309, Part 36, a previous limit was placed on the quantity of VOC-laden soil handled by the KCLC facility such that no more than 15 pounds of volatile organics could be emitted to the atmosphere per day. Condition 36 has been removed. Although we understand that Condition 37 defines the handling procedures for "contaminated soil(s)", with levels of more than 50 ppmw VOC, the removal of Condition 36 would allow the facility to effectively receive and unlimited amount of VOC soil below 50 ppmw threshold. By removing Condition # 36, the potential increase in overall VOC exposure for the residents of the City of Pittsburg is a high concern.*

The District apologizes for this formatting mistake and any confusion and concern it might have caused. Part # 36 will remain in the Permit Condition # 17309 and the facility will be subject to it.

Appendix D
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 NSR 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 E

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 11/21/2020.

Well Station	Vertical Wells
EW	176
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
HC-2001	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 remaining as of 11/21/2020 are:
- Install up to 22 vertical gas collection wells.
 - Install up to 39 horizontal collectors.
 - Permanently decommission up to 51 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 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.
E027R
 - 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 112.828 tons per any 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 c 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 C₁).
 - 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-1 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-1 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-1 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.