Bay Area Air Quality Management District

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Permit Evaluation
and
Statement of Basis
for
RENEWAL of

MAJOR FACILITY REVIEW PERMIT

for

Republic Services Vasco Road, LLC
Facility #A5095

Facility Address:
4001 North Vasco Road
Livermore, CA 94551

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Application Engineer: Flora Chan
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Application: 18627

TABLE OF CONTENTS

Title V Statement of Basis
Renewal of Major Facility Review Permit
For Republic Services Vasco Road, LLC, Site A5095
Application #18627

A. BACKGROUND

Republic Services Vasco Road, LLC 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 (MFR) because it is a major facility as defined by BAAQMD Regulation 2-6-212. It is a major facility because it has the "potential to emit" (as defined by BAAQMD Regulation 2-6-218) more than 100 tons per year of a regulated air pollutant (in this case, carbon monoxide). Therefore, this facility is required to have an MFR permit pursuant to BAAQMD Regulation 2-6-301.

In addition, it is a designated facility as defined by BAAQMD Regulation 2-6-204. The Emission Guidelines for Municipal Solid Waste Landfills (40 CFR Part 60, Subpart Cc) require the owner or operator of a landfill subject to this part and having a design capacity of 2.5 million megagrams and 2.5 million cubic meters or more to obtain a federal operating permit pursuant to Part 70. This facility is a designated facility because it meets the criteria listed in 40 CFR, Section 60.32c(c). Therefore, this facility is also required to have an MFR permit pursuant to BAAQMD 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, Major Facility Review (MFR). 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 A5095.

This facility received its initial Title V permit on February 5, 2004. The permit was revised on March 12, 2004, June 17, 2004, August 15, 2007, and September 29, 2011. Application # 18627 is for a permit renewal. Although the current permit expired on January 31, 2009, it continues in force until the District takes final action on the permit renewal. The standard sections of the permit have been upgraded to included new standard language used in all Title V permits. Sources and abatement devices that have been permanently shutdown are being removed from

this permit. This proposed renewal permit also includes equipment and permit condition changes that were evaluated by the District pursuant to New Source Review (NSR) Applications #11404, #21153, #21690, and #23770. Pursuant to Regulation 2, Rule 6, section 416, the District has reviewed the terms and conditions of this Major Facility Review permit and determined that they are valid and correct. This review included an analysis of applicability determinations for all sources, including those that have been modified or permitted since the issuance of the initial Major Facility Review Permit. The review also included an assessment of all monitoring in the permit for sufficiency to determine compliance. The proposed renewal permit clearly shows all changes to the permit in strikeout/underline format.

Republic Services Vasco Road, LLC has submitted the following permit applications for new or modified operations that are still undergoing District review: NSR Application #23493 and Title V Application #23494 for gas collection system alterations, NSR Application #20685 biomass processing operations, and NSR Application #18626 to increase operating time for S-9 and to bank emission reduction credits from shut down sources. Since the District's review of these projects is not complete, these applications will not be included in this Title V permit renewal. After the District has completed the evaluation for these projects, the projects will be incorporated into the Title V permit in accordance with the Title V permit revision procedures in Regulation 2, Rule 6.

B. FACILITY DESCRIPTION

Republic Services Vasco Road, LLC (Facility #A5095) is located at 4001 North Vasco Road in Livermore, CA. The Vasco Road is an active MSW landfill that is equipped with a continuously operated landfill gas collection system. For active landfills, the District has changed the manner in which landfill permits are described. For this facility, the single source number for Vasco Road Landfill (S-1) has been split into three source numbers: S-1 for the waste decomposition process, S-12 for the waste and cover material dumping process, and S-13 for the excavating, bulldozing and compacting activities. These source description changes were made to improve the emission calculation methodology for each of these processes. In addition to the landfill, this facility includes the following District permitted equipment: a Non-Retail Gasoline Dispensing Facility (S-7), a Portable Diesel Engine that powers a truck tipper (S-9), and a Landfill Gas Flare (A-4).

The Vasco Road Landfill is a 323-acre Class III disposal site that accepts household, commercial, industrial, construction, and demolition waste but does not accept any hazardous waste or contaminated soil. The maximum design capacity of the site is 31.65 million cubic yards (24.2 million m^3). The waste decomposition process at S-1 generates landfill gas, which contains primarily methane and carbon dioxide (which are greenhouse gases: GHG) and also contains small amounts of non-methane organic compounds (NMOC) and sulfur compounds (mainly hydrogen sulfide). Many of the non-methane compounds (NMOCs) found in landfill gas are precursor organic compounds (POC), and some NMOCs are hazardous air pollutants (HAP) or

Toxic Air Contaminants (TAC). Various local, state, and federal regulations require that landfill gas be collected and controlled to reduce POC and HAP or TAC emissions to the atmosphere. In order to meet these requirements, the landfill at this site is equipped with an active landfill gas collection system and a landfill gas control system.

Active landfill gas collection systems consist of perforated pipes that are buried in the refuse at numerous locations, solid pipes referred to as laterals and headers, and blowers. The perforated pipes are called horizontal collectors or vertical wells, depending on the orientation of the pipes within the refuse. The solid pipes connect to horizontal collectors and vertical wells to the blowers. The blowers collect landfill gas by creating a vacuum in the buried refuse that draws landfill gas into the pipes. The blowers vent this collected landfill gas to the landfill gas control system. The gas collection system at this site previously included 5 horizontal collectors and 83 vertical wells. In 2009, the collection system was expanded by installing 21 new vertical wells. The gas collection system now includes 5 horizontal collectors and 104 vertical wells, and the facility is authorized to install an additional 60 wells during the next few years.

When the Title V permit was initially issued for this site in 2004, the landfill gas control system included a 71 MM BTU/hour capacity enclosed ground flare: the A-3 Landfill Gas Flare. However, A-3 was removed in June 2009 and replaced by a larger 120 MM BTU/hour enclosed flare: the A-4 Landfill Gas Flare. This flare destroys most of the methane, organic compounds, sulfur compounds, HAP, and TAC in the landfill gas, but also produces secondary combustion pollutants including: nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM_{10}), formaldehyde, and acid gases (such as hydrogen chloride and hydrogen fluoride).

When the Title V permit was initially issued for this site, the facility operations included a pugmill (S-5), an ash silo (S-6), a baghouse (A-6), and two diesel engines (S-8 and S-10) that provided power to these operations. This equipment was shut down and permanently removed from this facility in April 2008. The District is proposing to remove these devices (S-5, S-6, A-6, S-8, and S-10) from the Title V permit.

This facility uses engines to provide power to other equipment operating at this site. Engines produce combustion emissions including NO_x, CO, POC, SO_2, PM_{10}, and HAP. Some of these engines are exempt from District permit requirements, because the engines are small engines with an output rating of less than 50 bhp, or because the engines are registered portable engines (registered through the state-wide portable equipment registration program, PERP) that remain at this facility for less than 12 consecutive months. Stationary engines and portable engines that remain at a single facility for more than 12 consecutive months are required to have a District permit to operate. The Title V permit for this facility currently includes a Portable Diesel Engine (S-9) that provides power to the hydraulic lift on the truck tipper. The truck tipper raises one end of the waste delivery trucks to facilitate the dumping of waste onto the active face of the landfill. The S-9 diesel engine is considered to be a portable engine (pursuant to CARB definitions) and a nonroad engine (pursuant to federal definitions), because it moves around within the facility,

does not remain at any single on-site location, and does not return to the same on-site location. However, S-9 is required to have a District permit to operate because it remains at the facility for more than 12 consecutive months. In accordance with Regulation 2, Rule 6, Sections 113 and 114, PERP registered portable engines and non-road engines are not subject to Regulation 2, Rule 6, Major Facility Review. Since S-9 is a nonroad engine and nonroad engines are exempt from Title V permitting requirements pursuant to Regulation 2-6-114, the District is removing S-9 from this Title V renewal permit. Exempt equipment will be identified in Section II of the permit.

The S-7 Non-Retail Gasoline Dispensing Facility (GDF #9551) located at Site# A5095 includes: one 1000 gallon capacity aboveground gasoline storage tank, one gasoline dispensing nozzle, a 10,000 gallon diesel fuel storage (exempt from District permit requirements), and one diesel fuel dispensing nozzle (exempt from District permit requirements). The gasoline and diesel are used to fuel on-site vehicles and equipment such as bulldozers, compactors, trucks, and portable diesel engines. Gasoline storage and transfer operations emit POCs and HAPs.

Since the Title V permit for this facility was first issued in 2004, this facility has undergone a number of equipment changes and permit condition revisions. The impacts of these changes on the emissions from this facility are discussed below. The shutdown of the pugmill, silo, and associated engines (S-5, S-6, S-8, S-10, and A-6) resulted in small decreases in the permitted emission levels for PM_{10}, NO_x, CO, POC, and SO_2. For the S-1 Vasco Road Landfill, the gas collection system alterations and permit condition revisions that have been approved by the District did not result in any changes in permitted emission levels; however, the organic emissions from the landfill have increased over the last seven years due to the higher cumulative amount of waste that is now present in the landfill. The large increases in PM_{10} emissions are primarily due to a District emission factor correction that was made in 2011. The 2009 landfill gas flare replacement project resulted in increases in the permitted emission rates for NO_x, CO, POC, PM_{10}, SO_2, and HAP due to the larger capacity of the new flare. Actual landfill combustion emissions have increased over the last seven years due to the increases in the amount of landfill gas collected and flared. The actual emission changes are presented below.

	2004 Actual Emissions	2011 Actual Emissions	Emission Changes
	tons/year	tons/year	tons/year
PM_{10}	30.7	185.7	155.0
CO	84.6	126.6	42.0
POC	62.5	72.2	8.7
SO_2	14.0	36.0	22.0
NO_x	16.1	33.2	17.1

C. PERMIT CONTENT

The legal and factual basis for the permit follows. The permit sections are described in the order 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 maybe made at the discretion of the District during the term of this permit.

Changes to the Permit, Tile Page:

- None

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 dates of adoption and approval of rules in Standard Condition 1.A. The District is also adding BAAQMD Regulation 2, Rule 5 and SIP Regulation 2, Rule 6 to Standard Condition 1.A.
- The District is correcting the bases of Standard Condition I.B.11, I.E.2, and I.F.
- The following language was added as Standard Condition I.B.12: "The permit holder is responsible for compliance, and certification of compliance, with all conditions of the permit, regardless whether it acts through employees, agents, contractors, or subcontractors. (Regulation 2-6-307)." The purpose is to reiterate that the Permit Holder is responsible for ensuring all activities at the facility comply with all applicable requirements.
- The reporting and certification periods in Standard Conditions I.F and I.G have been clarified.

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. Each of the permitted sources has previously been issued a permit 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. The permitted sources are listed in Table II-A.

Significant sources are those sources that have a potential to emit of more than 2 tons per year of a "regulated air pollutant" (as defined in BAAQMD Rule 2-6-222) or 400 pounds per year of a "hazardous air pollutant" (as defined in BAAQMD Rule 2-6-210). No significant sources have been reported at this facility.

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 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 District is adding an exempt equipment list to this section to clarify the status of various sources and operations. Table II-C will identify any equipment or operations that are located at this facility but that are exempt from Title V permitting requirements. Typically, this table will include equipment or operations that are exempt from the District requirement to have a permit to operate pursuant to BAAQMD Regulation 2, Rule 1, Sections 103, 105, or 113-128 and that are not significant sources. However, it may also include equipment or operations that are required to have a District permit to operate but that are exempt from BAAQMD Regulation 2, Rule 6, Major Facility Review pursuant to Regulation 2, Rule 6, Sections 110-114. The applicable exemption will be identified in Table II-C. Although equipment listed in Table II-C is not required to be identified in the Title V permit, this exempt equipment must still comply with any applicable District, state, or federal regulations.

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.

Following are explanations of the differences in the equipment list between the time that the facility was originally issued a Title V permit (February 2004) and the permit proposal date: In

Table II-A, S-1 was split into S-1, S-12, and S-13; the gas collection system description for S-1 was updated; the A-3 Landfill Gas Flare was replaced by the A-4 Landfill Gas Flare pursuant to NSR Permit Application #11404. In Table II-A, the number of gas collection wells for S-1 was updated pursuant to NSR Applications #21153 and #21690. In Table II-A, the S-5 Pugmill (Mixing of Sludge and Ash), S-6 Silo (For Storing Ash), S-8 Diesel Engine (Powering S-5 Pugmill), S-10 Diesel Engine (Powering Pugmill Control Panel) and A-5 Baghouse are being deleted because this equipment was removed from service in April 2008. As discussed in the Facility Background Section above, the S-9 Portable Diesel Engine, which powers a truck tipper, is being moved from Table II-A to Table II-C, because this source is a non-road engine and is exempt from major facility review pursuant to Regulation 2-6-114.

Changes to Permit, Section II:

- The description of S-1 is being changed to: Vasco Road Landfill – Waste Decomposition Process to clarify that this source number will be used to identify emissions related to waste decomposition process from the landfill. The landfill gas collection system will remain as part of S-1, because the gas collection system is being used to capture the gases generated by the waste decomposition process. The gas collection system description for S-1 is being updated in Table II-A. These collection system changes were authorized by the District pursuant to NSR Applications #22153 and #21690 and are discussed in detail in the Engineering Evaluations for these applications that are provided in Appendices C and D, respectively.
- The active landfilling operations at Vasco Road Landfill were split into 3 source numbers (S-1, S-12, and S-13) to better represent the air pollution emitting activities associated with each source. As noted above, the waste decomposition process remained under S-1. The new source numbers, S-12 Vasco Road – Waste and Cover Material Dumping and S-13 Vasco Road Landfill – Excavating, Bulldozing, and Compacting Activities have been added to Table II-A to represent the particulate emission generating activities that occur at active landfills.
- The pugmill operations (S-5, S-6, S-8 and S-10) are being removed in Table II-A. These sources were shut down and dismantled in April 2008.
- The S-9 Diesel Engine (powering truck tipper) is being removed from Table II-A because S-9 is a non-road engine that is exempt from MFR review pursuant to Regulation 2-6-114. For clarity, this District permitted source is being moved to Table II-C.
- In Table II-B, the A-3 Landfill Gas Flare is being removed and replaced by the A-4 Landfill Gas Flare. The minimum combustion zone temperature for A-4 is being revised based on 2009 source test data for A-4.
- The A-6 Baghouse controlling S-6 is being removed from Table II-B. A-6 was shut down and dismantled in April 2008.
- The District is adding Section II.C, Exempt Equipment List, to clarify the status of non-road engines and other types of sources or operations that are exempt from Title V permitting requirements. The S-9 Portable Diesel Engine is a non-road engine that is exempt from major facility review pursuant to BAAQMD Regulation 2-6-114 Exemption, Non-Road Engines, which states: "Engines as defined by 40 CFR Part 89 are

exempt from this regulation." From 40 CFR Part 89.2, a nonroad engine is defined below:

Nonroad engine means:

(1) Except as discussed in paragraph (2) of this definition, a nonroad engine is any internal combustion engine:

(i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(2) An internal combustion engine is not a nonroad engine if:

(i) the engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Act; or

(ii) the engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or

(iii) the engine otherwise included in paragraph (1)(iii) of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

The S-9 Portable Diesel Engine is portable and moves around from location to location within this facility following the active face of the landfill. This engine powers the hydraulic lift on a truck tipper, which raises one end of the waste delivery truck to facilitate the dumping of the waste out of the truck and onto the landfill's active waste disposal area. In accordance with paragraph (1)(iii) above, such portable engines are nonroad engines unless paragraph (2) applies. While S-9 remains within the property boundaries of this facility for more than 12 consecutive months, it does not remain at any single site at a building, structure, or installation for more than 12 consecutive months. Since S-9 operates at multiple locations within this facility and S-9 is portable, it meets the definition above of nonroad engine and qualifies for the Regulation 2-6-114 exemption.

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" as defined in BAAQMD Rule 2-6-239. This facility has no unpermitted significant sources.

Changes to Permit, Section III:

- Editorial corrections were made to the text in this section.
- The District is adding EPA's website address for the SIP standards to Section III.
- 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:
    - BAAQMD Regulation 1, General Provisions and Definitions
    - BAAQMD and SIP Regulation 2, Rule 1, Permits – General Requirements
    - BAAQMD and SIP Regulation 2-1-429, Permits – Federal Emissions Statement
    - BAAQMD Regulation 2, Rule 5, Permits – New Source Review of Toxic Air Contaminants
    - BAAQMD and SIP Regulation 4, Air Pollution Episode Plan, which is applicable to this site because it emits more than 100 tons/year of a regulated air pollutant.
    - BAAQMD Regulation 6, Rule 1, Particulate Matter – General Requirements
    - SIP Regulation 6, Particulate Matter and Visible Emissions
    - BAAQMD and SIP Regulation 8, Rule 2, Organic Compound – Miscellaneous Operations
    - BAAQMD and SIP Regulation 8, Rule 3, Organic Compounds – Architectural Coatings
    - SIP Regulation 8, Rule 4, Organic Compounds – General Solvent and Surface Coating
    - BAAQMD Regulation 8, Rule 15, Organic Compounds – Emulsified and Liquid Asphalts
    - SIP Regulation 8, Rule 16, Organic Compounds – Solvent Cleaning Operations
    - BAAQMD and SIP Regulation 8, Rule 40, Organic Compounds – Aeration of Contaminated Soil and Removal of Underground Storage Tanks

- BAAQMD and SIP Regulation 8, Rule 47, Organic Compounds – Air Stripping and Soil Vapor Extraction
- SIP Regulation 8, Rule 47, Organic Compounds – Air Stripping and Soil Vapor Extraction
- BAAQMD and SIP Regulation 9, Rule 1, Inorganic Gaseous Pollutants – Sulfur Dioxide
- BAAQMD Regulation 9, Rule 2, Inorganic Gaseous Pollutants - Hydrogen Sulfide
- California Health and Safety Code Section 41750 et seq., Portable Equipment
- California Health and Safety Code, Title 17, Section 93105, Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying and Surface Mining Operations
- California Health and Safety Code, Title 17, Section 93106, Asbestos Airborne Toxic Control Measure for Asbestos Containing Serpentine
- California Health and Safety Code, Title 17, Section 93116, Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater
- EPA Regulation 40 CFR Part 61, Subpart A, National Emission Standards for Hazardous Air Pollutants – General Provisions
- EPA Regulation 40 CFR Part 61, Subpart M, National Emission Standards for Hazardous Air Pollutants – National Emission Standard for Asbestos

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.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- California requirements (such as ATCMs)
- 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 of the applicable requirements. The text of the requirements is found in the regulations, which are readily available on the District or EPA 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.

EG and District Regulations for Vasco Road Landfill

Landfills and landfill gas combustion equipment are subject to BAAQMD Regulation 8, Rule 34. This regulation requires landfills that have more than 1 million tons of refuse in place to collect and control the landfill gas that is generated by waste decomposition and specifies numerous operating, monitoring, and reporting requirements for subject operations. Regulation 8, Rule 34 has required that Vasco Road Landfill be controlled by an active landfill gas collection system and landfill gas control system since 1987.

Landfills and landfill gas combustion equipment may also be subject to either the federal New Source Performance Standards (NSPS) for Municipal Solid Waste (MSW) Landfills or the Emission Guidelines (EG) for MSW Landfills. The federal NSPS for MSW Landfills (40 CFR Part 60, Subpart WWW) applies to landfills that have had a design capacity modification after May 30, 1991. The EG for MSW Landfills (40 CFR Part 60, Subpart Cc) applies to landfills that have had no design capacity modification since May 30, 1991 but that have accepted waste since November 8, 1987. The Vasco Road Landfill has had no design capacity modifications since May 30, 1991, but has accepted waste after November 8, 1987. Therefore the EG is applicable to this disposal facility.

Regulation Applicability for the S-9 Portable Diesel Engine

As discussed in the equipment section, the District has determined that the S-9 Portable Diesel Engine is a nonroad engine because it does not remain at any single location within this facility for more than 12 consecutive months. Since S-9 is a nonroad engine, it is exempt from major facility review pursuant to Regulation 2-6-114. Therefore, the District is proposing to remove Tables IV-F and VII-F and Condition #20511 for S-9 from this draft renewal permit. However, since S-9 will remain a District permitted source at this facility, S-9 must continue to comply with all applicable requirements. For clarity, the applicable requirements for S-9 are identified below, even though these requirements will not be specifically identified in the MFR permit for this site.

BAAQMD Regulation 6, Rule 1 and SIP Regulation 6 apply to all combustion devices. Since S-9 has a displacement of less than 1500 in^3, it is subject to the Ringelmann 2.0 limitation in BAAQMD Regulation 6-1-303 and SIP Regulation 6-303 pursuant to BAAQMD 6-1-303.1 and SIP 6-303.1, respectively. This diesel engine is also subject to the prohibition on emitting visible

particles (BAAQMD 6-1-305 and SIP 6-305), the particulate weight limitation (BAAQMD 6-1-310 and SIP 6-310), and the requirement to know the appearance of emissions from this source (BAAQMD 6-1-401 and SIP 6-401).

Diesel engines emit sulfur dioxide are subject to the fence-line ground level sulfur dioxide emission limitation and the liquid fuel sulfur content limit in BAAQMD and SIP Regulations 9-1-301 and 9-1-304.

BAAQMD Regulation 9, Rule 8 applies to stationary internal combustion engines. As defined in BAAQMD Regulation 9-8-204, a stationary internal combustion engine is: "Any spark or compression ignited internal combustion engine that is operated, or intended to be operated, at a specific site for more than one year or is attached to a foundation at that site." Although S-9 is a portable diesel engine and will move around within this site, it will remain at this specific site for more than one year. Therefore, for the purposes of Regulation 9, Rule 8, S-9 is considered to be a stationary internal combustion engine even though it is also portable engine. Currently, S-9 is exempt from the emission limits in Sections 301-305 pursuant to BAAQMD Regulations 9-8-110.1 and 9-9-110.3. However, these exemptions will expire on January 1, 2012. Effective January 1, 2012, S-9 must comply with the emission limits in BAAQMD Regulation 9-8-304.1 (180 ppmv of NO_x and 440 ppmv of CO at 15% O_2, dry basis), unless the permit holder requests a delayed compliance date in accordance with Regulation 9-8-402 and complies with the more stringent Regulation 9-8-305 limits instead by January 1, 2016. Other applicable sections include: 9-8-401, 9-8-402, 9-8-501, 9-8-502, 9-8-502.3, 9-8-502.4, and 9-8-503. The NO_x and CO emission limits are not federally enforceable because these recent amendments to Regulation 9, Rule 8 have not been adopted into the District's SIP by EPA.

The NSPS for Compression Ignition Internal Combustion Engines (40 CFR Part 60, Subpart IIII) is potentially applicable to any stationary compression ignition engines at a site. The S-9 Portable Diesel Engine is a compression-ignition (CI) internal combustion (IC) engines. However, portable engines are usually considered to be nonroad engines and would not typically be defined as stationary engines under this subpart. Portable engines that remain at a location for longer than 12 consecutive months are no longer considered to be nonroad engines (per 40 CFR Part 1068.30, paragraph (2)(iii) of the nonroad definition). In this case, a location is defined as "any single site at a building, structure, facility, or installation." S-9 is moved around to different locations within this facility and does not reside at any single location for more than 12 consecutive months. Therefore, S-9 will continue to be considered a nonroad engines for the purposes of federal NSPS and NESHAP requirements.

Pursuant to 40 CFR, Part 60.4200(a)(2), subpart IIII applies to owners or operations of stationary compression-ignition IC engines that commence construction after July 11, 2005. Since S-9 is a nonroad engines, this engine is not a stationary engine (pursuant to the definition of stationary internal combustion engine in 40 CFR Part 60.4219) and is not subject to Subpart IIII.

The NESHAP for Stationary Reciprocating Internal Combustion Engines (40 CFR, Part 63, Subpart ZZZZ) applies to reciprocating IC engines (RICE) located at major and area sources of HAP. As discussed above for Subpart IIII, S-9 is a nonroad engine, because it is a portable engine that does not reside at a single on-site location for more than 12 consecutive months. Therefore, S-9 is not a stationary RICE pursuant to the definition on stationary RICE in 40 CFR Part 63.6675, and Subpart ZZZZ does not apply to S-9.

Portable compression ignition engines are subject to the California Airborne Toxic Control Measure (ATCM) for Diesel Particulate Matter from Portable Engines rated at 50 Horsepower and Greater (California Health and Safety Code, Title 17, Section 93116). S-9 is subject to this non-federally enforceable ATCM. This ATCM requires S-9 to use CARB certified diesel fuel, to be a CARB certified engine, sets fleet average diesel PM emission limits, and imposes record keeping and reporting requirements. The following subparts of Section 93116 apply to S-9: 93116.1, 93116.1(a), 93116.3, 93116.3(a, b, b(2), c, c(1), and d), 93116.4, 93116.4(e, e(1), e(2)), and 93116.5.

Applicability of 40 CFR Part 64, Compliance Assurance Monitoring (CAM)

Sources at Title V facilities may be subject to the Compliance Assurance Monitoring (CAM) requirements in 40 CFR, Part 64. The District has reviewed applicability of the Compliance Assurance Monitoring (CAM) requirements in 40 CFR, Part 64, for this facility. Three criteria specified in 40 CFR Part 64.2(a)(1-3) must be met for CAM to apply:

- The source must be subject to a federally enforceable emission limit for a regulated air pollutant, other than an exempt limitation.
- The source must use a control device to achieve compliance with this emission limitation.
- The pre-controlled emissions of the specific pollutant being controlled must be greater than the major facility emissions threshold for that pollutant.

Vasco Road Landfill with Gas Collection System (S-1); abated by Landfill Gas Flare (A-4):

At this facility, the landfill waste decomposition process and its related emission control device (S-1 and A-4) are exempt from the first CAM applicability criteria, 40 CFR Part 64.2(a)(1), pursuant to 40 CFR Part 64.2 (b)(1)(i), because the landfill and landfill gas control and landfill gas control systems are subject to the EG and NESHAP requirements identified above, and these EG and NESHAP requirements were adopted pursuant to Section 111 and 112 of the Clean Air Act after November 15, 1990. Since the applicable federal requirements contain adequate monitoring provisions, additional compliance assurance monitoring is not necessary. Since the landfill and its related control devices do not satisfy all three CAM applicability criteria, CAM does not apply to S-1 and A-4.

Although the Non-Retail Gasoline Dispensing Facility (S-7) does employ control measures that reduce organic compound emissions compared to uncontrolled fuel dispensing operations, the Phase I and Phase II vapor balance systems, pressure relief valves, and other leak prevention measures used at S-7 are inherent parts of the system design that are intended to prevent organic compounds from being emitted into the atmosphere rather than to remove or destroy organic

compounds from an exhaust stream. These types of inherent process equipment and passive control measures are not considered to be control devices under the control device definition in 40 CFR Part 64.1. In addition, the uncontrolled POC emissions from S-7 are less than the major facility emissions threshold (100 tons/year). Since S-7 does not meet either the second or the third CAM applicability criteria – 40 CFR Part 64.2(a)(2 or 3), S-7 is not subject to CAM.

Change to Permit, Section IV:

- Editorial corrections were made to the text of Section IV.
- The EPA web address for the District's SIP-approved rules was added to this section.
- Tables IV-B, IV-C, IV-E, and IV-G were removed from the permit because the associated equipment (S-5, S-6, A-6, S-8, and S-10) have been shut down and removed from this facility.
- Table IV-F was removed from the permit because S-9 is a non-road engine that is exempt from MFR pursuant to BAAQMD Regulation 2-6-114.
- Table IV-D for the S-7 Non-Retail Gasoline Dispensing Facility was renamed as Table IV-B.
- Throughout Section IV, the dates of adoption, amendment, or approval of the rules and their "federal enforceability" status have been updated for the following rules: BAAQMD Regulation 1; BAAQMD Regulation 6, Rule 1; SIP Regulation 6; BAAQMD Regulation 8, Rule 2; BAAQMD Regulation 8, Rule 34; 40 CFR Part 60 Subpart A; 40 CFR Part 62 Subpart F; 40 CFR Part 63, Subparts A and AAAA in Table IV-A and BAAQMD and SIP Regulation 8, Rule 5 in Table IV-B. In some cases, the most recent BAAQMD rule amendments (such as the 7/20/05 amendments to Regulation 8, Rule 2, the 6/15/05 amendments to Regulation 8, Rule 34, and the 3/15/95 amendments to Regulation 9, Rule 1) involved changes to these rules that had no impact on the applicability or execution of the rule or the associated source-specific applicable requirements. In such cases, the specific applicable requirement was identified as federally enforceable because the BAAQMD version of the cited requirement was identical to the SIP version of the cited requirement.
- In Table IV-A, the A-3 Flare was replaced with the A-4 Flare. The District has also clarified which source-specific requirements apply to this flare.
- In Table IV-A, the District revised the description of several wellhead requirements (BAAQMD Regulation 8-34-305.1-4) for consistency with standard Title V permitting procedures. The descriptions of these sections contained a specific limit, which was replaced by a more general description of the type of limit
- In Table IV-A, the applicable requirements for 40 CFR Part 62, Subpart F were clarified.
- In Table IV-A, a missing section (63.1955(a)) from 40 CFR Part 63, Subpart AAAA was added to Table IV-A.
- In Tables IV-A and IV-B, the permit condition basis of "Toxic Risk Management Policy" was replaced by the applicable Regulation 2, Rule 5 section. Regulation 2, Rule 5 replaced the District's Toxic Risk Management Policy in 2005.

- In Table IV-A, the descriptions of the requirements in Condition #818, Parts 8, 10, 12, 13, 14, 18 and 20 were updated and Parts 9, 11, and 17 were deleted based on the proposed changes to these permit conditions in Section VI.
- The footnote to Table IV-A was deleted because it is not necessary. Text in the preamble of Section IV explains that sites must comply with both the BAAQMD and the SIP version of any applicable rule.

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."

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.

The BAAQMD Compliance and Enforcement Division is conducting a review of compliance for the period from 2/5/2004 to 12/13/2011, and notes that Republic Services, was in intermittent compliance. There was no evidence of ongoing noncompliance and no recurring pattern of violations that would warrant consideration of a Title V permit compliance schedule for this facility. The compliance report will be added to Appendix A of this permit evaluation and statement of basis.

Changes to Permit, Section V:

- The District is not proposing any changes to this section.

VI. Permit Conditions

Each permit condition is identified with a unique numerical identifier, up to five digits. 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 will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review.

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, Rule 2, Section 301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2, Rule 1, Section 403.
- 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 condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy. This policy was replaced by Regulation 2, Rule 5 in 2005.

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

Since the last revision of the Title V permit, this site has discontinued the operation of S-5 subject to Condition #12203, S-6 and A-6 subject to Condition #12204, S-8 subject to Condition #20396, and S-10 subject to Condition #20512. The District is removing these permit conditions from the Title V permit since the devices have been shut down. The District is also removing Condition #20511 for the S-9 Portable Diesel Engine from the Title V permit, because S-9 is exempt from MFR pursuant to Regulation 2-6-114. In Condition #818, the District is incorporating permit condition revisions that originated from the District's new source review of landfill gas collection and control system modifications at this site (pursuant to NSR Applications #11404, #21153, and #21690). Condition #818 for S-1 and A-4 and Condition

#7523 for S-7 have been reviewed again for this permit renewal. Conditions that are obsolete or that have no regulatory basis have been deleted from the permit, conditions have been revised to improve clarity, and regulatory bases have been updated and corrected. The proposed changes to each part of Condition #818 and #7523 are explained in more detail below.

Changes to Permit, Section VI:

- Condition # 818, Part 1: The District replaced A-3, which was shut down in 2009, with the new flare abatement device number (A-4).
- Condition # 818, Part 2: Text was revised for consistency with the landfill gas collection system description and operating requirements for other active landfill sites. The number of currently operating vertical wells and the authorized number of future vertical well installations were increased pursuant to NSR Application # 21690.
- Condition # 818, Part 3: Text was added to clarify the operating requirements for the landfill gas collection system.
- Condition # 818, Part 4: The District replaced A-3 with A-4. The basis for this part was clarified.
- Condition #818, Part 5: The District replaced A-3 with A-4. The average combustion zone temperature measured during the June 2009 source test on A-4 was 1452 degrees F. In accordance with the criteria stated in this part, the District changed the minimum combustion zone temperature for A-4 from 1650 degrees F to 1402 degrees F based on this June 2009 source test data. The basis for this part was updated because the District's TRMP has been replaced by Regulation 2, Rule 5. The minimum combustion zone temperature for the flare is a TBACT limit and the applicable section is Regulation 2-5-301.
- Condition # 818, Part 6: The District replaced A-3 with A-4.
- Condition # 818, Part 7: The District replaced A-3 with A-4.
- Condition # 818, Parts 8 and 10: The District replaced A-3 with A-4. The NOx and CO emission limits for A-4 were set pursuant to NSR Application #11404.
- Condition # 818, Parts 9-11: The District has removed the daily NO_x, CO, and PM_{10} emission limits for A-3, because A-3 has been shut down and these limits are obsolete. The proposed NO_x and CO limits in Parts 8 and 10, combined with the proposed heat input limits in Part 13, will assure compliance with the maximum permitted daily NO_x and CO emission limits for A-4. Therefore, it is not necessary to repeat these daily NO_x and CO emission limits in permit conditions. Since particulate emissions from A-4 are very low and are not expected to ever exceed the maximum permitted PM_{10} emission rates for A-4, the District determined it was not necessary to explicitly identify the PM_{10} emission limit for A-4 in these permit conditions.
- Condition # 818, Part 12: The District has determined that the landfill gas sulfur content limit of 320 ppmv of TRS in Part 12 is sufficient to ensure that sulfur dioxide emissions from the A-4 flare will not exceed the maximum permitted SO_2 emission rate for A-4 or the 9-1-302 limit of 300 ppmv of SO_2 in the flare exhaust. A landfill gas concentration of 320 ppmv of TRS will result in a maximum outlet SO_2 concentration of 67 ppmv in the flue gas from the flare. The applicant requested that this TRS limit be expressed as an

annual average limit with compliance verified by quarterly monitoring. Since a landfill gas concentration of 320 ppmv of TRS will result in a maximum outlet SO_2 concentration that is well below the 300 ppmv SO_2 limit for emission points and the landfill gas sulfur content does not vary significantly, an annual average limit is acceptable. The total reduced sulfur compounds found in landfill gas include hydrogen sulfide. Typically, H_2S makes up 95% or more of the TRS content in landfill gas. Since the lower hydrogen sulfide limit of 80 ppmv in Part 12 will not allow any higher SO_2 emissions than the TRS limit alone, this H_2S limit is not necessary for the purposes of tracking SO_2 Cumulative Increases or for compliance with Regulation 9-1-302. Therefore, the District is proposing to remove the H_2S limit from Part 12. A landfill gas hydrogen sulfide limit (combined with the maximum landfill gas generation rate for a site) will limit the fugitive H_2S emissions from the landfill and the residual H_2S emissions from the flare and could be necessary to demonstrate compliance with the site's fence-line H_2S limits (Regulation 9-2-301) or with the District's NSR requirements for toxic air contaminants (Regulation 2-5-302), which are both non-federally enforceable requirements. The District could find no clear link between these H_2S requirements and the 80 ppmv limit for H_2S in landfill gas. Under Application # 23770, the District evaluated the health impacts that would result from the increase in H_2S emissions that would occur due to the removal of the 80 ppmv H_2S landfill gas concentration limit. For this analysis, all of the TRS was assumed to be H_2S; therefore, the proposed H_2S emissions were based on a landfill gas H_2S content of 320 ppmv. The maximum ground level H_2S concentration (4.3E-4 ppmv) and health impacts due to the proposed H_2S emissions were well below the regulatory limits. Therefore, the removal of the landfill gas H_2S limit is acceptable.

- Condition # 818, Part 13: The District is replacing the heat input limits for A-3 with the new heat input limits for A-4 and is revising the bases for this part in accordance with NSR Application # 11404 for A-4. The District is also identifying a more accurate heat input rate calculation methodology using continuous landfill gas flow rate measurements and monthly landfill gas methane concentration measurements, which are already required by Part 3(b).
- Condition # 818, Part 14: The District clarified the limit in Part 14b.
- Condition # 818, Parts 16, 18, and 21: The District updated the bases for these parts. The District's TRMP was replaced by project risk limits in Regulation 2-5-302.
- Condition #818, Part 17: The District deleted this part because the S-5 pugmill has been shut down, and the landfill no longer uses pugmill product as daily cover material.
- Condition # 818, Part 19: The District updated the bases listed for this part. Regulation 6 has been renumbered as Regulation 6, Rule 1.
- Condition # 818, Part 20: The District replaced A-3 with A-4. The District is deleting the THC testing requirements because the THC limit for landfill gas flares was replaced by NMOC limits in Regulation 8-34-301.3. The time period for the annual source test was revised for consistency with other Title V permits. The bases for this part were updated.
- Condition # 818, Part 22: The District replaced A-3 with A-4, clarified record keeping procedures for A-4, and updated the bases for this part.

- Condition #7523: The District updated the basis for this part. The District's TRMP was replaced by project risk limits in Regulation 2-5-302.
- Condition #12203, Part 1-8: The District is deleting this condition because S-5 was removed from the facility.
- Condition #12204, Part 1-4: The District is deleting this condition because S-6 was removed from the facility.
- Condition #20396, Part 1-3: The District is deleting this condition because S-8 was removed from the facility.
- Condition #20511, Part 1-3: The District is deleting this condition because S-9 was removed from this permit pursuant to Regulation 2-6-114.
- Condition #20512, Part 1-3: The District is deleting this condition because S-10 was removed from the facility.

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.

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.

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 requirements only when it can support a conclusion that existing monitoring is inadequate**.**

The tables below contain only the federally enforceable limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for all 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.

SO_2 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-4 Landfill Gas Flare	BAAQMD 9-1-301	Property Line Ground Level SO_2 Limits: $\leq$ 0.5 ppm for 3 minutes and $\leq$ 0.25 ppm for 60 min. and $\leq$ 0.05 ppm for 24 hours	None

SO_2 Discussion:

Potential to Emit Calculations for A-4 Landfill Gas Flare:

For SO_2 calculations, the landfill gas is assumed to contain 50% methane and to have a high heating value of 496 BTU/ft^3 at 70 °F. For landfill gas containing 50% methane, the theoretical flue gas production rate is estimated to be 4.7847 standard dry cubic feet (sdcf) of flue gas (at 0% excess oxygen) per sdcf of landfill gas. The A-4 flare is assumed to operate continuously at maximum capacity of 120 MM BTU/hour.

(1,051,200 MM BTU/year)*(1.0E6 BTU/1 MM BTU)/(496 BTU/ft^3 LFG)*(320 ft^3 H_2S/1.0E6 ft^3 LFG)/(386 ft^3 H_2S/lbmol H_2S)*(1 lbmol SO_2/1 lbmol H_2S)*(64.06 pounds SO_2/lbmol SO_2)/(2000 pounds SO_2/ton SO_2) = 56.3 tons SO_2/year

Maximum SO_2 Concentration in Flare Exhaust:

(320 ft^3 H_2S/1.0E6 ft^3 LFG)*(1 ft^3 SO_2/1 ft^3 H_2S)/(4.7847 ft^3 flue gas at 0% O_2/1.0 ft^3 LFG) = 7.69E-5 ft^3 SO_2/ft^3 flue gas at 0% O_2 = 67 ppmv of SO_2 in flue gas from A-4

Definitions of the terms used above are contained in the glossary.

BAAQMD Regulation 9-1-301: This facility will be subject to federally enforceable limits, which will ensure compliance with the BAAQMD Regulation 9-1-302 gas stream emission limit of 300 ppmv of SO_2 in the flare exhaust. As shown above, the TRS limit in Part 12 will result in

a maximum concentration of 67 ppmv of SO_2 in the flare exhaust, which is less than one quarter of the 9-1-302 limit. Based on air dispersion modeling analyses conducted at other landfill sites, the District has found that sources that are complying with the BAAQMD Regulation 9-1-302 limit are unlikely to result in an excess of the ground level concentration limits listed in BAAQMD Regulation 9-1-301. Monitoring for ground level SO_2 concentrations in addition to the proposed continuous landfill gas flow rate monitoring, annual landfill gas TRS content monitoring, and record keeping requirements would not be appropriate, because the likelihood of non-compliance with the ground level SO_2 emission limits is extremely low.

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
A-4 Landfill Gas Flare	BAAQMD 6-1-301 and SIP 6-301	Ringelmann 1.0	None
A-4 Landfill Gas Flare	BAAQMD 6-1-310 and SIP 6-310	$\leq$ 0.15 grains/dscf	None

PM Discussion:

Potential to Emit Calculations for A-4 Landfill Gas Flare:

The maximum potential PM_{10} emissions from A-4 are based on the maximum permitted PM_{10} emission rate for A-4 (0.022 lbs/MM BTU) and continuous operation of A-4. For comparison, the AP-42 emission factor for landfill gas fired flares: 17 pounds of PM_{10} per million dry standard cubic feet (dscf) of methane (CH_4) is equivalent to 0.017 lbs/MM BTU for landfill gas containing 50% methane (HHV = 496 BTU/scf).

(1,051,200 MM BTU/year)*(0.022 lbs PM_{10}/MM BTU)/(2000 pounds PM_{10}/ton PM_{10})
= 11.6 tons PM_{10}/year

Maximum Grain Loading in Flare Exhaust:

(0.022 lbs PM_{10}/1E6 BTU)*(496 BTU/1.0 ft^3 LFG)/(4.7847 ft^3 flue gas at 0% O_2/1.0 ft^3 LFG)*
(7000 grains PM_{10}/1.0 lbs PM_{10}) = 0.016 grains/dscf of flue gas at 0% O_2

BAAQMD Regulation 6-1-301 and SIP 6-301 for A-4 Landfill Gas Flare: Visible particulate emissions are normally not associated with combustion of gaseous fuels, such as natural gas or landfill gas. Since maximum potential particulate emissions are not substantial and violations of Ringelmann 1.0 limit are not expected, periodic monitoring for the Ringelmann limit would not be appropriate for this flare.

BAAQMD Regulation 6-1-310 and SIP 6-310 for A-4 Landfill Gas Flare: Regulation 6-1-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. As shown above, A-4 will have a maximum particulate grain loading rate of 0.016 grains/dscf (at 0% excess oxygen). The outlet grain loading rate from A-4 will be less than 0.01 gr/sdcf under typical actual combustion conditions.

The grain loading limit of 0.15 gr/dscf is far above the maximum expected grain loading rate of 0.016 gr/sdcf with a compliance margin (limit/emissions) of more than 9:1. Since particulate emissions testing is costly (compared to testing costs for other criteria pollutants), the likelihood of non-compliance with the Regulation 6-1-310 limit is very low, and PM_{10} emissions from A-4 are not substantial, it would not be appropriate to add periodic monitoring for the Regulation 6-1-310 standard.

Changes to Permit, Section VII:

- A note is being added at the beginning of the section to clarify that this section is a summary of the limits and monitoring, and that in the case of a conflict between Sections I-VI and Section VII, the preceding sections take precedence.
- Tables VII-B, VII-C, VII-E, and VII-G have been deleted because the associated equipment (S-5, S-6, A-6, S-8, and S-10) has been removed from this site.
- Table VII-F has been deleted because the S-9 Portable Diesel Engine is exempt from MFR per Regulation 2-6-114.
- Table VII-D for the S-7 Non-Retail Gasoline Dispensing Facility has been renumbered as Table VII-B.
- In Tables VII-A and VII-B, the District is adding symbols ($\leq$ or $\geq$) to clarify limits.
- In Table VII-A, references to A-3 were replaced with A-4.
- In Table VII-A, the wellhead temperature limit was clarified by adding the equivalent Fahrenheit temperature limit.
- For the wellhead and landfill gas concentration limits in Table VII-A, the District clarified that these limits are volumetric dry basis limits.
- For TOC and NMOC limits in Table VII-A, the District added text to indicate the type of limit.
- As discussed in Section VI, the District revised the A-4 combustion zone temperature limit based on 2009 source test data. This revised limit is reflected in Table VII-A.
- The District removed the obsolete A-3 Flare emissions limits (NO_x, CO, and PM_{10}) from Table VII-A.
- The District added the correct NO_x and CO outlet concentration and emission rate limits for A-4 to Table VII-A.
- As discussed in Section VI, the District removed the landfill gas H_2S limit (80 ppmv) from Condition #818, Part 12. This H_2S limit was also removed from Table VII-A.
- The heat input limits for A-3 were replaced by the appropriate heat input limits for A-4. The existing monitoring procedures for these heat input limits were clarified.

- As discussed in Section VI, the Condition #818, Part 14b limit of 23.8 million tons was clarified to be a limit on the cumulative amount of decomposable materials placed in the landfill. The description of this limit in Table VII-A was also revised.
- The type of limit was clarified for TAC concentration limits in VOC and metal laden soil.
- In Table VII-B for the S-7 Non-Retail Gasoline Dispensing Facility, the District is incorporating the Regulation 8, Rule 5 amendments approved in 2006. S-7 is exempt from BAAQMD Regulation 8, Rule 5. Therefore, only SIP Regulation 8, Rule 5 applies to S-7 at this time. The District is also adding a missing pressure setting limit and a missing gas tight limit for the pressure vacuum valve on the above ground gasoline storage tank, which are identified in SIP Regulation 8, Rule 5, Sections 303.1 and 303.2.
- In Table VII-B, the District added several limits from Regulation 8, Rule 7 (related to component repair time, liquid leak rates, and pressure settings) that were missing from this table. All of these limits were previously identified in Section IV for the permit.

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" as defined by Regulation 2-6-202.

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

Changes to the Permit, Section VIII:

- The introductory text to Section VIII was corrected.
- In Table VIII, the District revised the particulate limit citations to reflect that SIP Regulation 6 has been renumbered and is now BAAQMD Regulation 6, Rule 1. The District also added the applicable EPA test methods for the particulate emission limits.
- The test method for the Regulation 6-311 limit was deleted because no equipment was subject to this limit.
- The District added the SIP 8-2-301 limit and clarified the descriptions of this limit and the applicable test methods.
- The District added a missing test method for SIP Regulation 8-5-303.2.
- The District clarified the descriptions for several Regulation 8, Rule 34 limits in Table VIII.
- The District added the applicable test methods for the Regulation 8-40-116.2 exemption determination.
- The District removed Regulation 9-1-304 from Table VIII, because no sources in this permit are subject to this liquid fuel sulfur content limit. All diesel engines at this site were either shut down or removed from this permit.

- The District clarified the test methods for several limits identified in Condition #818, Parts 3, 5, 8, 10, 12, 13, and 16.
- The District removed the test methods for Condition #818 Parts 9 and 11 because these parts have been deleted from Condition #818.
- The District removed the test method for Condition #12203, Part 4 because S-5 was shut down and Condition # 12203 no longer applies to this site.

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 the Permit, Section X:

- The District added descriptions of the permit revisions associated with this MFR Renewal Permit (Application # 18627) to Section X.

XI. Glossary

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

Changes to the Permit, Section XI:

- The District is updating the Section XI Glossary by clarifying explanations and adding numerous new terms.

XII. Applicable State Implementation Plan

Changes to the Permit, Section XII:

- The District is deleting this section. The address for EPA's website is now found in Sections III and IV of the permit.

D. ALTERNATE OPERATING SCENARIOS

No alternate operating scenarios were requested for this facility.

E. COMPLIANCE STATUS

An office memorandum, dated January 26, 2012, from the Director of Compliance and Enforcement, to the Director of Engineering, presents a review of the compliance record for Republic Services Vasco Road, LLC (Site #: A5095). The Compliance and Enforcement Division staff has reviewed the records for this site as part of the District's evaluation of Republic Services' application for renewal of their Title V permit. The records were reviewed for the time period from February 5, 2004 through December 13, 2011. During the period subject to review, activities known to the District include:

- The District issued 12 Notices of Violation (NOV) during this period. These NOVs are described in detail in Appendix A.
- The District received 1 unconfirmed air pollution complaint alleging Republic Services Vasco Road, LLC as the source of an odor.
- The District received 14 notifications of Reportable Compliance Activities (RCA) during this period. Two RCAs were determined to be duplicates. The District issued two NOVs as a result of reportable compliance activities. The RCAs are described in detail in Appendix A.
- The facility is not operating under an Enforcement Agreement, a Variance, or an Order of Abatement.

The responsible official for Republic Services Vasco Road, LLC certified that all equipment was operating in compliance on February 27, 2012. The required annual compliance certification was submitted on February 29, 2012.

The District's Compliance and Enforcement Division has determined that Republic Services was in intermittent compliance during the period of February 5, 2004 through December 13, 2011. However, Republic Services has demonstrated no evidence of ongoing noncompliance and no recurring pattern of violations that would warrant consideration of a Title V permit compliance schedule for this facility. Based on this review and analysis of all the violations during the review period, the District has concluded that no schedule of compliance is necessary.

F. DIFFERENCES BETWEEN THE APPLICATION AND THE PROPOSED PERMIT

The initial Title V permit for this facility was issued on February 5, 2004 (Application # 2631). The District issued an Administrative Amendment on March 12, 2004 (Application # 2244), a Significant Revision on June 17, 2004 (Application # 2244), an Administrative Amendment on August 15, 2007 (Application #15066), and an Administrative Amendment on September 29, 2011 (Application #20703). The September 29, 2011 version of the Title V permit for Site # A5095 is the basis for constructing the proposed Title V renewal permit.

The Title V permit application for renewal (Application #18627) was originally submitted on July 25, 2008. In these application materials, Republic Services requested the following specific changes to the Title V permit for this site:

- Republic Services indicated that S-6, S-6, A-6, S-8, and S-10 had been shut down and that Republic Services had no plans to operate this equipment in the future. Republic Services requested that this equipment be removed from the Title V permit.
- Republic Services indicated that a new landfill gas flare (A-4) had been installed but was not yet operating. Republic Services requested that A-4 be included in the Title V renewal permit.
- Republic Service requested that the other remaining existing equipment (S-1 Vasco Road Landfill, A-3 Landfill Gas Flare, S-7 Non-Retail Gasoline Dispensing Facility, and S-9 Diesel Engine for Truck Tipper) be included in the Title V renewal permit.
- For S-1, Republic Services requested to be allowed to accept up to 20,000 cubic yards per year of contaminated soil (soil containing more than 50 ppmw of VOC) for disposal at S-1. The current permit language prohibits the acceptance of contaminated soil at this landfill (Condition #818, Part 15).
- For S-9, Republic Services requested to increase the allowable operating hours in Condition #20511, Part 1 from 6 hours/day to 11 hours/day.

As indicated above, the September 29, 2011 version of the Title V permit for Site # A5095 was used as the basis for constructing the proposed Title V renewal permit. The District reviewed the applicant's requested changes above (Application #18627) and has made the following changes to the proposed permit in response to these requests.

- The District removed the following equipment from the proposed renewal permit: S-5, S-6, A-6, S-8, and S-10.

- The District added the following new equipment to the proposed renewal permit: A-4 Landfill Gas Flare.
- The District included the following existing equipment in this proposed renewal permit: S-1 Vasco Road Landfill and S-7 Non-Retail Gasoline Dispensing Facility. As explained below, A-3 and S-9 were not included in this permit.

The District has reviewed the applicant's other requested changes but has not taken the action requested by the applicant for the reasons explained below.

- Although the applicant requested to include the A-3 Landfill Gas Flare in the renewal permit, A-3 has now been permanently shut down. Therefore, the District has removed A-3 from the proposed renewal permit.
- In the permit application materials, the applicant requested to include the S-9 Diesel Engine for a Truck Tipper in the renewal permit. Since the District has recently determined that S-9 is exempt from MFR review pursuant to Regulation 2-6-114, the District removed S-9 from the proposed renewal permit.
- In regard to the applicant's request to be allowed to accept 20,000 cubic yards per year of contaminated soil at S-1, the District reviewed the history of the permit condition (Condition #818, Part 15) that prohibits the acceptance of contaminated soil at this landfill. This prohibition was adopted on February 5, 2004 with the initial Title V permit issuance for this site in response to the permit holder's statement (in their Title V permit application materials) that no contaminated soil would be accepted as this site. This type of permit condition change would result in emission increases for S-1 and would trigger new source review (NSR). The District discussed the NSR requirements for this type of permit condition change with the applicant, and the applicant decided not to pursue this requested permit change at this time. Therefore, the District in not taking any action on this request.
- In regard to the applicant's request to increase the operating time for the S-9 Diesel Engine for the Truck Tipper from 6 hours per day to 11 hours per day, the District informed the applicant that this type of change would constitute a modification of S-9 and would be required to undergo new source review prior to inclusion in the Title V permit. The applicant added this requested operating time change at S-9 to NSR Permit Application #18626. This application is still undergoing District review. Since the District subsequently determined that S-9 was exempt from MFR, the District is removing S-9 from the renewal permit and is not taking any action on the applicant's requested operating time change for S-9.

The District has made additional changes to the proposed Title V renewal permit that were not identified in the permit holder's application materials. These additional changes are summarized briefly below:

- The District updated several standard language sections in the permit.
- The District split S-1 into three source numbers: S-1, S-12, and S-13 and added S-12 and S-13 to this permit.
- The District updated regulatory amendment dates throughout the permit.

- The District added new applicable requirements and limits, removed obsolete requirements and limits, and updated or clarified existing requirements and limits throughout the permit.
- The District clarified and revised permit conditions and bases for S-1, S-12, S-13, A-4, and S-7.
- The District added terms to the glossary and removed of Section XII of the permit.
- All of the permit revisions were identified in the Section X Revision History.

H:\Engineering\TITLE V Permit Appls\1 ALL T5 Application Files here\A5095\Renewal-18627\2.0 Proposed Public Notice\A5095-18627_renewal-SOB-March2012.doc

APPENDIX A:

BAAQMD COMPLIANCE REPORT

COMPLIANCE & ENFORCEMENT DIVISION

Inter-Office Memorandum

January 26, 2012

JK 2/21/12
BB 2/17/12

TO: JIM KARAS – ACTING DIRECTOR OF ENGINEERING

FROM: BRIAN BATEMAN – DIRECTOR OF ENFORCEMENT

SUBJECT: REVIEW OF COMPLIANCE RECORD OF:

REPUBLIC SERVICES, INC; #A5095

Background

This review was initiated as part of the District evaluation of an application by Republic Services, Inc. for a Title V Permit Renewal. It is standard practice of the Compliance and Enforcement Division to undertake a compliance record review in advance of a renewal of a Title V Permit. The purpose of this review is to assure that any non-compliance problems identified during the prior permit term have been adequately addressed, or, if non-compliance persists, that a schedule of compliance is properly incorporated into the Title V permit compliance schedule. In addition, the review checks for patterns of recurring violation that may be addressed by additional permit terms. Finally, the review is intended to recommend, if necessary, any additional permit conditions and limitations to improve compliance.

Compliance Review

Compliance records were reviewed for the time period from February 5, 2004 through December 13, 2011. The results of this review are summarized as follows.

1. Violation History

Staff reviewed Republic Services, Inc. Annual Compliance Certifications and found no ongoing non-compliance and no recurring pattern of violations.

Staff also reviewed the District compliance records for the review period. During this period Republic Services, Inc. activities known to the District include:

District issued 12 Notice of Violation(s):

NOV#	Regulation	Date Occur	# of Days	Comments	Disposition
A44347	1-301	4/02/04	1	Shelter in place due to a fire at landfill	Resolved
A45660	8-34-303	9/14/04	1	Surface leaks	Resolved
A47210	2-6-307	6/19/06	1	Failed to conduct an annual source test	Settlement Process initiated
A47211	2-6-307	6/19/06	1	Diesel engine exceeded allowed operating hours	Settlement Process initiated
A47212	8-34-305	11/6/06	1	Oxygen concentration excursion at the wellhead	Settlement Process initiated
A48734	2-1-301& 302	2/01/06	1	No permits for biomass process / handling operation	Resolved
A48735	2-6-307 & 1-503	8/01/07	1	Fare temperature excursion and failure to report it	Resolved
A48736	2-6-307	4/9/09	1	Flare temperature excursion	Resolved
A48739	2-1-307	9/13/09	1	Flare temperature excursion	Resolved
A48746	2-6-307	6/14/10	1	Failed source test	Settlement Process initiated
A49402	8-34-303	7/19/11	1	Surface leaks	Pending
A49403	2-6-307	6/9/11	1	Failed source test	Settlement Process initiated

2. Complaint History

The District received 1 unconfirmed air pollution complaint alleging Republic Services, Inc. as the source.

3. Reportable Compliance Activity

Reportable Compliance Activity (RCA), also known as "Episode" reporting, is the reporting of compliance activities involving a facility as outlined in District Regulations and State Law. Reporting covers breakdown requests, indicated monitor excesses, pressure relief device releases, inoperative monitor reports and flare monitoring.

Within the review period, the District received 14 notifications for RCA's and 2 NOV's were issued as a result of these RCA's. 2 of the 14 RCA notifications were duplicates.

Episode	Date Occur	# of Days	Comments	Disposition
05K41	12/30/08	1	Inoperative temperature monitor	No Action
05L21	2/24/09	1	No violation documented	No Action
05L24	3/8/09	1	No violation documented	No Action
05L75	4/9/09	1	Breakdown request for 05L76	Denied
05L76	4/9/09	1	Flare temperature excursion	NOV A48736
05M32	5/17/09	1	Flare shutdown due to power outage	Granted
05P10	9/13/09	1	Inoperative temperature monitor	No Action
05P41	9/13/09	1	Flare temperature excursion	NOV A48739
05R62	1/20/10	1	Breakdown request for 05R65	Granted
05R65	1/20/10	1	Flare shutdown due to power outage	No Action
05R68	1/20/10	1	Duplicate of 05R62	No Action
05R69	1/20/10	1	Duplicate of 05R65	No Action
05W11	924/10	1	Breakdown request for 05W12	Granted
O5W12	9/24/10	1	Flare shutdown due to power outage	No Action

4. Enforcement Agreements, Variances, or Abatement Orders

There were no enforcement agreements, variances, or abatement orders for Republic Services, Inc. over review period.

Conclusion

Following its review of all available facility and District compliance records from February 5, 2004 through December 13, 2011, the District's Compliance and Enforcement Division has determined that Republic Services, Inc. was in intermittent compliance. However, Republic Services, Inc. has demonstrated no evidence of ongoing noncompliance and no recurring pattern of violations that would warrant consideration of a Title V permit compliance schedule for this facility.

Based on this review and analysis of all the violations for the review period, the District has concluded that no schedule of compliance or change in permit terms is necessary beyond what is already contained in the facility's current Title V permit.

APPENDIX B:

GLOSSARY

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: http://www.epa.gov/ttn/chief/ap42/index.html

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

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

C_6H_6
Benzene

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

CEQA
California Environmental Quality Act

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

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 CH_4
Methane

CI
Compression Ignition

CIWMB
California Integrated Waste Management Board

CO
Carbon Monoxide

CO2
Carbon Dioxide

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

E6, E9, E12
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, 4.53E6 equals (4.53) x (106) = (4.53) x (10x10x10x10x10x10) = 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.

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 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
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 H_2S
Hydrogen Sulfide

H2SO4 or H_2SO_4
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.

LEA
Local Enforcement Agency

LFG
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^{o}F.

Long ton
2200 pounds

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (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

MW
Molecular weight

N2
Nitrogen

NA
Not Applicable

NAAQS
National Ambient Air Quality Standards

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

NMHC
Non-methane Hydrocarbons (Same as NMOC)

NMOC
Non-methane Organic Compounds (Same as NMHC)

NOx or NO_x
Oxides of nitrogen.

NO2 or NO_2
Nitrogen Dioxide.

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 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 pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

O2 or O_2
Oxygen

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NOx, 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 is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Particulate Matter

PM10 or PM_{10}
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those 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

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 NOx concentrations in the exhaust stream of a combustion device. SCRs utilize a catalyst, which operates within a specific temperature range, and injected ammonia to promote the conversion of NOx compounds to nitrogen gas.

Short ton
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 SO_2
Sulfur dioxide

SO3 or SO_3
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 (NMHC + Methane)

therm
100,000 British Thermal Units

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 (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Policy

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 SO_2 that will be present in the combusted fuel gas, since sulfur compounds are converted to SO_2 by the combustion process.

TSP
Total Suspended Particulate

TVP
True Vapor Pressure

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
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
min	=	minute
mm	=	millimeter
MM	=	million
MM BTU	=	million BTU
MMcf	=	million cubic feet
Mg	=	mega grams
M scf	=	one thousand 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 C:

NSR PERMIT EVALUATION

FOR APPLICATION # 11404

Engineering Evaluation
Republic Services Vasco Road Landfill; Plant 5095
Application Number 11404

BACKGROUND:

Republic Services Vasco Road, Inc. (RSVR) has applied for an Authority to Construct the following:

A-4: Landfill Gas Flare; Make and model to be determined later, 4,000 SCFM maximum capacity, 120 MMBTU/hr

This flare is expected to eventually be the primary source of landfill gas abatement for the Vasco Road Landfill (S-1) replacing the existing Landfill Gas Flare A-3 at a later date; however, while RSVR has stated that this is their intention, A-3 remains in operation and there is no indication that the two flares will not be operated concurrently. Therefore, for the purposes of this evaluation, this application is for an additional rather than replacement flare. RSVR has also requested two minor changes to the conditions for existing sources. They would like to change the NOx limit for the existing flare (A-3) from 0.054 lb/MMBTU to 0.05 lb/MMBTU, and they would like a specific limit of 595 ppmv as hexane (AP-42 default value) on the NMOC concentration in the Landfill gas in order to maintain POC emissions below 50 tons per year.

EMISSIONS DISCUSSION:

Non-methane organic compound (i.e. POC) emissions from landfill gas occur as either fugitive emissions from uncollected gas or as the small fraction of POC that passes through the control device unabated. For permitting purposes, these emissions are assigned to the landfill source and are based on the amount of decomposable refuse that the landfill receives. In this application, the landfill itself is not being modified so it can be assumed that there will be no increase of POC emissions. However, since the abatement device (the Flare A-4) is new, all secondary pollutants from combustion must be added to the Cumulative Increase for the facility. Emissions of secondary air pollutants from the Landfill Gas Flare A-4 will be determined as follows:

NOx, CO and PM
RSVR has provided Design Criteria Minimum Specifications for the proposed flare, along with maximum emission factors for secondary pollutants from the flare:

Outlet Temp. 1400 degrees F

- NOx: 0.049 lb/MMBTU
- CO: 0.19 lb/MMBTU
- PM: 0.022 lb/MMBTU

SO_2
Since the Sulfur Dioxide (SO_2) emissions will vary directly with the amount of Sulfur compounds present in the fuel, a mass balance calculation can be performed to determine SO_2 emissions based on the total concentration of sulfur compounds in the landfill gas. The current Title V permit for this facility limits sulfur content in the landfill gas not to exceed 320 ppmv measured as H_2S (Condition #818 item 12). Assuming this maximum landfill gas total sulfur concentration, the SO_2 emission factor will be:

SO_2 = (320 X 10^{-6} lb-mole H_2S/lb-mole gas)(lb-mole SO_2/lb-mole S)(64 lb SO_2/lb-mole SO_2)(lb-mole gas/386 scf)/(496 BTU/scf)
= 8.9 x 10^{-8} lb SO_2/BTU
= 0.107 lb/MMBTU

Assuming continuous use at the peak landfill gas capacity (4,000 scfm, 120 MMBTU/hr) the highest estimated emissions of secondary air pollutants from the Landfill Gas Flare A-4 will be:

NOx = (0.049 lb/MMMBTU)(120 MMBTU/hr)(24 hr/day)(365 days/yr)
= 51,508.8 lb/yr
= 25.754 tons/yr

CO = (0.19 lb/MMMBTU)(120 MMBTU/hr)(24 hr/day)(365 days/yr)
= 199,728 lb/yr
= 99.864 tons/yr

SO_2 = (0.107 lb/MMMBTU)(120 MMBTU/hr)(24 hr/day)(365 days/yr)
= 112,478.4 lb/yr
= 56.239 tons/yr

PM = (0.022 lb/MMMBTU)(120 MMBTU/hr)(24 hr/day)(365 days/yr)
= 23,126.4 lb/yr
= 11.563 tons/yr

CUMULATIVE EMISSIONS:

	(lbs/day)		**(tons/yr)**
NOx	= 141.12	NOx	= 25.754
CO	= 547.2	CO	= 99.864
SO_2	= 256.32	SO_2	= 56.239
PM	= 63.36	PM	= 11.563

TOXIC RISK ASSESSMENT:

As previously discussed, there is no increase of landfill gas POC emissions from this application because the landfill has not been modified. Therefore, any increased risk associated with the new flare (over the existing flare) will be from a potential increase of secondary pollutants associated with the new flare.

Although it is difficult to predict exactly what compounds will be emitted as secondary air pollutants from flared landfill gas, based on the known and suspected constituents of the gas from the Vasco Road Landfill it is reasonably certain that the following compounds will be present at a result of the combustion of compounds containing chlorine, fluorine, and bromine:

- Hydrogen Chloride
- Hydrogen Bromide
- Hydrogen Fluoride

The attached spreadsheet (Tables 2 through 4) estimates emissions of each compound, using the following methodology and assumptions:

- Compounds of interest are those that are listed in EPA AP-42 Table 2.4-1 “Default Concentrations For LFG Constituents” and which contain Chlorine, Bromine, or Fluorine.
- Since the development of these EPA Default values, the Waste Industry Air Coalition (WIAC) has organized a survey of testing results of various Landfills in an effort to establish “more reasonable”

default values. The thinking behind this is that the EPA values do not take into account the decline in NMOC concentration over time.
- The concentrations used in the spreadsheet are based on the results of gas sampling performed by SCS Engineers earlier this year (2005). Where compounds were tested for but not detected, the detection limit is used. Where compounds were not tested for, AP-42 default values are used.
- The Flare is assumed to operate at maximum capacity 4000 scfm.
- Halogenated compounds are completely combusted to yield HCl, HBr, and HF gases.

In addition, there will be emissions of acrolein, aldehydes, and PAH's as a result of the combustion process. A second spreadsheet (Table 5) provides emission estimates for these compounds using the following methodology and assumptions:

- The Flare is assumed to operate at maximum capacity 4000 scfm.
- Emissions estimates were made using factors from the CARB database of "California Air Toxics Emission Factors" (CATEF) for Landfill Gas Fired Flares.

The spreadsheet results are summarized as follows in Table 1:

Table 1: Secondary Toxic Air Contaminants

Compound	Calculated Emission Factor (lb/MMCF, LFG)	Estimated Emissions (lb/yr)	Risk Screen Trigger (lb/yr)
Hydrogen Chloride	1.56 E+00	3.26 E+03	1.4 E+03
Hydrogen Bromide	3.14 E-02	6.59 E+01	4.6 E+03
Hydrogen Fluoride	1.62 E-01	3.41 E+02	1.1 E+03
Acetaldehyde	2.58 E-01	5.42 E+02	7.2 E+01
Acrolein	8.44 E-02	1.77 E+02	3.9 E+00
Formaldehyde	2.95 E+01	6.20 E+04	3.3 E+01
Benzo(a)anthracene	2.12 E-02	4.46 E+01	4.4 E-02
Benzo(a)pyrene	2.11 E-02	4.44 E+01	4.4 E-02
Benzo(b)fluoranthene	2.11 E-02	4.44 E+01	4.4 E-02
Benzo(k)fluoranthene	2.11 E-02	4.44 E+01	4.4 E-02
Dibenz(a,h)anthracene	2.11 E-02	4.44 E+01	4.4 E-02
Indeo(1,2,3-cd)pyrene	2.11 E-02	4.44 E+01	4.4 E-02
Naphthalene	1.30 E+01	2.73 E+04	2.7 E+02

In several cases, the projected incremental emissions of these compounds are above the respective risk screen trigger levels, so a risk screen analysis was prepared based on emissions of all of these compounds.

As calculated in the attached Health Risk Assessment, emissions of secondary pollutants from operation of this flare will result in increased Cancer risk of 1.2 in a million to the maximally exposed residential receptor. In addition, operation of this flare will result in non-carcinogenic chronic health effects at a value of 2.3E-2 of the Reference Exposure Level. The flare is considered to meet TBACT level control for the Landfill, so the maximum allowable risk for the operation is 10 in a million. As such, operation of the flare does not represent an unacceptable health risk to the surrounding community.

BACT/RACT REVIEW:

In accordance with Regulation 2-2-112, BACT does not apply to emissions of secondary pollutants that are the direct result of the use of an abatement device that complies with the BACT or BARCT requirements for the control of another pollutant. Since the Enclosed Flare meets the BARCT

requirements of Regulation 8-34-301.3 for organic compounds, BACT is not triggered for the emissions of secondary pollutants from the flare. However, Regulation 2-2-112 does require Reasonably Available Control Technology (RACT) for secondary pollutants. The District specifies RACT for Enclosed Landfill Gas Flares as that which will achieve the following emission rates:

- NOx: 0.06 lb/MMBTU
- CO: 0.20 lb/MMBTU

The Enclosed Landfill Gas Flare A-4 meets RACT for NOx and CO, with emission rates of 0.049 lb/MMBTU and 0.19 lb/MMBTU respective.

OFFSET REVIEW:

With the addition of the new Landfill Gas Flare A-4 and the changes to the conditioned emission limits for the existing flare, the permitted facility wide emissions of criteria pollutants are as follows:

Cumulative Increase (tons/yr)		**All Permitted Sources (tons/yr)**	
POC	0.000	POC	45.990
NOx	25.754	NOx	49.750
CO	99.964	CO	185.091
SO_2	56.239	SO_2	88.874
PM	11.563	PM	18.334

POC and NOx

In accordance with Regulation 2-2-302, before the District may issue an authority to construct or permit to operate for a new or modified source at a facility that emits or will be permitted to emit more than 15 tons per year but less than 50 tons/yr of POC or NOx on a pollutant specific basis, emissions offsets shall be provided by the District at a 1.0 to 1.0 ratio from the Small Facility Banking Account in accordance with the provisions of Regulation 2-4-414. Offsets shall be provided for the emissions from the new or modified source, plus any pre-existing cumulative increase, minus any onsite contemporaneous emission reduction credits determined in accordance with Section 2-2-605. This facility has no pre-existing cumulative increase for NOx but does have a balance of 4.490 tons per year for POC (See attached PSDP output). Although this application is for an abatement device and as such there is no cumulative increase for POC emissions, RSVR has requested that Offsets be provided from the Small Facilities Banking Account, and so this will be done for POC as well. The change in emission limits for the existing flare does not constitute a contemporaneous emission reduction for NOx (or POC for that matter).

PM and SO_2

In accordance with Regulation 2-2-303, before the District may issue an authority to construct or permit to operate for a new or modified source of PM_{10} or SO_2, at a Major Facility, which emits or will be permitted to emit more than 1 tons per year on a pollutant specific basis, emissions offsets shall be provided by the District at a 1.0 to 1.0 ratio from the Small Facility Banking Account in accordance with the provisions of Regulation 2-4-414. Offsets shall be provided for the emissions from the new or modified source, plus any pre-existing cumulative increase, minus any onsite contemporaneous emission reduction credits determined in accordance with Section 2-2-605. RSVR does not constitute a Major Facility for either PM_{10} or SO_2 , so Regulation 2-2-303 does not apply and emission offsets do not need to be provided for these pollutants.

Required Offsets

Offsets are required for this application as follows:

Table III: Required Offsets for Application 11404

Pollutant	Emissions Increase (tons/yr)	Emission Increase Balance (tons/yr)	Net Emissions Increase (tons/yr)	Offset Ratio	Offsets Required (tons/yr)
NOx	25.754	0.0	25.754	1.0:1.0	25.754
POC	0.0	4.490	4.490	1.0:1.0	4.490

PSD REVIEW

In accordance with Regulation 2-2-304, a PSD review is required for a new major facility, which will emit 100 tons per year or more of a regulated air pollutant, if it is one of the 28 PSD source categories listed in Section 169(1) of the federal Clean Air Act, or 250 tons per year or more for an unlisted category. PSD review is also required for a major modification of a major facility if the cumulative increase, from the PSD Baseline Date, minus the contemporaneous emission reduction credits at the facility are in excess of 40 tons per year of sulfur dioxide or nitrogen oxides, or 15 tons per year of PM10. Similarly, Regulation 2-2-305 requires a PSD review for a major modification of a major facility with an increase of 100 tons per year or more of carbon monoxide.

RSVR is not a PSD Major Facility for any pollutants, because maximum facility-wide emissions will be less than 250 tons/year for each pollutant. Note that landfills and landfill gas combustion equipment are NOT in one of the 28 listed categories that are subject to the lower PSD Major Facility threshold of 100 tons/year. Therefore, PSD review is not triggered for this application.

STATEMENT OF COMPLIANCE:

Public Notification Requirements (Regulation 2, Rule 1):
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.

CEQA Requirements (Regulation 2, Rule 1):
The proposed Landfill Gas Flare A-4 is considered to be an abatement device and is required for compliance with Regulation 8, Rule 34. In accordance with Regulation 2-1-312.2, permit applications involving the installation of abatement equipment are categorically exempt from CEQA review. Since the flare is expressly exempted from CEQA by 2-1-312.2, comparison to the significance thresholds is not required and no further CEQA review is necessary.

Maximum Achievable Control Technology (MACT) Requirement (Regulation 2-2-317):
Total HAP emissions from this facility (including fugitive emissions from the landfill) have been determined to be less than 25 tons/year of all HAPs combined and less than 10 tons/year of any single HAP. Therefore, Regulation 2-2-317 does not apply.

Major Facility Review (Regulation 2, Rule 6):
This facility was initially issued an MFR Permit on February 5, 2004, which expires on January 31, 2009. The permit will be revised to reflect the proposed additional flare. In accordance with Regulation 2-6-215, the proposed revision to the MFR Permit is a “Minor Revision”, because it is neither a “Significant

Revision" as defined by Regulation 2-6-226 nor an "Administrative Permit Amendment" as defined by Regulation 2-6-201.

Landfill Gas Emission Control System Requirements (Regulation 8, Rule 34):
District Regulation 8-34-301.3 requires enclosed ground type flares to reduce the amount of NMOC in the collected gas by at least 98 percent by weight or emit less than 30 ppm (vol) NMOC (expressed as methane @ 3% O_2). Annual source testing and continuous flare temperature monitoring will be required in order to demonstrate compliance with this requirement.

Particulate Matter and Visible Emissions (Regulation 6):
The new Flare A-4 is expected to comply with the Ringelmann 1 limit of Regulation 6-301 and will have no visible emissions. The flare will also comply with Regulation 6-310 (PM $\leq$ 0.15 grains/dscf), because it is expected to emit less than 0.02 grains/dscf (converted AP-42 PM emission factor for Enclosed Landfill Gas Flares).

Sulfur Dioxide (Regulation 9, Rule 1)
Regulation 9-1-302 limits sulfur dioxide in the exhaust from the Flare A-4 to 300 ppmv (dry basis). The current Title V permit for this facility limits sulfur content in the landfill gas not to exceed 320 ppmv measured as H_2S (Condition #818 item 12). The maximum allowable SO2 emission rate has been previously calculated at 0.107 lb/MMBTU (see page 1 of this report). In their Semi-annual Report submitted February of 2005, RSVR reported 42% methane content in the recovered LFG for the reporting period. At 42% methane, the LFG heat content would be 417.4 BTU/scf, so the SO_2 emission factor becomes 44.66 lb/(MMscf LFG). The new flare has a maximum capacity of 4000 scfm (or 0.24 MMscf LFG per hour), so at maximum capacity the flare will produce 10.72 lbs SO_2 per hour.

At 42% methane content, 4.17 dscf of exhaust would be produced per scf of LFG, at zero percent excess oxygen. So assuming maximum flow of LFG for the flare (4,000 scfm), we have 1.001 MMcf of exhaust produced per hour (dry). The maximum concentration of SO_2 in the flare exhaust can then be determined as follows:

ppm SO_2 = (10.72 lb SO_2 /hr) * (hr/1.001E6 dscf) * (lb-mole SO_2 /64 lb SO_2) * (386 dscf gas/lb-mole gas)

= 6.46E-5 lb-mole SO_2 /lb-mole gas

= 65 ppm SO_2

This calculated SO_2 concentration is well below the 300 ppm limit, so compliance with the operating conditions for S-1 will ensure compliance with 9-1-302.

Federal Requirements:
No new federal requirements are triggered by the proposed A-4 Flare.

PERMIT CONDITIONS:

It is recommended that the permit conditions for the Landfill and Flare be modified to account for the addition of enclosed flare A-4, the additional specific limit to the NMOC concentration in LFG for S-1, and the change to the NOx limit for the existing flare, A-3. Changes follow in underline/strikethrough format:

Condition # 818
FOR: S-1 VASCO ROAD LANDFILL WITH GAS COLLECTION SYSTEM;
FOR: A-3 LANDFILL GAS FLARE
FOR: A-4 LANDFILL GAS FLARE

1. All collected landfill gas shall be vented to the properly operating Landfill Gas Flares (A-3 and A-4). Raw landfill gas shall not be vented to the atmosphere except for unavoidable landfill gas emissions, which occur during collection system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 and inadvertent component or surface leaks that do not violate 8-34-301.2 or 8-34-303. (basis: Regulations 8-34-301 and 8-34-303)

2. The Permit Holder shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in Parts 2a-b below. Increasing or decreasing the number of wells or collectors, changing the length of collectors, or changing the locations of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.
   a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below.

	Required Components
Total Number of Vertical Wells:	83
Total Number of Horizontal Collectors:	5

   b. The Permit Holder has been issued an Authority to Construct (Application Number: 2244) for the additional landfill gas collection system components listed below.

Total Number of Vertical Wells:	46

   Wells installed pursuant to subpart b shall be added to subpart a in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415. The Permit Holder shall maintain records of the initial operation date for each new well.
   (basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305)

3. a. The landfill gas collection system described in Part 2a shall be operated continuously, as defined in Regulation 8-34-219 and Part 3b below. Wells shall not be shut off, disconnected or removed from operation without written authorization from the APCO, unless the Permit Holder complies with all applicable requirements of Regulation 8, Rule 34, Sections 113, 116, 117, and 118. (basis: Regulation 8-34-301.1)

   b. For the specified wells and collectors listed below, the gas collection system operating requirements listed in Parts 3b(i-ii) shall replace the wellhead requirements identified in Regulation 8-34-305.2 through 8-34-305.4. All wells and collectors remain subject to the Regulation 8-34-305.1 requirement to maintain vacuum on each wellhead and to the Regulation 8-34-505 monthly monitoring requirements. The specified wells and collectors shall be deemed to be operating continuously, if the components are complying with Regulation 8-34-305.1 and any applicable limits in Part 3b(i-ii). In addition, Part 3b(iii) clarifies the applicable limits for vaults containing gas collection system components. If the Permit Holder discovers an excess of a Part 3b(i-iii) limit and corrects the excess in accordance with the Regulation 8-34-414 repair schedule, the excess shall not be deemed a violation of this part. (basis: Regulations 8-34-301.1, 8-34-301.2, 8-34-303, and 8-34-305)
      i. The Regulation 8-34-305.2 temperature limit shall not apply to the wells or collectors listed below. The landfill gas temperature in each of the components listed below shall not exceed 140 degrees F.
      OEW-HA, OEW-HB, OEW-14, EW-9, EW-33A, EW-43, EW-44, EW-45, EW-52, EW-53, EW-54, EW-57, and EW-58.
      ii. The Regulation 8-34-305.3 nitrogen concentration limit and the Regulation 8-34-305.4 oxygen concentration limit shall not apply to the wells listed below, provided that the oxygen concentration in the landfill gas at the main header does not exceed 5% O_2 by volume (dry basis) and the methane concentration in the landfill gas at the main header is not less than 35% CH_4 by volume (dry basis). The

permit holder shall monitor the landfill gas from the main header for oxygen and methane on a monthly basis to demonstrate compliance with this part.
OEW-6, OEW-10, OEW-11, OEW-13, OEW-14, OEW-HA, OEW-HB, EW-9, EW-15, EW-16, EW-26, EW-27, EW-29, EW-29A, EW-31, EW-32, EW-32A, EW-33, EW-33A, EW-35, EW-36, EW-36A, EW-38, EW-40, EW-41, EW-42A, EW-43, EW-51, and EW-58.

iii. This subpart applies to vaults containing gas collection system equipment, where the top of the vault is located at or near the surface of the landfill. The vault shall be monitored at both 1 cm from the vault (for comparison to the component leak limit of Regulation 8-34-301.2) and 2 inches above the vault (for comparison to the surface leak limit of Regulation 8-34-303).

(a) If during an inspection the District's monitored readings show compliance with both the component leak limit and the surface leak limit, the vault and components within shall be deemed to be in compliance with Regulations 8-34-301.2 and 8-34-303. No further testing is necessary.

(b) If the District's monitored readings show an excess of either the component leak limit or the surface leak limit, the operator shall comply with the Regulation 8-34-415 Repair Schedule for Landfill Surface Leak Excesses, until the source of the leak can be identified. The vault shall be opened and allowed to air out for at least 10 minutes. The collection system components within the vault shall be re-monitored at 1 cm from the components and the landfill surface surrounding the vault shall be re-monitored at 2 inches above the surface.

(c) If the re-monitoring (after airing the vault for 10 minutes) shows no component leaks and no surface leaks, the vault and components within shall be deemed to be in compliance with Regulations 8-34-301.2 and 8-34-303.

(d) If the re-monitoring shows a component leak, or the operator's further evaluation determines that the source of the emissions excess was a collection system component, then a violation of 8-34-301.2 shall be deemed to have occurred; and the operator shall take all necessary corrective action and shall comply with all applicable reporting requirements.

(e) If the re-monitoring shows a surface leak but not a component leak, the operator shall continue to comply with all applicable provisions of the Regulation 8-34-415 Repair Schedule for Landfill Surface Leak Excesses.

4. A temperature monitor with readout display and continuous recorder shall be installed and maintained on each of the Flares (A-3 and A-4). One or more thermocouples shall be placed in the primary combustion zone of each of the flares and shall accurately indicate flare combustion temperature at all times. Temperature charts showing continuous combustion zone temperature shall be retained for at least five years and made readily available to District staff upon request. (basis: Regulations 8-34-501.3 and 507)

5. The combustion temperature of the Flare (A-3) shall be maintained at a minimum of 1650 degrees F, averaged over any 3-hour period. The combustion temperature of the Flare (A-4) shall be maintained at a minimum 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 the minimum combustion zone temperature limit, in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415, based on the following criteria. The minimum combustion zone temperature for the flare shall be equal to the average combustion zone temperature measured during the most recent complying source test minus 50 degrees F,

provided that the minimum combustion zone temperature shall not be less than 1400 degrees F. (basis: RACT for CO, Toxic Risk Management Policy, and Regulation 8-34-301.3)

6. Each of t~~T~~he Flares (A-3 and A-4) shall be equipped with auto restart capability, a local alarm system, and automatic temperature controlled louvers.
(basis: Regulation 8-34-301 and RACT for CO)

7. Each of t~~T~~he ~~A-3~~ Flares (A-3 and A-4) shall be fired on landfill gas. No landfill gas condensate or leachate may be burned in the A-3 or A-4 Flare. Propane or other similar clean burning fuels may be used during flare start-up. (basis: Cumulative Increase)

8. The concentration of nitrogen oxides (NOx) in the flue gas from the Landfill Gas Flare (A-3) shall not exceed 11~~2~~ ppmv of NOx, corrected to 15% oxygen, dry basis. This is equivalent to 0.050~~4~~ pounds of NOx (calculated as NO2) per million BTU. The concentration of nitrogen oxides (NOx) in the flue gas from the Landfill Gas Flare (A-4) shall not exceed 11 ppmv of NOx, corrected to 15% oxygen, dry basis. This is equivalent to 0.050 pounds of NOx (calculated as NO2) per million BTU. (basis: RACT)

9. The emissions of nitrogen oxide (calculated as NO2) from the A-3 Flare shall not exceed 92.0 pounds per day. The emissions of nitrogen oxide (calculated as NO2) from the A-4 Flare shall not exceed 141.1 pounds per day. (basis: Offsets)

10. The emissions of carbon monoxide (CO) from the A-3 Flare shall not exceed 460.1 pounds per day. The emissions of carbon monoxide (CO) from the A-4 Flare shall not exceed 547.2 pounds per day. (basis: Cumulative Increase)

11. The emissions of PM10 from the A-3 Flare shall not exceed 37.5 pounds per day. The emissions of PM10 from the A-4 Flare shall not exceed 63.4 pounds per day. (basis: Cumulative Increase)

12. The hydrogen sulfide content of the landfill gas shall not exceed 80 ppmv, dry basis. The total reduced sulfur content of the landfill gas shall not exceed 320 ppmv, reported as H2S, dry basis. (basis: RACT for SO2 and Regulation 9-1-302)

13. The Heat Input to the A-3 Landfill Gas Flare shall not exceed 1704 million BTU per day nor 621,960 million BTU per year. The Heat Input to the A-4 Landfill Gas Flare shall not exceed 2880 million BTU per day nor 1,051,200 million BTU per year. 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 the flares based on the landfill gas flow rate recorded pursuant to Part 22g, 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/ft^3 at 60 ^{0}F. (basis: Regulation 2-1-301)

14. The Permit Holder shall comply with the following waste acceptance and disposal limits and shall obtain the appropriate New Source Review permit, if one of the following limits is exceeded:
    a. Total amount of solid waste (as defined in Regulation 8-34-202) accepted at the landfill shall not exceed 2,518 tons in any day (except during temporary emergency situations approved by the Local Enforcement Agency). Vehicle traffic that is transporting incoming or outgoing solid waste or other materials shall not exceed 625 vehicles per day. (Basis: Regulation 2-1-301)
    b. The total cumulative amount of all waste placed in the landfill shall not exceed 23.8 million tons. Exceedance of the cumulative tonnage limit is not a violation of the permit and does not trigger the requirement to obtain a New Source review permit, if the operator can, within 30 days of the date of discovery of the exceedance, provide documentation to the

District demonstrating, in accordance with BAAQMD Regulation 2-1-234.3, that the limit should be higher. (Basis: Regulation 2-1-234.3)

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 31.65 million cubic yards.
(Basis: Regulation 2-1-301)

15. This facility is not subject to Regulation 8, Rule 40 because the landfill does not accept contaminated soil (soil containing more than 50 ppmw of volatile organic compounds, VOCs). The following types of materials may be accepted:
   a. Metal-laden soil (soil containing metals above naturally occurring background concentrations), VOC-laden soil (soil containing VOCs that is not "contaminated" soil), or other materials for which 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).
   b. Materials for which the Permit Holder has no documentation to prove that soil is not contaminated, but the source of the soil is known and there is no reason to suspect that the soil might contain organic compounds or metal compounds at other than naturally occurring background concentrations.
   c. Materials which the Permit Holder plans to test in order to determine the VOC contamination level in the soil, provided that the material is sampled within 24 hours of receipt by this site and is handled as if the soil were contaminated until the Permit Holder receives the test results. The Permit Holder shall collect soil samples in accordance with Regulation 8-40-601. 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 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 Regulation 8, Rule 40, until the soil has been removed from this site. For the purposes of Regulations 8-40-306.3-306.5, storing soil in a temporary stockpile or pit and co-mingling, blending, or mixing of soil lots are not considered treatment.
      ii. If these test results indicate that the soil, as received at this site, 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 Regulation 8, Rule 40 any longer.

   (basis: Regulation 8-40-301)

16. The total amount of metal-laden and VOC-laden soil used as cover material shall not exceed 180,000 tons during any consecutive 12 month period. The metal concentrations of any metal-laden soil shall not exceed the following limits:

Metals	Maximum Concentration (ppmw)
Arsenic	130
Beryllium	75
Cadmium	100
Chromium VI	7
Copper	2500
Lead	1000
Mercury	20
Nickel	2000
Selenium	100
Zinc	5000

Parts a. and b. below identify the maximum usage rates and maximum allowed concentrations of toxic compounds that may be present in the two types of VOC-laden soil used that may be used as cover material at this site.

a. For soil containing high concentrations of certain chlorinated compounds, the amount used as cover material shall not exceed 10,000 tons during any consecutive 12 month period. Soil shall be subject to this throughput limit if the soil contains chlorinated compounds in amounts exceeding any of the following concentrations:

0.05 ppmw of carbon tetrachloride,
0.05 ppmw of chloroform,
0.40 ppmw of 1,4 dichlorobenzene,
0.05 ppmw of 1,2 dichloroethane,
0.40 ppmw of tetrachloroethylene, or
0.05 ppmw of vinyl chloride.

Under no circumstances shall the Permit Holder use soil for cover, which contains organic compounds in excess of the following concentrations:

0.50 ppmw of benzene,
0.50 ppmw of carbon tetrachloride,
6.00 ppmw of chloroform,
7.50 ppmw of 1,4 dichlorobenzene,
0.50 ppmw of 1,2 dichloroethane,
0.70 ppmw of tetrachloroethylene,
0.50 ppmw of trichloroethylene, or
0.20 ppmw of vinyl chloride.

b. For soil containing low concentrations of certain chlorinated compounds, the amount used as cover material shall not exceed 170,000 tons during any consecutive 12 month period. Soil shall be subject to this throughput limit if the soil contains organic compounds in amounts less than or equal to all of the following concentrations:

0.50 ppmw of benzene,
0.05 ppmw of carbon tetrachloride,
0.05 ppmw of chloroform,
0.40 ppmw of 1,4 dichlorobenzene,
0.05 ppmw of 1,2 dichloroethane,
0.40 ppmw of tetrachloroethylene,
0.50 ppmw of trichloroethylene, and
0.05 ppmw of vinyl chloride.

(basis: Offsets, Toxic Risk Management Policy, and Regulation 8-2-301)

*17. Material produced at the S-5 Pugmill and used as alternative daily cover material at S-1 shall be covered with refuse or clean soil within 48 hours of spreading the alternative daily cover material across the working face of the landfill.
(Basis: Regulation 1-301)

18. In order to demonstrate compliance with Parts 15 and 16, the Permit Holder shall maintain the following records in an APCO approved log book.

a. For any metal-laden or VOC-laden soil that will be used as daily or intermediate cover material, the Permit Holder shall record the following:
   (i) soil lot number (or other means of tracking the soil on-site),
   (ii) date and time the soil was received,
   (iii) amount of soil received,
   (iv) total VOC content measured by the waste generator, and
   (v) concentrations in the soil of benzene, carbon tetrachloride, chloroform, 1,4 dichlorobenzene, 1,2 dichloroethane, tetrachloroethylene, trichloroethylene and vinyl chloride,

b. For any material subject to Part 15c:

(i) soil lot number,
(ii) date and time that the soil was resampled on-site,
(iii) total VOC concentration in the resampled soil.

c. For each soil lot number of metal-laden or VOC-laden soil received at the landfill, the owner/operator of S-1 shall record the following.
(i) date and time that any of the soil in the lot was used for cover material,
(ii) describe the location where the soil was placed,
(iii) specify whether the soil was used for daily or intermediate cover,
(iv) record, on a daily basis, the amount of soil placed as cover material,
(v) summarize, on a daily basis, the total amount of metal-laden and VOC-laden soil used for cover (if multiple soil lots where placed during any one day), and
(vi) summarize, on a monthly basis, the total amount of metal-laden and VOC-laden soil used for daily or intermediate cover.

All logs, sampling records, analytical results, and notification records shall be made available to District staff upon request and shall be kept on site for a minimum of 5 years from the date of entry. (basis: Offsets, Toxic Risk Management Policy, and Regulation 8-2-301)

19. Water and/or dust suppressants shall be applied to all unpaved roadways and active soil removal and fill areas associated with this landfill as necessary to prevent visible particulate emissions. Paved roadways at the facility shall be kept sufficiently clear of dirt and debris as necessary to prevent visible particulate emissions from vehicle traffic or wind.
(basis: Regulations 2-1-403, 6-301, and 6-305)

20. In order, to demonstrate compliance with Parts 5 and 8-13 and Regulation 8, Rule 34, Sections 301.3 and 412, the Permit Holder shall ensure that a District approved source test is conducted annually on each of the Landfill Gas Flares (A-3 and A-4). The annual source test shall determine the following:
a. landfill gas flow rate to the flare (dry basis);
b. concentrations (dry basis) of carbon dioxide (CO_2), nitrogen (N_2), oxygen (O_2), total hydrocarbons (THC), methane (CH_4), 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, THC, CH_4, NMOC, and O_2 in the flare stack gas;
e. the NMOC destruction efficiency achieved by the flare; and
f. the average combustion temperature in the flare during the test period.

Each annual source test shall be conducted no sooner than 9 months and no later than 12 months after the previous source test. 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 within 45 days of the test date. (basis: RACT, Offsets, Cumulative Increase, Toxic Risk Management Policy, and Regulations 8-34-301.3 and 8-34-412)

21. To demonstrate compliance with Part 12 above and Regulations 8-34-412 and 9-1-302, the Permit Holder shall conduct a characterization of the landfill gas concurrent with the annual source test required by Part 20 above. The landfill gas sample shall be drawn from the main landfill gas header. In addition to the compounds listed in part 20b, the landfill gas shall be analyzed for all the organic and sulfur compounds listed below. All concentrations shall be reported on a dry basis. The test report shall be submitted to the Compliance and Enforcement Division within 45 days of the test date. (basis: Toxic Risk Management Policy, AB-2588 Air Toxic Hot Spots Act, RACT for $S0_2$, and Regulations 8-34-412 and 9-1-302)

Organic Compounds	Organic Compounds
acrylonitrile	ethylbenzene

benzene
benzyl chloride
carbon tetrachloride
chlorobenzene
chlorodifluoromethane
chloroethane
chloroform
1,1 dichloroethane
1,1 dichlorethene
1,2 dichloroethane
1,4 dichlorobenzene
dichlorodifluoromethane
dichlorofluoromethane
ethylene dibromide
fluorotrichloromethane
hexane
isopropyl alcohol
methyl ethyl ketone
methylene chloride
perchloroethylene
toluene
1,1,1 trichloroethane
1,1,2,2 tetrachloroethane
trichloroethylene
vinyl chloride
xylenes

Sulfur Compounds
carbon disulfide
carbonyl sulfide
dimethyl sulfide
ethyl mercaptan
hydrogen sulfide
methyl mercaptan

22. The Permit Holder shall maintain the following records in an APCO approved log book.
    a. Record the total amount of solid waste received at S-1 and the total number of vehicles transporting solid waste or other materials to and from the site on a daily basis. Summarize these daily waste acceptance and vehicle traffic records for each calendar month.
    b. 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. Record the cumulative amount of waste placed in each uncontrolled area or cell on a monthly basis.
    c. 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.
    d. Record of the dates, locations, and frequency per day of all watering activities on unpaved roads or active soil or fill areas. Record the dates, locations, and type of any dust suppressant applications. Record the dates and description of all paved roadway cleaning activities. Written documentation of standard watering procedures combined with completion of daily check lists may satisfy these daily record keeping requirements. All records shall be summarized on monthly basis.
    e. Record the initial operation date for each new landfill gas well and collector.
    f. 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) that are required to be operating continuously pursuant to part 2a. Any areas containing only non-decomposable waste shall be clearly identified. This map shall be updated at least once a year to indicate changes in refuse boundaries and to include any newly installed wells and collectors.
    g. Record the operating times and the landfill gas flow rate to each of the ~~A-3~~ Landfill Gas Flares (A-3 and A-4) on a daily basis. Summarize these records on a monthly basis. Calculate and record the heat input to each of the flares (A-3 and A-4), pursuant to Part 13.
    h. Maintain records of all test dates and test results performed to maintain compliance Parts 8-13, 15-16, or 20-21 or to maintain compliance with any applicable rule or regulation.

All records shall be maintained on site or shall be made readily available to District staff upon request for a period of at least 5 years from the date of entry. These record keeping requirements do not replace the record keeping requirements contained in any applicable rules or regulations. (basis: RACT, Offsets, Cumulative Increase, Toxic Risk Management Policy, Regulations 2-1-301, 2-6-501, 6-301, 6-305, 8-2-301, 8-34-301, 8-34-304, and 8-34-501)

23. The annual report required by BAAQMD Regulation 8-34-411 shall be submitted in two semi-annual increments. The reporting period for the first increment of the Regulation 8-34-411 annual report that is submitted subsequent to the issuance of the MFR Permit for this site shall be from December 1, 2003 through June 30, 2004. This first increment report shall be submitted by July 31, 2003. The reporting periods and report submittal due dates for all subsequent increments of the Regulation 8-34-411 report and for all semi-annual increments of MSW Landfill NESHAP report (required pursuant to 40 CFR Part 63.1980(a)) 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))

RECOMMENDATIONS:

It is recommended that an Authority to Construct be issued to the Republic Services Vasco Road Landfill for the following:

A-4: Enclosed Landfill Gas Flare, Make and Model to be determined, 4,000 SCFM maximum capacity, 120 MM BTU/hour.

It is also recommended that 25.754 tons of NOx offsets and 4.490 tons of POC offsets be provided for this application from the District's Small Facility Banking Account.

By: Signed by Robert Cave on 4/20/2005
Robert Cave
Air Quality Engineer II

APPENDIX D:

NSR PERMIT EVALUATION

FOR APPLICATION # 21153

Engineering Evaluation Report

Vasco Road Landfill, P#5095
4001 N. Vasco Road, Livermore
Application #21153

Background

Republic Services ("Applicant") operates the Vasco Road Landfill located in Livermore. Under Application 2244, the applicant requested approval of the installation of 46 new vertical gas extraction wells. No wells were installed under that Authority to Construct, which has now expired.

The District's policy for permitting alterations of a landfill gas collection system have recently changed. To reduce the administrative overhead required to manage Authorities to Construct (which expire in 2 years) for such alterations, the District is now granting approval of landfill gas collection system alterations as a Change of Conditions.

Under the accelerated permitting program, the Applicant has now applied for a Change of Conditions to allow the following alterations to the gas collection system for the Landfill, S-1:

S-1 Landfill with Gas Collection System (83 vertical and 5 horizontal wells) – Installation of up to (46) additional Vertical Gas Extraction Wells

Emission Calculations

Landfills are sources of various types of air emissions. The decomposition of waste in the landfill generates emissions of methane and volatile organic compounds, which is emitted in the form of fugitive leaks from uncollected landfill gas or as the small fraction of organic compounds which are uncombusted at the landfill gas flare. Landfill gas control equipment, such as flares, also generate emissions from the combustion of landfill gas.

The landfill gas generation and emission rate are attributed to the landfill source, S-1, and are a function of the amount of waste in the landfill. Under this application, the Applicant has not proposed any modification to the landfill waste capacity. The changes to the collection system, including addition of new wells, will not result in additional gas generation or any change in the landfill gas production rate; it will merely allow for better collection of the generated gas. Therefore, there is no emission increase at the landfill associated with the addition of collection wells. This type of change is therefore not a "modification" of the landfill source as defined in Regulation 1-217:
"Any physical change in existing plant or change in the method of operation which results or may result in either an increase in emission of any air pollutant subject to District control, or the emission of any such air pollutant not previously emitted. …."

The facility reported that the existing gas collection and control system collected and processed 919 million standard cubic feet of landfill gas for the year ending 11/30/2008. This volume of landfill gas is equivalent to approximately 465,369 MMBtu for the year. The permitted firing capacities of the Landill Gas Flares, A-3 and A-4, are 621,960 MMBtu/year and 1,051,200 MMBtu/year, respectively, so the expected increase in collected landfill gas due to the proposed collection system modifications are well within the capacity of the permitted flares at this site. As the emissions from the flares have already been fully accounted for, there is no increase in flare emissions due to this application.

Cumulative Increase

The District tracks increases in emissions from each facility. As there is no increase in emissions associated with the proposed landfill gas collection well modifications, there will be no change to the cumulative emission total for this site.

Compliance Determination

Statement of Compliance

There are no new District or federal regulations triggered by this proposed landfill gas collection system modifications. However, changing the number of landfill gas collection wells will require that the Title V permit for the facility be modified. This change qualifies as a minor revision to the Title V permit and will be processed under Application 18627, the application for renewal of the Title V permit.

Modification of Permit Condition #818

Part 2 of permit condition #818 will be modified as indicated below in strikeout/underline format:

FOR: S-1 VASCO ROAD LANDFILL WITH GAS COLLECTION SYSTEM;
FOR: A-3 LANDFILL GAS FLARE
FOR: A-4 LANDFILL GAS FLARE

1. All collected landfill gas shall be vented to the properly operating Landfill Gas Flares (A-3 and A-4). Raw landfill gas shall not be vented to the atmosphere except for unavoidable landfill gas emissions, which occur during collection system installation, maintenance, or repair that is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 and inadvertent component or surface leaks that do not violate 8-34-301.2 or 8-34-303. (basis: Regulations 8-34-301 and 8-34-303)

2. The Permit Holder shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in Parts 2a-b below. Increasing or decreasing the number of wells or collectors, changing the length of collectors, or changing the locations of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.

a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below.

	Required Components
Total Number of Vertical Wells:	83
Total Number of Horizontal Collectors:	5

b. The Permit Holder has been issued ~~an Authority to Construct~~a Change of Conditions (Application Number: ~~2244~~21153) for the additional landfill gas collection system components listed below.

Total Number of Vertical Wells:	46

Wells installed pursuant to subpart b shall be added to subpart a in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415. The Permit Holder shall maintain records of the initial operation date for each new well.
(basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305)

Recommendations

I recommend issuing a Change of Conditions to the following source:

S-1 Landfill with Gas Collection System (83 vertical and 5 horizontal wells) – Installation of up to (46) additional Vertical Gas Extraction Wells

signed by Tamiko Endow — 12-3-2009
Tamiko Endow — Date
Air Quality Engineer

APPENDIX E:

NSR PERMIT EVALUATION

FOR APPLICATION # 21690

ENGINEERING EVALUATION

Republic Services Vasco Road; PLANT # 5095

APPLICATION # 21690

for Gas Collection System Alterations

BACKGROUND

Republic Services operates the Vasco Road Landfill Facility in Livermore, CA. This facility includes an active landfill (S-1 Landfill with Gas Collection System), two landfill gas flares (A-3 and A-4).

Republic Services requested approval of the installation of 46 new vertical gas extraction wells. No wells were installed under that Authority to Construct (A/N 2244), which has now expired.
Republic Services submitted a permit application in October 2009 for gas collection system alterations to install *46* additional Vertical Gas Extraction Wells. In 2009, the collection system was expanded by installing 21 new vertical / horizontal wells. The Gas Collection and Control System (GCCS) plan anticipates an additional 50 vertical / horizontal wells to be installed over the next several years. Therefore, Republic Services submitted this application (A/N 21690) to request increase the number of vertical / horizontal wells from 46 to 81. The District is now granting approval of landfill gas collection system alteration as a Change of Conditions.

S-1 Landfill with Gas Collection System (83 vertical and 5 horizontal wells) – Installation of up to (81) additional Vertical/ Horizontal Gas Extraction Wells

EMISSIONS

The landfill gas generation and emission rate are attributed to the landfill source, S-1, and are a function of the amount of waste in the landfill. The applicant has not proposed any modification to the landfill waste capacity in this application. The changes to the collection system, including addition of new wells, will not result in additional gas generation or any change in the landfill gas production rate; it will merely allow for better collection of the generated gas. Vasco Road Landfill currently vents all of their collected landfill gas to the A-3 and A-4 Landfill Gas Flares.

There is no emission increase at the landfill associated with the addition of collection wells. There will be no change to total cumulative emission for this site.

STATEMENT OF COMPLIANCE

Regulation 2, Rule 1 (CEQA and Public School Notifications)
This application involves permit condition changes for an existing permitted source that do not result in any emission increases. In addition, the gas collection system is part of the required abatement system for the landfill, and the requested collection system alterations are necessary to ensure that landfill gas emissions are properly controlled. Consequently, this request is categorically exempt from CEQA review in accordance with Regulations 2-1-312.1 and 2-1-312.2. This project has no potential for causing a significant adverse environmental impact. 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 (New Source Review) and Rule 5 (NSR of Toxic Air Contaminants)
Since there are no emission increases expected from this project, new source review (NSR) is not required. BACT, Offsets, PSD, TBACT and Project Risk limits do not apply.

There is no new District or federal regulations triggered by this proposed landfill gas collection system modifications. However, changing the number of landfill gas collection wells will require the Title V permit for the facility to be modified. This change qualifies as a minor revision to the Title V permit and will be processed under Application 18627, the application for renewal of the Title V permit.

PERMIT CONDITIONS

The S-1 Vasco Road Landfill is subject to Condition # 818. These conditions will be revised as indicated below in order to allow the necessary alterations of the landfill gas collection system. These collection system alterations are expected to (a) collect landfill gas in new fill areas, (b) replace aging gas collection components, and (c) optimize landfill gas collection.

Condition # 818
FOR: S-1 VASCO ROAD LANDFILL WITH GAS COLLECTION SYSTEM; A-3 LANDFILL GAS FLARE, AND A-4 LANDFILL GAS FLARE

No changes to Parts 1

2. The Permit Holder shall apply for and receive an Authority to Construct before ~~modifying~~ altering the landfill gas collection system described in Parts 2a-b below. Increasing or decreasing the number of wells or collectors, changing the length of collectors, or changing the locations of wells or collectors are all considered to be ~~modifications~~ alterations that are subject to the Authority to Construct requirement.

   a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below.

	Required Components
Total Number of Vertical Wells:	83
Total Number of Horizontal Collectors:	5

   b. The Permit Holder has been issued a Change of Conditions (Application Number: ~~21153~~ 21690) for the additional landfill gas collection system components listed below.

Total Number of Vertical Wells:	~~46~~ 81

   Wells installed pursuant to subpart b shall be added to subpart a in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415. The Permit Holder shall maintain records of the initial operation date for each new well.

(basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305)

No changes to Parts 3-23.

RECOMMENDATION

Issue a Change of Conditions for the following source subject to the revised conditions above (Condition # 818):

S-1 Landfill with Gas Collection System (83 vertical and 5 horizontal wells) – Installation of up to (81) additional Vertical/ Horizontal Gas Extraction Wells

	signed by Flora Chan	9-8-2010
By:	Flora Chan Air Quality Engineer II	Date

APPENDIX F:

NSR PERMIT EVALUATION

FOR APPLICATION # 23770

Engineering Evaluation

Republic Services Vasco Road
Plant No. 5095
Application No. 23770

Equipment Location: 4001 N. Vasco Road
Livermore, California 94550

SCS Engineers, on behalf of Republic Services Vasco Road (VRLF), has applied for a change of conditions for their existing permit for

S-1 Landfill – Waste Decomposition Process

Republic Services is requesting to revise Permit Condition #818, Part 12, to define the sulfur limit as an annual average limit, which includes both laboratory test results and Draeger sampling results. They are requesting to eliminate the 80 ppmv H2S limit in the current condition and to retain the current Total Reduced Sulfur (TRS) limit as the limit for sulfur content in the LFG. The permit would have a TRS limit, with the TRS concentration estimated by multiplying the H2S concentration by a factor of 1.2.

Background for S-1 Landfill

On August 31, 2011, Republic Services reported an incident of non-compliance with the Condition #818, Part 12 of their Title V permit limit, which limits the concentration of hydrogen sulfide (H2S) in the landfill gas to no greater than 80 parts per million by volume. The most recent annual source test report on August 22, 2011, showed an exceedance of the H2S limit at 140 ppmv.

During the previous 12 months, H2S testing of the LFG was performed using a portable Draeger instrument on 5 occasions, (August 24, 2010, December 15, 2010, January 31, 2011, June 10, 2011, and August 26, 2011. The readings obtained were 40 ppmv, 40 ppmv, 60 ppmv, 70 ppmv, and 25 ppmv. The average H2S concentration, including the five field results and the recent source test result is 62.5 ppmv, which is within the permit limit of 80 ppmv.

An exceedance of the H2S limit was also reported in the previous source test result, dated July 14, 2010, at a reported concentration of 146 ppmv. Confirmation sampling was performed, with samples collected over an approximate one-hour period rather than taking a grab sample in order to minimize potential influence of variability of H2S concentration in the LFG. The confirmation sample indicated an H2S concentration of 11 ppmv. In addition, Draeger sampling yielded results below the 80 ppmv limits.

Republic Services is requesting to revise Permit Conditions #818, Part 12 are as follows:

Current Condition, Part 12:
The hydrogen sulfide content of the landfill gas shall not exceed 80 ppmv, dry basis. The total reduced sulfur content of the landfill gas shall not exceed 320 ppmv, reported as H2S, dry basis."

Requested language:
The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed an annual average of 320 ppmv (dry) expressed as H2S. Annual average may be determined from a combination of field testing and laboratory analytical results. Total reduced sulfur compounds in the

collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in control systems exhaust. The sample collected for laboratory analysis shall be a composite sample collected over a period of no less than 30 minutes. Total reduced sulfur compounds in the landfill gas shall be determined on an annual basis."

Emissions Discussion

S-1 Landfill

Vasco Road Landfill is an active landfill. A copy of the EPA LANDGEM printout is attached. Republic Services has requested an annual average H2S limit of 320 ppmv (dry) expressed as H2S. The H2S emissions and the Chronic and Acute Hazard Index are calculated for this H2S concentration.

All other emissions from the Vasco Road Landfill have already been accounted for in previous permit applications, and there are no NSR emission increases associated with this application.

Hazard Index Calculation:

Assumptions:

- Maximum Landfill Gas Generation Rate = 2795 ft^3/min from LANDGEM Model
- Assume 25% Fugitive Surface Emission Rate (75% of generated gas is captured and controlled by landfill gas combustion equipment)
- Assume H2S concentration = 320 ppmv for 1-hr average and annual average
- Surface emissions are continuous
- Health impacts due to residual H2S emissions from combustion equipment are negligible compared to impacts due to surface emissions

	Acute	**Chronic**
Maximum Landfill Gas Generation Rate (ft^3/min):	2795	
Fugitive Surface Emission Rate:	25%	
Max Landfill Gas Fugitive Emission Rate (ft^3/min):	698.8	
Max Requested H2S Concentration (ppmv):	320	
Max Fugitive H2S Emission Rate (ft^3/min):	0.224	
Max Fugitive H2S Emissions (lbs/hour):	1.1815	
Max Fugitive H2S Emissions (g/s):	0.1489	
Landfill Surface Area (ft^2):	8318490	
Landfill Surface Area (m^2):	772813	
H2S Emission Rate Flux (g/s per m^2):	1.926E-07	
	1-hr Avg.	Annual Avg.
Max Chi/Q From ISCST3 ($\mu g/m^3$ per g/s-m^2):	3152995	315299
Ground Level H2S Concentrations ($\mu g/m^3$):	0.6073	0.0607
Inhalation REL for H2S ($\mu g/m^3$):	42	10
	Acute	Chronic
Hazard Index (REL/H2S Concentration *) * Does not include exposure adjustment factors	0.014	0.006

Toxic Risk Screening Analysis

The emissions of H2S listed above exceed the chronic trigger level for H2S listed in Regulation 2, Rule 5, Table 2-5-1. In order to raise the H2S concentration limit in the conditions from 80 ppmv to 320 ppmv annual average, a risk screening analysis was performed.

Results from the health risk screening analysis are as follows. The maximum cancer risk is not applicable for H2S. The health risk screening analysis indicates that the resulting maximum chronic hazard index is 0.0058 and the maximum acute hazard index is 0.014. In accordance with the District's Regulation 2-5, these levels are considered acceptable.

Estimates of residential risk assume potential exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimates for offsite workers assume potential exposure occurs 8 hours per day, 245 days per year, for 40 years.

The estimated health risks for this permit application are presented in the table below.

Receptor	***Cancer Risk***	***Chronic Hazard Index***	***Acute Hazard Index***
Resident	***N/A***	***5.8E-03***	***1.4E-02***
Worker	***N/A***	***1.4E-03***	***1.4E-02***
Student	***N/A***	***N/A***	***N/A***

New Source Review

NSR and PSD are not applicable to this application.

Statement of Compliance

The total emissions of landfill gas will not change as a result of the proposed revision to the permit condition. There is no change to the landfill gas collection system or the abatement system. Therefore, there are no new District or Federal regulations triggered by the proposed permit condition revisions

Permit Condition #818 will be changed to reflect the change in the H2S concentration limit.

There are no schools within 1000 feet of the landfill.

CEQA

The change in permit conditions is categorically exempt under the District's CEQA Regulation 2-1-312.1 and 312.2, because the emissions from this source will not change. There will be no physical modification to this facility and no anticipated increase in emissions above the currently permitted levels. The engineering evaluation for this project uses fixed standards and objective measurements. There is no adverse environmental impact due to the proposed change in conditions.

Recommendations - Modified Permit Conditions

Vasco Road Landfill (BAAQMD Plant #A5095).

Recommend approval for Source S-1 Landfill, Part 12 of Condition #818 to be changed as follows:

12. Total reduced sulfur compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in the exhaust from the flare. ~~The hydrogen sulfide content of the landfill gas shall not exceed 80 ppmv, dry basis.~~ The concentration of total reduced sulfur ~~content~~ compounds ~~of~~ in the collected landfill gas shall not exceed an annual average of 320 ppmv, reported as H2S, dry basis. (basis: RACT for SO2 and Regulation 9-1-302)
    a. To demonstrate compliance with this limit, the Permit Holder shall monitor the collected landfill gas for sulfur content on a quarterly basis using a combination of field testing and laboratory analytical results.
    b. When using the field testing procedure, the Permit Holder shall measure the hydrogen sulfide (H2S) content in the landfill gas using a Draeger tube. The total reduced sulfur concentration shall be calculated based on the field test results by multiplying the measured H2S concentration by 1.2.
    c. For laboratory analyses, the sample shall be a composite sample collected over a period of no less than 30 minutes and analyzed for the sulfur compounds identified in Part 21.
    d. The Permit Holder shall record the date and results of all field tests, the calculated TRS concentration based on these field tests, and the date and results of the annual laboratory analyses in a District-approved log. The annual average TRS concentration shall be calculated and recorded for each rolling 4-quarter period based on the TRS data recorded above.

signed by Judith Cutino Date March 7, 2012

Judith Cutino, PE
Senior Air Quality Engineer