

ENGINEERING EVALUATION

Browning-Ferris Industries; PLANT # 2266
APPLICATION # 7841

BACKGROUND

Browning Ferris Industries (BFI) owns and operates the Los Trancos Canyon Landfill Facility located on Ox Mountain in Half Moon Bay, CA. This landfill site has two fill areas. The upper canyon area has reached full capacity and has been inactive since 1995, while the lower canyon area is actively accepting waste. Each fill area is equipped with an independently operating landfill gas collection and control system. Landfill gas from the older upper canyon area is controlled by one Landfill Gas Flare (A-6, 126 MM BTU/hour). Landfill gas from the newer lower canyon area is controlled by two Landfill Gas Flares (A-4, 30 MM BTU/hour and A-5, 60 MM BTU/hour).

The three existing flares (A-4, A-5, and A-6) were permitted in 1998/1999 under Application # 18429. BFI has had difficulty maintaining continuous operation of these flares. BFI is currently exceeding the 240 hours/year limit on down-time for inspection and maintenance (Regulation 8-34-113), due to the excessive maintenance problems that BFI has experienced with these flares. Also, recent source test data indicates that the flares have been operating either marginally in compliance or out of compliance with the current nitrogen oxide (NO_x) emission limits. These flares were permitted with very tight NO_x restrictions (30% lower than the current RACT limit of 0.06 pounds/MM BTU), because the facility wanted to keep facility-wide NO_x emissions below 50 tons/year in order to have the required NO_x offsets provided from the small facility banking account.

BFI determined that replacing the existing flares with new equipment rather than retrofitting the existing flares would best suit their need to improve the reliability of the control systems at this site. BFI submitted this application to request an Authority to Construct and Permit to Operate for three Landfill Gas Flares (A-7, A-8, and A-9) to replace the three existing flares. The new flares will have a slightly higher capacity (246 MM BTU/hour versus 216 MM BTU/hour) than the existing flares and will be located in the same places as the three existing flares (A-7 and A-8 will replace A-4 and A-5 and A-9 will replace A-6). This project is intended to reduce down time for the flares and eliminate violations of the flare NO_x emission limits.

CRITERIA POLLUTANT EMISSIONS FOR NEW FLARES

NO_x Emissions:

BFI's goal is to keep facility-wide NO_x emissions below 50 tons/year so that this facility will be able to have NO_x offsets provided from the small facility banking account. This emission rate limit can be satisfied with a flare NO_x emission factor limit (Pounds of NO_x per MM BTU) combined with an annual heat input limit (MM BTU per Year).

The current flares are limited to 0.042 lbs/MM BTU of NO_x and 1,892,160 MM BTU/year. Although the capacity of the new flares is higher than the existing flares, the current annual heat input limit of 1,892,160 MM BTU/year is expected to provide sufficient landfill gas control capacity for the maximum expected landfill gas generation rate. Therefore, BFI is not requesting any change to the annual heat input limit.

Since 1999, BFI has discontinued operation of two on-site tub grinders, resulting in a reduction of facility-wide NO_x emissions. Consequently, the proposed new flares will be able to have a higher NO_x emission factor limit than the current flares, while still keeping facility-wide NO_x emissions below 50 tons/year. BFI proposed a NO_x emission factor limit for the new flares of 0.0527 lbs/MM BTU. The NO_x measurement

procedure is only accurate to $\pm 2\%$ of full scale, which is equivalent to approximately ± 0.001 lbs/MM BTU. Therefore, the District is proposing to round the NO_x emission factor limit down to the nearest 0.001 lbs/MM BTU or 0.052 lbs NO_x/MM BTU. This proposed limit will also satisfy the Regulation 2-2-112 RACT requirement, because a NO_x emission rate of no more than 0.06 lbs/M BTU is considered RACT for landfill gas fired flares. Based on source test data for other similar flares, the proposed NO_x limit is achievable even after application of a reasonable margin for variability.

At the annual throughput limit of 1,892,160 MM BTU and 0.052 lbs NO_x/MM BTU, maximum emissions are: 49.196 tons/year of NO_x.

CO Emissions:

BFI proposed a CO emission factor limit of 0.2 lbs/MM BTU. This is equal to the RACT emission factor limit for CO emissions for landfill gas flares with a NO_x limit of 0.06 lbs/MM BTU. However, this emission rate is significantly higher than the actual CO emission rates from the current flares (0.013-0.133 lbs/MM BTU) that were measured during the most recent source test.

If the new flares were permitted at 0.2 lbs/MM BTU, the cumulative emission increase for this application (maximum permitted emissions from all new equipment minus baseline emissions from all equipment replaced or shut down) would be 141.6 tons per year of CO. Cumulative emission increases that exceed 100 tons per year of CO require the applicant to submit an air quality impact analysis pursuant to Regulation 2-2-305.2. Since the applicant has not submitted the required air quality impact analysis, CO cumulative emission increases must be limited to less than 100 tons per year to ensure compliance with Regulation 2-2-305.2.

The District is proposing a CO emission limit of 0.15 lbs/MM BTU for each of the new flares, which results in cumulative CO emission increases of 94.3 tons/year.

NMOC Emissions:

Landfill gas flares are required to comply with Regulation 8-34-301.3, which limits NMOC emissions to either a minimum destruction efficiency of 98% or an outlet concentration of no more than 30 ppmv of NMOC (as methane) at 3% oxygen. For this site, which is expected to have a maximum of 1300 ppmv of NMOC (as methane) in the landfill gas, complying with the outlet concentration limit will result in more emissions than complying with the destruction efficiency limit. Therefore, NMOC emission calculations are based on the 8-34-301.3 outlet NMOC concentration limit. The NMOC emissions from these flares are assumed to be up to 100% POC and no more than 5% NPOC.

SO₂ Emissions:

Sulfur dioxide (SO₂) emissions are calculated based on a maximum permitted landfill gas sulfur content of 150 ppmv expressed as H₂S. There are no established RACT limits for SO₂ emissions from flares. However, the SCAQMD (Rule 431.1) limits landfill gas to a sulfur content of 150 ppmv as H₂S (daily average). This sulfur content is therefore expected to be reasonably achievable.

PM₁₀ Emissions:

Particulate matter (PM₁₀) emissions are based on an AP-42 factor for landfill gas fired flares (Chapter 2.4 Table 2.4-5): 17 pounds of PM₁₀ per million dry standard cubic feet of methane burned.

Emission Summary:

Maximum daily and maximum annual emissions from the new flares are summarized below. Detailed emission calculations are attached.

Table 1. Summary of Maximum Permitted Daily Emissions

Pounds/Day	A-7 Flare	A-8 Flare	A-9 Flare	Total
NO _x	74.88	74.88	157.25	307.01
CO	216.00	216.00	453.60	885.60
POC	20.13	20.13	42.28	82.54
NPOC	1.01	1.01	2.11	4.13
SO ₂	71.95	71.95	151.09	294.98
PM ₁₀	24.63	24.63	51.72	100.99

Table 2. Summary of Maximum Permitted Annual Emissions

Tons/Year	A-7 Flare	A-8 Flare	A-9 Flare	Total
NO _x	No Applicable Limits on Individual Flares			49.196
CO				141.912
POC				13.227
NPOC				0.661
SO ₂				47.269
PM ₁₀				16.182

EMISSION REDUCTIONS

Contemporaneous on-site emission reductions will be generated due to the shut-down of the three existing landfill gas flares (A-4, A-5, and A-6) and the shut down of the S-14 Diesel Engine for S-13 Tub Grinder. The permit to operate for S-14 was surrendered earlier this year. Emission reductions for each abatement device or source were calculated in accordance Regulation 2-2-605. The baseline throughput was determined from information reported on the annual update forms for the years 2000, 2001, and 2002. September 2002 source test data was used to determine the actual emission factors for NO_x, CO, POC, and SO₂ for the flares. For PM₁₀ emission reductions, the factor was based on AP-42 data. June 1995 source test data was used to determine the actual emission factors for NO_x, CO, and POC for the S-14 Diesel Engine. The SO₂ emissions were based on using CARB low sulfur fuel. PM₁₀ emissions were based on a vendor emission factor. Detailed emission calculations are attached. Emission reductions for each device are summarized below.

Table 3. Summary of Baseline Emissions from Shut Down or Replaced Equipment

Tons/Year	A-4	A-5	A-6	S-14	Total
NO _x	2.645	3.515	13.370	0.096	19.626
CO	3.539	1.525	42.538	0.021	47.624
POC	0.161	0.243	0.651	0.002	1.057
NPOC	0.000	0.000	0.000	0.000	0.000
SO ₂	0.560	0.888	6.257	0.006	7.711
PM ₁₀	1.163	1.980	5.465	0.009	8.617

NET EMISSION INCREASES

The emission increases, emission reductions and net emission increases for this application are summarized below.

Table 4. Summary of Criteria Pollutant Net Emission Increases

	New Flares tons/year	Old Flares tons/year	Diesel Engine tons/year	Net Increases tons/year
NO _x	49.196	-19.530	-0.096	29.570
CO	141.912	-47.602	-0.021	94.288
POC	13.227	-1.054	-0.002	12.170
NPOC	0.661	0.000	0.000	0.661
SO ₂	47.269	-7.705	-0.006	39.558
PM ₁₀	16.182	-8.608	-0.009	7.565

TOXIC EMISSIONS FOR NEW FLARES

Toxic Air Contaminant (TAC) emissions were determined for the new flares (A-7, A-8, and A-9). The emissions were based on proposed concentration limits for TACs in the landfill. These limits were determined based on site-specific landfill gas analyses, the variability of the measured concentrations, and AP-42 data. Each flare is assumed to achieve at least 85% destruction for any individual TAC (except H₂S, which is readily oxidized, and has a destruction efficiency of at least 98%). Secondary emissions of formaldehyde were assumed to be the same as CARB's CATEF emission factor for landfill gas fired turbines. Halogen acid emissions (HCl, HF, and HBr) are based on AP-42 data and the proposed concentration limits for any landfill gas constituents containing halogens (assuming 100% conversion to HX). Detailed emission calculations are attached. Total TAC emission from the three flares and the risk screen trigger levels are summarized below.

Table 5. Maximum Permitted TAC Emissions from Flares

	Uncontrolled lbs/MM BTU	Controlled lbs/MM BTU	Emissions Pounds/Year	Trigger Level Pounds/Year
Carcinogens				
acrylonitrile	1.53E-04	2.30E-05	38.0	0.67
benzene	4.52E-03	6.77E-04	1117.7	6.7
carbon tetrachloride	8.89E-05	1.33E-05	22.0	4.6
chloroform	6.90E-05	1.04E-05	17.1	36
1,4 dichlorobenzene	4.25E-04	6.37E-05	105.2	18
ethylene dibromide (1,2 dibromoethane)	1.09E-04	1.63E-05	26.9	2.7
ethylene dichloride (1,2 dichloroethane)	2.86E-04	4.29E-05	70.8	8.7
ethylidene chloride (1,1 dichloroethane)	5.72E-03	8.58E-04	1415.9	120
methylene chloride	1.47E-02	2.21E-03	3645.7	190
perchloroethylene (tetrachloroethylene)	9.59E-03	1.44E-03	2372.8	33
1,1,2,2 tetrachloroethane	4.85E-04	7.28E-05	120.1	3.3
trichloroethylene	3.80E-03	5.70E-04	940.0	97
vinyl chloride	1.81E-03	2.71E-04	447.1	2.5
formaldehyde *		3.95E-04	651.5	33

Table 5. Maximum Permitted TAC Emissions from Flares

* Formaldehyde emissions are estimated based on a CATEF emission factor for LFG fired turbines.

	Uncontrolled lbs/MM BTU	Controlled lbs/MM BTU	Emissions Pounds/Year	Trigger Level Pounds/Year
Non-Carcinogens				
carbon disulfide	2.20E-04	3.30E-05	54.5	14000
chlorobenzene	3.25E-04	4.88E-05	80.5	14000
chlorodifluoromethane	1.50E-03	2.25E-04	371.2	140000
dichlorodifluoromethane	1.40E-02	2.10E-03	3460.1	140000
dichlorofluoromethane	2.98E-03	4.46E-04	736.3	140000
fluorotrichloromethane	1.59E-03	2.38E-04	393.1	140000
ethyl benzene	1.84E-02	2.76E-03	4557.2	NA
ethyl chloride (chloroethane)	1.12E-03	1.68E-04	276.9	1900000
hexane	7.47E-03	1.12E-03	1849.5	83000
hydrogen sulfide	3.92E-02	7.84E-04	1293.7	8100
isopropyl alcohol	3.47E-02	5.21E-03	8598.6	440000
methyl ethyl ketone	6.25E-03	9.38E-04	1547.6	150000
methyl chloroform (1,1,1 trichloroethane)	7.71E-04	1.16E-04	190.9	62000
toluene	7.99E-02	1.20E-02	19775.4	39000
vinylidne chloride (1,1 dichloroethene)	2.80E-04	4.20E-05	69.4	6200
xylenes	3.07E-02	4.60E-03	7595.3	58000
hydrogen chloride **		2.59E-02	42725.9	1400
hydrogen fluoride **		4.19E-03	6908.8	1100
hydrogen bromide **		1.42E-03	2340.7	4600

** HCl, HF, and HBr emissions are calculated based on AP-42 LFG concentrations of compounds containing these ions and the assumption that 100% of the ions are converted to the halogen acid during combustions.

PLANT CUMULATIVE EMISSIONS

Table 6 below is the summary of all cumulative emission increases, decreases, and offsets provided since April 1991. The plant cumulative increase does not reflect maximum permitted emissions from this facility. For instance, CO emission increases are 288.2 tons/year, but the new maximum permitted CO emission rate will be only 141.9 tons/year. The difference arises from the emission reduction credit calculation procedure. For any pollutants where offsets are not required or offsets were provided from the small facility banking account, the facility gets emission reduction credits for actual annual emissions and not for maximum permitted emissions. The cumulative increase also includes emission increases for equipment that has been or will be shut down. As illustrated below for SO₂ and CO emissions, the difference between actual and maximum permitted emissions can be quite large and can result in cumulative emission increases exceeding maximum permitted emission rates.

Table 6. Plant Cumulative Increase

	Current tons/yr	Increase tons/yr	Decrease tons/yr	Offsets tons/yr	New Total tons/yr
NO _x	= 0.000	+ 49.196	- 19.626	- 29.570	= 0.000
POC	= 0.000	+ 13.227	- 1.057	- 12.170	= 0.000
CO	= 193.931	+ 141.912	- 47.624	-	= 288.219

SO ₂	=	29.100	+	47.269	-	7.711	-	=	68.658
PM ₁₀	=	25.461	+	16.182	-	8.617	-	=	33.026
NPOC	=	50.670	+	0.661	-	0.000	-	=	51.331

To clarify the NSR requirements for this facility, Table 7 below shows the maximum permitted emission rates (or maximum potential emission rates for sources without specific emission limits) for each source and abatement device at this facility (after implementation of this Flare Replacement Project).

Table 7. Maximum Facility-Wide Emissions

Tons/Year	S-1 *	S-5	S-12	A-7 + A-8 + A-9	Total
CO				141.912	141.912
PM ₁₀	70.760		0.120	16.182	87.062
NO _x				49.196	49.196
SO ₂				47.269	47.269
POC	34.637	0.400		13.227	48.264
NPOC	1.699			0.661	2.360

* Based on site landfill gas data, the fugitive landfill gas (maximum of 2400 cfm) is assumed to contain ≤ 1300 ppmv of NMOC as methane (up to 100% POC and up to 5% NPOC). The PM₁₀ emissions are all fugitive emissions and include area sources like wind erosion and vehicle traffic on roads as well as point sources like stockpiles and the active face.

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 Flares (A-7, A-8, and A-9) are considered to be abatement devices and are 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 flares are expressly exempted from CEQA by 2-1-312.2, comparison to the significance thresholds is not required and no further CEQA review is necessary.

New Source Review (Regulation 2, Rule 2, BACT):

As shown in Table 1, each of the new flares (A-7, A-8, and A-9) will emit more than 10 pounds/day of NO_x, CO, POC, SO₂, and PM₁₀. Since these flares are meeting BARCT requirements for control of POC and NPOC emissions from the landfill, the secondary pollutant emissions (NO_x, CO, SO₂, and PM₁₀) from these flares are exempt from BACT requirements pursuant to Regulation 2-2-112. Regulation 2-2-112 requires RACT for secondary pollutant emissions. This RACT requirement is assumed to apply if the emission rate exceeds 10 pounds/day. The emission factor limits that have been considered RACT for landfill gas fired flares are 0.06 pounds of NO_x per MM BTU and 0.20 pounds of CO per MM BTU. The proposed flares will emit at or below these RACT emission limits.

Specific emission limits have not been established as RACT for PM₁₀ or SO₂ emissions from landfill gas flares. Instead, RACT is the use of approved control technology such as a fuel pretreatment system to reduce PM₁₀ emissions. BFI uses filters and knockout pots to remove large particles and moisture from the gas. This type of fuel treatment is adequate for RACT level control of PM₁₀ emissions. No controls

are considered RACT for SO₂ control. The currently available technology for reducing the sulfur in the landfill gas is either not cost effective or not reliable. The South Coast Air Quality Management District (Rule 431.1) limits the sulfur content of landfill gas (when it is used as a fuel) to 150 ppmv as H₂S (daily average). Therefore, the proposed landfill gas sulfur content limit of 150 ppmv of TRS expressed as H₂S is considered reasonably achievable. In addition, the proposed sulfur dioxide emission rate from the flares is less than the current reported BACT level of control for IC Engines. Therefore, the proposed sulfur dioxide emission rate is acceptable as RACT with no controls.

New Source Review (Regulation 2, Rule 2, Offsets):

NO_x and POC: In accordance with Regulation 2-2-302, NO_x and POC offsets are required for this facility, because total facility emissions exceed 15 tons/year of NO_x and 15 tons/year of POC. Since NO_x and POC emissions will each be less than 50 tons/year and this facility owns no banked credits, offsets will be supplied at a 1.0 to 1.0 ratio from the small facility banking account.

Since 1991, the District has supplied a total of 34.600 tons/year of NO_x offsets and 39.924 tons/year of POC offsets to this site from the small facility banking account. For the 3 flares being shut down, the District has supplied 24.76 tons/year of NO_x offsets and 20.369 tons/year of POC offsets. In order for the current maximum permitted emission rates for the new flares (49.196 tons/year of NO_x and 13.227 tons/year of POC) to be fully offset, the additional offsets required from the small facility banking account are: 14.596 tons/year of NO_x. More than sufficient POC offsets have been supplied from the small facility banking account. Note that these offset requirements are much lower than the amounts shown in Table 6. The amounts shown in Table 6 were determined according to the Engineering Division's current procedures. The alternative calculation approach described in this paragraph is provided as information only to illustrate that the current approved procedure results in more offsets being supplied from the SFBA than is necessary to meet NSR requirements.

PM₁₀ and SO₂: As stated in Regulation 2-2-303, offsets of PM₁₀ and SO₂ emission increases are only required if the facility is considered to be a major facility of PM₁₀ and SO₂ emissions. As shown in Table 7, this facility is not major for either PM₁₀ or SO₂ emissions, because facility-wide emissions will be less than 100 tons/year. Therefore, Regulation 2-2-303 does not apply and PM₁₀ and SO₂ offsets are not required.

New Source Review (Regulation 2, Rule 2, PSD):

The PSD requirements are only applicable if the facility is considered to be a new PSD major facility or if the project constitutes a major modification at an existing major facility. This facility is not a new PSD Major Facility for any pollutants, because maximum facility-wide emissions will be less than 250 tons/year for each pollutant (Regulations 2-2-304.1 and 2-2-305.1). 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.

While CO emissions from this facility do not exceed the federal 250 tons/year threshold for the federal definition of a major facility for purposes of PSD, maximum permitted CO emissions (both before and after this project) will exceed 100 tons/year. Therefore, this facility is a "major facility" pursuant to Regulation 2-1-204. Regulations 2-2-304.2-4, 2-2-305.2, and 2-2-306 list major modification thresholds various pollutants at existing major facilities. This project is not considered to be a major modification for any pollutants, because cumulative emission increases for this project are less than the major modification thresholds for each of these pollutants, as summarized in Table 8 below.

Table 8. Cumulative Increases Compared to PSD Major Modification Thresholds

Pollutant	Project Cumulative Emission Increases	Major Modification Thresholds for PSD	Citation
NOx	29.6 Tons/Year	40 Tons/Year	Regulation 2-2-304.2

SO2	39.6 Tons/Year	40 Tons/Year	Regulation 2-2-304.2
PM10	7.6 Tons/Year	15 Tons/Year	Regulation 2-2-304.3
CO	94.3 Tons/Year	100 Tons/Year	Regulation 2-2-305.2
H2S	0.6 Tons/Year & 3.5 Lbs./Day	10 Tons/Year & 55 Lbs./Day	Regulation 2-2-306
TRS	0.7 Tons/Year & 3.7 Lbs./Day	10 Tons/Year & 55 Lbs./Day	Regulation 2-2-306

Regulations 2-2-308 and 2-2-309 do not apply.

New Source Review (Regulation 2, Rule 2, CO Modeling):

Regulation 2-2-305.2 requires an air quality impact analysis, if cumulative CO emission increases at a major facility will exceed 100 tons/year. As discussed above for CO emissions from the new flares, a CO emission factor limit of 0.15 lbs CO/MM BTU will be imposed to ensure that cumulative increases will not exceed 100 tons/year and this modeling requirement will not be triggered.

New Source Review (MACT and Toxic Risk Management Policy):

MACT: Total HAP emissions from this facility (including fugitive emissions from the landfill) were 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.

Toxic Risk Management Policy: As shown in Table 5, TAC emission increases from the A-7, A-8, and A-9 Landfill Gas Flares will exceed several of the District's risk screening trigger levels (from Table 2-1-316). Therefore, a risk screening analysis is required. There are no related projects to this application (no other applications with TAC emission increases within the last two years and no subsequent modifications of an existing source as this equipment is all new).

The District's Toxic Evaluation Section conducted a risk screening analysis for this project using the ISCST-3 air dispersion model with SCREEN3 meteorological data (no site specific met-data is available). Health risks at the maximum impact points were determined to be: cancer risk of 0.5 in a million, chronic hazard index of 0.03, and acute hazard index of 0.004. These maximum health risk values were found in locations where there are no residences. Therefore, the health risk values for an actual residential receptor will be much lower. In accordance with the District's Toxic Risk Management Policy, this project is acceptable, as proposed, and TBACT is not required, because the increased cancer risk to the maximally exposed receptor is less than 1 in a million and the chronic hazard index is less than 1.

Major Facility Review (Regulation 2, Rule 6):

This facility was initially issued an MFR Permit on October 1, 2001, and this MFR Permit expires on September 30, 2006. It was revised through the minor revision procedures on March 7, 2002 and again on August 12, 2003.

In accordance with Regulation 2-6-226.4, this proposed revision to the MFR Permit will be a significant revision, because limits will be imposed in order to avoid an applicable requirement. Specifically, a NO_x emission factor limit and an annual throughput limit will be imposed so that the applicant may avoid the requirement to supply offsets at a ratio of 1.15:1 (Regulation 2-2-302). In this case, the required offsets will be supplied by the District from the Small Facility Banking Account at a ratio of 1.0:1 instead of by the applicant. In addition, a CO emission factor limit and an annual throughput limit will be imposed so that the applicant may avoid the requirement to submit an air quality impact analysis for the CO emissions from the new flares (Regulation 2-2-305.2).

Regulation 2-6-226.7 requires that the incorporation of any requirement promulgated by EPA be considered a significant revision if 3 or more years remain on the permit term. The August 12, 2003 revision included the incorporation of the MSW Landfill NESHAPs requirements. Since there were more

than 3 years remaining on the permit term, the incorporation of this new requirement should have been handled as a significant revision. The significant MFR Permit revision required for this application will be used to remedy this error by identifying the NESHAPs requirements that were added pursuant to the August 12, 2003 minor MFR revision.

The MFR Permit for this facility will be revised as discussed below:

- Merge Table IV-A (for the landfill) and Table IV-D (for the flares) into a single Table IV-A, in order to more easily identify the related requirements for the gas collection and control systems and to eliminate repetitiousness.
- Merge Tables VII-A and VII-D into a single Table VII-A
- Add new Flares (A-7, A-8, and A-9) to Tables II-B, IV-A, and VII-A.
- Modify Permit Condition # 10164
- Make minor corrections in Table VIII

Applicable District Requirements (Regulation 8, Rule 34 “Solid Waste Disposal Sites”):

The S-1 Los Trancos Canyon Landfill and gas collection system are expected to comply with Regulation 8 Rule 34 Section 301 by:

- (a) continuously operating the gas collection system and control devices,
- (b) having no leaks (exceeding 1000 ppmv) from the gas collection system, and
- (c) processing all collected gases in control devices (A-7, A-8, and A-9 Landfill Gas Flares) achieving either 98% NMOC destruction efficiency or meeting the appropriate outlet NMOC concentration limit.

This project is expected to improve compliance with (a) above. This facility has had no recent compliance difficulties with (b) or (c) above.

The S-1 Los Trancos Canyon Landfill is also subject to 8-34-303, which limits leaks on the surface of the landfill to less than 500 ppmv as methane. This facility is expected to continue to comply with this limit.

Applicable District Requirements (Regulation 6):

The new flares (A-7, A-8, and A-9) are expected to comply with the Ringelmann 1 limit of Regulation 6-301 and will have no visible emissions. These devices will also comply with Regulation 6-310 ($PM \leq 0.15$ grains/dscf), because the flares will emit less than 0.02 grains/dscf.

Applicable District Requirements (Regulation 9):

Regulation 9-1-302 limits sulfur dioxide in the exhaust from each new device (A-7, A-8, and A-9) to 300 ppmv. At the maximum expected landfill gas sulfur content of 150 ppmv, the exhaust from these devices will contain 31 ppmv of SO₂. Therefore, this equipment will comply with 9-1-302. Since this equipment will comply with 9-1-302, it is also expected to comply with the ground level SO₂ limits of 9-1-301.

Regulation 9-2-301 limits ground level concentrations of hydrogen sulfide at the fence limit. The proposed new combustion equipment will emit 1484 pounds/year of hydrogen sulfide (H₂S). The risk screening analysis indicated that the maximum ground level concentration of H₂S from the new combustion equipment would be less than 5 ppb (1-hour average). Therefore, combustion equipment emissions of H₂S are negligible, and all combustion devices will comply with Regulation 9-2-301 (30 ppb over 60 minutes and 60 ppb over 3 minutes).

Federal Requirements:

NSPS: The S-1 Los Trancos Canyon Landfill is subject to the NSPS for MSW Landfills (40 CFR, Part 60, Subpart WWW). The new landfill gas flares are expected to comply with all applicable requirements of Subpart WWW.

NESHAPS: A NESHAPS requirement for landfills (40 CFR Part 63, Subpart AAAA) was adopted on January 16, 2003. This subpart requires compliance with the above NSPS requirements, plus increases the frequency of all annual reporting requirements to every 6 months. The last revision of the MFR Permit incorporated this requirement and added a permit condition to require the new monitoring frequency (effective 1/16/04).

Deleted Requirements:

The District is proposing to delete two parts of Condition # 10164. Part 22 describes the NMOC emission limits for the flares that are being shut down. Part 22a describes an obsolete requirement from Regulation 8-34-301.3 that was applicable before the new limit was adopted into the SIP. All other requirements in Part 22 are described in regulations and do not need to be repeated in a permit condition.

Part 31 described the current heat input limits for A-4, A-5, and A-6 and represent operating at maximum equipment capacity for 24 hours per day and 365 days per year. These limits are redundant and are not necessary for these flares, which are being shut down. Therefore, the District is proposing to delete these limits and the associated record keeping requirements.

PERMIT CONDITIONS

Condition # 10164 will be modified as shown below in strikeout and underline formatting. The reasons for the changes are summarized below.

- The current Parts 22 and 31 will be deleted because these requirements are either obsolete or redundant and are not necessary.
- The gas collection and control requirements will be consolidated to improve the readability of this condition. Parts 19 and 20 will be moved and renumbered as Parts 13 and 14. Parts 13-18 will be renumbered as indicated.
- Text was added to Part 19 to more clearly describe the minimum required control system.
- Part 20 is new. It limits annual landfill gas throughput to the flares and requires records. This limit is necessary to ensure that annual NOx and CO emissions do not exceed the emission rates allowed by this application.
- Part 21 is being modified by increasing the landfill gas sulfur content to the allowable RACT limit and by eliminating the quarterly draeger tube testing, which is unnecessary.
- Part 22 is new. It limits concentrations of TACs in landfill gas to the levels used to calculate the cancer risk for this application. This condition helps to assure compliance with the District's Risk Management Policy.
- The new flares (A-7, A-8, and A-9) were added to Parts 23-30. NOx and CO limits for these new flares were added to Parts 28 and 29.
- Part 31 is new. It requires an annual gas characterization test to verify compliance with the landfill gas TRS and TAC concentration limits in Parts 21 and 22.
- Part 34 is new. It requires contemporaneous shut-down of the old landfill gas flares for compliance with emission reduction credit calculation procedures.
- Minor corrections were made to several other parts.

Condition # 10164

For S-1, LOS TRANCOS CANYON LANDFILL; A-4, MODIFIED LANDFILL GAS FLARE; A-5, REPLACEMENT LANDFILL GAS FLARE; ~~AND A-6, NEW LANDFILL GAS FLARE;~~ A-7 LANDFILL GAS FLARE; A-8 LANDFILL GAS FLARE; AND A-9

LANDFILL GAS FLARE:

- *1. Landfill operations at the Los Trancos Canyon (Ox Mountain) Landfill (S-1), including the acceptance and placement of waste, earthmoving, and construction activities, shall be restricted to six days per week, Monday through Saturday. [Basis: CEQA]
2. Total waste accepted and placed at the Los Trancos Canyon Landfill (S-1) shall not exceed 835,000 tons during any consecutive twelve-month period; nor 3,598 tons during any one day. The total cumulative amount of all wastes placed in the landfill shall not exceed 22,740,000 tons. The maximum design capacity of S-1 (total volume of all wastes and cover materials placed in the landfill, excluding final cover) shall not exceed 49,000,000 cubic yards. To confirm compliance with this part, the Permit Holder of S-1 shall maintain daily records, summarized on a monthly basis, of the amount of waste accepted and placed in each area of the landfill. [Basis: Cumulative Increase]
- *3. All waste shall be covered with compacted materials meeting the requirements of the State of California. The cover frequency shall be increased as necessary to control odors and litter. [Basis: Regulation 1-301]
4. All on-site parking and maintenance areas for vehicles and mobile equipment shall be either paved, or provided with a gravel surface and maintained as necessary to prevent dust emissions. [Basis: Regulation 6-301]
5. All on-site roadways shall be paved, except for a segment of road from the end of the paved haul road to the working face. This unpaved segment shall not exceed 1200 feet in length. Limited use access roads may also remain unpaved. Limited use access roads include fire roads and other on-site roads that are traveled infrequently for the purpose of site patrol, maintenance, or monitoring of the landfill cover, landfill gas collections system, and landfill gas control system. [Basis: Cumulative Increase]
6. The speed of vehicles on unpaved roads shall not exceed 10 mph. [Basis: Cumulative Increase]
7. All unpaved roads (excluding limited use access roads) shall be treated with 10% (wt) magnesium chloride dust suppressant solution at a rate of at least 0.5 gallons per square yard. This dust suppressant solution shall be applied at least once per calendar month, during May through October. During November through April, dust suppressant shall be applied after any dry period consisting of 30 consecutive days with less than 0.09 inches of rain per day. In addition, water shall be applied to all unpaved roads at least four times per working day. This watering schedule may be reduced during periods when there is sufficient precipitation to minimize dust emissions. [Basis: Cumulative Increase]
8. The Permit Holder of S-1 shall sweep and wash down all paved roadways at least twice per week or as necessary to maintain a clean road surface. [Basis: Cumulative Increase]
9. On-site vehicle traffic volume shall not exceed the number of round trips described below during any one day:
 - a. Transfer Trucks - 178 round trips per day
 - b. Packer Trucks - 52 round trips per day
 - c. Water Trucks - 36 round trips per day
 - d. Soil Trucks - 200 round trips per day
 - e. Misc. Heavy Equipment - 60 round trips per day
 - f. Light Duty Vehicles - 250 round trips per day

The Permit Holder shall apply to the District for a modification of S-1 to add any other vehicles or to increase the number of daily round trips. The Permit Holder shall maintain daily traffic records

to confirm compliance with this part, except that the Permit Holder may omit the employee light duty vehicle trips from these recordkeeping requirements. [Basis: Cumulative Increase]

10. Except for the vehicles listed below, the on-site one way distance traveled by any heavy-duty vehicle (on paved roads only) shall not exceed 8,000 feet. This limitation does not apply to the following vehicle traffic, which may travel up to a maximum of 11,700 feet (one-way distance) on paved roads.
 - a. Water Trucks - 36 round trips per day
 - b. Fuel Trucks - 2 round trips per day
 - c. Employee Light-Duty Vehicles - 20 round trips per day[Basis: Cumulative Increase]
- *11. All completed landfill phases shall be revegetated in accordance with the final EIR. [Basis: CEQA]
12. The Permit Holder shall maintain appropriate records (including but not limited to: operating times, refuse acceptance rates, water and/or chemical dust suppressant application times, traffic volumes, site maps showing all paved and unpaved road lengths, etc.) to verify compliance with parts 1-11. These records shall be kept on site for at least 5 years from the date of entry and shall be made available to District personnel upon request. [Basis: Cumulative Increase]

Conditions for Contaminated Soil Daily Cover Operations

- ~~4913.~~ The Permit Holder of the S-1 Active Landfill shall not handle soil containing volatile organic compounds (VOCs) or use soil containing VOCs as cover material, unless the following provisions are met.
 - a. The Permit Holder satisfies all requirements of Regulation 8, Rule 40, Sections 116, 117, or 118; or
[Basis: [Regulation 8-40-301](#)]
 - b. The Permit Holder can demonstrate that the soil is not "contaminated" as defined in Regulation 8-40-205 (contains less than or equal to 50 ppmw of VOCs); and the Permit Holder places no more than 118.75 tons/day and no more than 31,800 tons/year of such soil in the landfill (disposal and cover use combined). These placement limits do not apply to the placement of soil that has no known contamination of VOCs.
[Basis: Cumulative Increase and [Regulation 8-2-301](#)]
- ~~2014.~~ Handling Procedures for Soil Containing Volatile Organic Compounds
 - a. The procedures listed below in subparts b-l do not apply if the following criteria are satisfied. However, the record keeping requirements in subpart m below are applicable.
 - i. The Permit Holder has appropriate documentation demonstrating that either the organic content of the soil or the organic concentration above the soil is below the "contaminated" level (as defined in Regulation 8, Rule 40, Sections 205, 207, and 211). The handling of soil containing VOCs in concentrations below the "contaminated" level is subject to Part ~~4913~~ above.
 - ii. The Permit Holder has no documentation to prove that soil is not contaminated, but source of the soil is known and there is no reason to suspect that the soil might contain organic compounds.
 - b. The Permit Holder shall provide notification to the Compliance and Enforcement Division of the Permit Holder's intention to accept contaminated soil at the facility at least 24 hours in advance of receiving the contaminated soil. The Permit Holder shall provide an estimate of the amount of contaminated soil to be received, the degree of contamination (range and average VOC Content), and the type or source of contamination.
 - c. Any soil received at the facility that is known or suspected to contain volatile organic compounds (VOCs) shall be handled as if the soil were contaminated, unless the Permit Holder receives test results proving that the soil is not contaminated. To prove that the soil is not contaminated, the Permit Holder shall collect soil samples in accordance with

Regulation 8-40-601 within 24 hours of receipt of the soil by the facility. The organic content of the collected soil samples shall be determined in accordance with Regulation 8-40-602.

- i. If these test results indicate that the soil is still contaminated or if the soil was not sampled within 24 hours of receipt by the facility, the Permit Holder must continue to handle the soil in accordance with the procedures subparts d-l below, until the soil has completed treatment or has been placed in a final disposal location and adequately covered. Storing soil in a temporary stockpile or pit is not considered treatment. Co-mingling, blending, or mixing of soil lots is not considered treatment.
 - ii. If these test results indicate that the soil – as received at the facility – has an organic content of 50 ppmw or less, then the soil may be considered to be not contaminated and need not be handled in accordance with the procedures listed in subparts d-l below, but shall be handled in accordance with Part 4913 above.
- d. Any contaminated soil received at the facility shall be clearly identified as contaminated soil, shall be handled in accordance with subparts e-l below, and shall be segregated from non-contaminated soil. Contaminated soil lots may not be co-mingled, blended, or otherwise mixed with non-contaminated soil lots prior to treatment, reuse, or disposal. Mixing soil lots in an attempt to reduce the overall concentration of the contaminated soil or to circumvent any requirements or limits is strictly prohibited.
- e. On-site handling of contaminated soil shall be limited to no more than two on-site transfers per soil lot. For instance, unloading soil from off-site transport vehicles into a temporary storage pile is considered one transfer. Moving soil from a temporary storage pile to a staging area is considered one transfer. Moving soil from a temporary storage pile to a final disposal site is considered one transfer. Moving soil from a staging area to a final disposal site is considered one transfer. Therefore, unloading soil from off-site transport into a temporary storage pile and then moving the soil from that temporary storage pile to the final disposal site is allowed. Unloading soil from off-site transport into a staging area and then moving the soil from that staging area to the final disposal site is allowed. However, unloading soil from off-site transport to a temporary storage pile, moving this soil to a staging area, and then moving the soil again to a final disposal site is three on-site transfers and is not allowed.
- f. If the contaminated soil has an organic content of less than 500 ppmw, the contaminated soil shall either be treated or deposited in a final disposal site or transported off-site for treatment, within 90 days of receipt at the facility.
- g. If the contaminated soil has an organic content 500 ppmw or more, the contaminated soil shall either be treated or deposited in a final disposal site or transported off-site for treatment, within 45 days of receipt at the facility.
- h. All active storage piles shall meet the requirements of Regulation 8-40-304 by using water sprays, vapor suppressants or approved coverings to minimize emissions. The exposed surface area of any active storage pile (including the active face at a landfill) shall be limited to 6000 ft². The types of storage piles that may become subject to these provisions include (but are not limited to) truck unloading areas, staging areas, temporary stockpiles, soil on conveyors, bulldozers or trucks, the active face of a landfill, or other permanent storage pile at the final disposal location.
- i. All inactive storage piles shall meet the requirements of Regulation 8-40-305 including the requirement to cover contaminated soil during periods of inactivity longer than one hour. The types of storage piles that may become subject to these provisions include (but are not limited to) soil on trucks or other on-site equipment, staging areas, temporary stockpiles, and the permanent storage pile at the final disposal location. District approved coverings for inactive storage piles include continuous heavy-duty plastic sheeting (in good condition, joined at the seams, and securely anchored) or encapsulating vapor suppressants (with re-treatment as necessary to prevent emissions).
- j. The Permit Holder must:

- i. Keep contaminated soil covered with continuous heavy-duty plastic sheeting (in good condition, joined at the seams, and securely anchored) whenever soil is to be stored in temporary stockpiles or during on-site transport in trucks. Soil in trucks shall not be left uncovered for more than 1 hour.
- ii. Establish a tipping area for contaminated soils near the active face that is isolated from the tipping area for other wastes.
- iii. Spray contaminated soil with water or vapor suppressant immediately after dumping the soil from a truck at the tipping area.
- iv. Ensure that all contaminated soil is transferred from the tipping area to the active face immediately after spraying with water or vapor suppressant.
- v. Ensure that contaminated soil in the tipping area is not disturbed by subsequent trucks. Trucks shall not drive over contaminated soil in the tipping area or track contaminated soil out of the tipping area on their wheels.
- vi. Spray contaminated soil on the active face with water or vapor suppressant (to keep the soil visibly moist) until the soil can be covered with an approved covering.
- vii. Limit the area of exposed soil on the active face to no more than 6000 ft².
- viii. Ensure that contaminated soil spread on the active face is completely covered on all sides with one of the following approved coverings: at least 6 inches of clean compacted soil, at least 12 inches of compacted garbage, or at least 12 inches of compacted green waste.
- ix. Ensure that covering of soil on the active face is completed within one hour of the time that the soil was first dumped from a truck at the tipping area.
- k. Contaminated soil shall not be used as daily, intermediate, or final cover material for landfill waste operations unless the requirements of Regulation 8, Rule 40, Sections 116 or 117 have been satisfied.
- l. Contaminated soil is considered to be a decomposable solid waste pursuant to Regulation 8, Rule 34. All contaminated soil disposed of at a site shall be included in any calculations of the amount of decomposable waste in place for annual reporting requirements or for purposes of 8-34-111 or 8-34-304.
- m. The Permit Holder shall keep the following records for each lot of soil received, in order to demonstrate on-going compliance with the applicable provisions of Regulation 8, Rule 40.
 - i. For all soil received by the facility (including soil with no known contamination), record the arrival date at the facility, the soil lot number, the amount of soil in the lot, the organic content or organic concentration of the lot (if known), the type of contamination (if any), and keep copies of any test data or other information that documents whether the soil is contaminated (as defined in 8-40-205) or not contaminated, with what, and by how much.
 - ii. If the soil is tested for organic content after receipt by the facility, a report with the sampling date, test results, and the date results were received.
 - iii. For all on-site handling of contaminated soil, use a checklist or other approved method to demonstrate that appropriate procedures were followed during all on-site handling activities. One checklist shall be completed for each day and for each soil lot (if multiple lots are handled per day).
 - iv. For soil aerated in accordance with 8-40-116 or 117 record the soil lot number, the amount of soil in the lot, the organic content, the final placement date, the final placement location, and describe how the soil was handled or used on-site.
 - v. For final disposal at a landfill, record on a daily basis the soil lot number, the amount of soil placed in the landfill, the disposal date, and the disposal location.All records shall be retained for at least 5 years from the date of entry and shall be made available for District inspection upon request.
(Basis: Regulation§ 8-40-301, 8-40-304 and 8-40-305)

1315. In order to demonstrate compliance with Regulation 8, Rule 34, Section 304, the Permit Holder

shall maintain the following records for each area or cell that is not controlled by a landfill gas collection system.

- a. Record the date that waste was initially placed in each uncontrolled area or cell.
- b. Record the cumulative amount of waste placed in each uncontrolled area or cell on a monthly basis.
- c. For any areas or cells that are excluded from the collection system requirements, 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 the initial operation date for each new landfill gas well and collector.
- e. 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 Parts [44.a-16a](#) and [45.a-17a](#) below. Any areas containing only non-decomposable waste shall be clearly identified. This map shall be updated at least every six months to indicate changes in refuse boundaries and to include any newly installed wells and collectors.

These records shall be kept on site for at least 5 years from the date of entry and shall be made available to District personnel upon request. [Basis: [Regulation](#) 8-34-304]

Collection and Control System Requirements

[4416](#). The Permit Holder of S-1 shall have a properly operated and properly maintained landfill gas collection system in the Upper Los Trancos Canyon Fill Area. The Permit Holder shall apply for and receive an Authority to Construct from the District before implementing any changes to the Collection and Control System Design Plan. Increasing or decreasing the number of wells or collectors or significantly changing the locations, depths or lengths of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.

- a. This gas collection system shall consist of 76 vertical wells.

[Basis: [Regulations](#) 2-1-301, 8-34-301.1, 8-34-305, and NSPS: 40 CFR 60.752(b)(2)(ii)]

[4517](#). The Permit Holder of S-1 shall have a properly operated and properly maintained landfill gas collection system in the Lower Los Trancos Canyon Fill Area. The Permit Holder shall apply for and receive an Authority to Construct from the District before implementing any changes to the Collection and Control System Design Plan. Increasing or decreasing the number of wells or collectors or significantly changing the locations, depths, or lengths of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.

- a. This gas collection system shall consist of 47 horizontal collectors (monitored at 4 headers) and 15 vertical wells.

- b. The Permit Holder has been issued an Authority to Construct for the additional landfill gas collection system components listed below. The minimum number of wells shall be installed by no later than March 1, 2002. Specific well locations, depths, and lengths of associated piping are as described in detail in Permit Application # 3221. Wells installed pursuant to Part [45.b-17b](#) shall be added to Part [45.a-17a](#) via an administrative permit amendment in accordance with the procedures identified in [Regulations 2-6-414 or 2-6-415](#).

Minimum Collectors
3 horizontal

Maximum Collectors
18 horizontal

[Basis: [Regulations](#) 2-1-301, 8-34-301.1, 8-34-305, and NSPS: 40 CFR 60.752(b)(2)(ii), 60.755(a) and 60.759]

[4618](#). The landfill gas collection systems described in parts [44.a-16a](#) and [45.a-17a](#) shall be operated continuously. Wells shall not be disconnected or removed, nor isolation valves shut completely off, 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]

[4719](#). All [collected](#) landfill gas [collected by the horizontal and vertical landfill gas collection systems for](#)

~~S-1~~ shall be abated by Landfill Gas Flares (A-4, A-5, ~~or A-6, A-7, A-8, or A-9~~). A minimum of one landfill gas flare (either A-6 or A-9) shall be used to control landfill gas collected from the upper canyon area. A minimum of one landfill gas flare (either A-5, A-7, or A-8) shall be used to control landfill gas collected from the lower canyon area, provided that the total landfill gas collection rate for A-4, A-5, A-7, and A-8 (averaged over the previous three months and excluding shut-down time) is not more than 2012 scfm, expressed as landfill gas with 50% methane (dry basis) at 70 degrees F and 1 atmosphere. If this total average landfill gas collection rate is more than 2012 scfm, a minimum of two flares (any combination of A-4, A-5, A-7, or A-8) shall be used to control landfill gas collected from the lower canyon area. Under no circumstances shall raw landfill gas shall not be vented to the atmosphere, except for —This limitation does not apply to—unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118 ~~or to and for~~ inadvertent component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303. {(Basis: Regulations 8-34-301 and 8-34-303)}

~~20.~~ The combined landfill gas flow rate to all the Flares (A-4, A-5, A-6, A-7, A-8, and A-9) shall not exceed 3807.6 million standard cubic feet during any consecutive 12-month period. For comparison to this limit, the landfill gas flow rate shall be corrected to 50% methane (dry basis), 70 degrees F, and 1 atmosphere. In order to demonstrate compliance with this part, the Permit Holder shall:

- a. determine and record, on a monthly basis, the methane content (dry basis) of the landfill gas in each landfill gas collection system header (upper canyon header and lower canyon header).
- b. calculate and record, on a monthly basis, the total landfill gas flow rate (expressed as 50% methane, dry basis, at 70 degrees F and 1 atmosphere) for each landfill gas collection system (flow to A-6 and A-9 for the upper canyon collection system and flow to A-4, A-5, A-7, and A-8 for the lower canyon collection system).
- c. calculate and record, on a monthly basis, the total landfill gas flow rate to all flares (expressed as 50% methane, dry basis, at 70 degrees F and 1 atmosphere), and
- d. maintain records of all calculation procedures and measured values that were used to determine the total corrected landfill gas flow rate to the flares.

All records shall be maintained on site in an APCO approved logbook 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: Offsets and Cumulative Increase)

~~1821.~~ The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed ~~92150~~ ppmv as H₂S. Total reduced sulfur compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in control systems exhaust. ~~In order to demonstrate compliance with this part, the Permit Holder shall measure the total sulfur content in collected landfill gas on a quarterly basis using a draeger tube. The landfill gas sample shall be taken from the main landfill gas header. The Permit Holder shall follow the manufacturer's recommended procedures for using the draeger tube and interpreting the results. The Permit Holder shall conduct the first draeger tube test no later than 3 months after the issue date of the MFR Permit and quarterly thereafter. Total reduced sulfur compounds in the landfill gas shall be determined on an annual basis pursuant to Part 31. {(Basis: Cumulative Increase and Regulation 2-6-503)}~~

Conditions for A-4, A-5, and A-6

~~22.~~ Each Flare (A-4, A-5, and A-6) shall meet all of the following requirements:

- a. For each flare, the destruction efficiency of total hydrocarbons shall not be less than 98% by weight. [Basis: 8-34-301.3]; and
- b. For each flare, the destruction efficiency for total non-methane organic compounds (NMOC) shall not be less than 98% by weight unless the outlet NMOC concentration is

~~less than 20 ppmv, expressed as hexane at 3% oxygen on a dry basis. [Basis: 40 CFR 60.752(b)(2)(iii)(B)]; and~~

~~c. Effective July 1, 2002, for each flare, the destruction efficiency for total non-methane organic compounds (NMOC) shall not be less than 98% by weight unless the outlet NMOC concentration is less than 30 ppmv, expressed as methane at 3% oxygen on a dry basis. This subpart is not federally enforceable unless EPA approves the October 6, 1999 version of Regulation 8, Rule 34 into the SIP. [Basis: 8-34-301.3]~~

*22. The Permit Holder shall submit a permit application for a Change of Permit Conditions, if any site-specific landfill gas characterization test indicates that the landfill gas at this site contains any of the following compounds at a level greater than the concentration listed below. The Permit Application shall be submitted to the District, within 45 days of receipt of test results indicating a concentration above the levels listed below.

Compound	Concentration (ppbv)
Acrylonitrile	500
Benzene	10,000
Carbon Tetrachloride	100
Chloroform	100
1,4 Dichlorobenzene	500
Ethylene Dibromide	100
Ethylene Dichloride	500
Ethylidene Dichloride	10,000
Methylene Chloride	30,000
Perchloroethylene	10,000
1,1,2,2 Tetrachloroethane	500
Trichloroethylene	5,000
Vinyl Chloride	5,000

(Basis: Toxic Risk Management Policy)

23. ~~Each Flare (A-4, A-5, and A-6; until the flare is permanently shut down; and A-7, A-8, and A-9: upon initial operation of the flare) shall operate at the minimum combustion zone temperature indicated in subparts a-cf below. These minimum temperatures shall be adjusted via an administrative permit amendment, if a flare source test demonstrates compliance with all applicable requirements at a different temperature. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO will revise the minimum combustion zone temperature limit in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415 and the following criteria. The minimum combustion zone temperature for a flare shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature is not less than 1200/1400 degrees F.~~

- a. ~~The A-4 Landfill Gas Flare shall operate at a minimum combustion zone temperature of at least 1600 degrees F, averaged over any 3-hour period.~~
- b. ~~The A-5 Landfill Gas Flare shall operate at a minimum combustion zone temperature of at least 1455 degrees F, averaged over any 3-hour period.~~
- c. ~~The A-6 Landfill Gas Flare shall operate at a minimum combustion zone temperature of at least 1407 degrees F, averaged over any 3-hour period.~~
- d. The A-7 Landfill Gas Flare shall operate at a minimum combustion zone temperature of at least 1400 degrees F, averaged over any 3-hour period.
- e. The A-8 Landfill Gas Flare shall operate at a minimum combustion zone temperature of at least 1400 degrees F, averaged over any 3-hour period.
- f. The A-9 Landfill Gas Flare shall operate at a minimum combustion zone temperature of at least 1400 degrees F, averaged over any 3-hour period.

[Basis: Regulation 8-34-301.3, NSPS: 40 CFR 60.752(b)(2)(iii)(B), 60.758(c)(1)(i), and Toxic Risk Management Policy]

24. Each Flare (A-4, A-5, and A-6: until the flare is permanently shut down; and A-7, A-8, and A-9: upon initial operation of the flare) shall be equipped with a temperature monitor with readout display and a continuous temperature recorder. One or more thermocouples shall be placed in the primary combustion zone of the flare and shall accurately indicate flare combustion zone temperature at all times. [Basis: Regulations 8-34-501.3 and 8-34-507, and NSPS: 40 CFR 60.756(b)(1)]
25. Each Flare (A-4, A-5, and A-6: until the flare is permanently shut down; and A-7, A-8, and A-9: upon initial operation of the flare) shall be equipped with automatic combustion air controls. [Basis: 2-1-403Regulation 8-34-301.3 and RACT for CO]
26. Each Flare (A-4, A-5, and A-6: until the flare is permanently shut down; and A-7, A-8, and A-9: upon initial operation of the flare) shall be equipped with a properly maintained and properly calibrated flow meter to measure gas flow into each flare. Gas flow shall be recorded at least every 15 minutes. [Basis: Regulations 8-34-501.10 and 8-34-508, and NSPS: 40 CFR 60.756(b)(2)(i)]
27. Each Flare (A-4, A-5, and A-6: until the flare is permanently shut down; and A-7, A-8, and A-9: upon initial operation of the flare) shall be equipped with an automatic gas shutoff valve, local and remote alarms, and an automatic restart system. [Basis: 2-1-403Regulation 8-34-301]
28.
 - a. The concentration of nitrogen oxides (NO_x) in the outlet from ~~any~~ Flares (A-4, A-5, or A-6) shall not exceed 0.042 pounds per million BTU. [Basis: RACT and Offsets]
 - b. Nitrogen Oxide (NO_x) emissions from Flares A-7, A-8, or A-9 shall not exceed 0.052 pounds of NO_x (calculated as NO₂) per million BTU. The Permit Holder may demonstrate compliance with this emission rate limit by having a nitrogen oxide concentration in the flare exhaust of no more than 39 ppmv of NO_x corrected to 3% oxygen, dry basis. An exhaust concentration measurement of more than 39 ppmv of NO_x shall not be deemed a violation of this part, if the Permit Holder can demonstrate that NO_x emissions did not exceed 0.052 lbs/MM BTU during the test period. (Basis: RACT and Offsets)
29.
 - a. The concentration of carbon monoxide (CO) in the outlet from ~~any~~ Flares (A-4, A-5, or A-6) shall not exceed 0.2 pounds per million BTU. [Basis: RACT and Cumulative Increase]
 - b. Carbon Monoxide (CO) emissions from Flares A-7, A-8, or A-9 shall not exceed 0.15 pounds of CO per million BTU. The Permit Holder may demonstrate compliance with this emission rate limit by having a carbon monoxide concentration in the flare exhaust of no more than 184 ppmv of CO, corrected to 3% oxygen, dry basis. An exhaust concentration measurement of more than 184 ppmv of CO shall not be deemed a violation of this part, if the Permit Holder can demonstrate that CO emissions did not exceed 0.15 lbs/MM BTU during the test period. (Basis: RACT, Cumulative Increase, and avoidance of Regulation 2-2-305.2)
30. In order to demonstrate compliance with Parts 28 and 29 above, Regulation 8, Rule 34, Section 301.3 and 40 CFR 60.752(b)(2)(iii)(B), the Permit Holder shall ensure that a District approved source test is conducted annually on each Landfill Gas Flare (A-4, A-5, and A-6: until the flare is permanently shut down; and A-7, A-8, and A-9: upon initial operation of the flare). The source tests shall be conducted no sooner than 9 months and no later than 12 months after the previous source test. ~~The Each~~ annual source test shall determine the following:
 - a. landfill gas flow rate to the flare (dry basis);
 - b. concentrations (dry basis) of carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), methane (CH₄), and total non-methane hydrocarbons (NMOC), ~~and total hydrocarbons (THC)~~ in the landfill gas;
 - c. the landfill gas flow rate (scfm) and heat input rate (MM BTU/hour) to the flare (BTU/hour);
 - d. stack gas flow rate from the flare (dry basis);

- e. concentrations (dry basis) of NO_x, CO, CH₄, NMOC, ~~THC~~, and O₂ in the flare stack gas;
- f. the emission rate per heat input (pounds/MM BTU) for NO_x and CO
- g. the ~~CH₄~~, NMOC, ~~and THC~~ destruction efficiencies achieved by the flare; and
- h. the average combustion zone temperature in the flare during the test period.

The Source Test Section of the District shall be contacted to obtain ~~its~~ approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 45 days ~~after of~~ the test date. [Basis: Regulations 2-6-503, 8-34-301.3, 8-34-412, and 40 CFR 60.752(b)(2)(iii)(B)]

- ~~31. The heat input to each of the Flares (A 4, A 5, and A 6) shall not exceed the limits described below for each flare.~~
- ~~a. The heat input to A 4 shall not exceed 720 MM BTU during any one day nor 262,800 MM BTU during any consecutive 12-month period.~~
 - ~~b. The heat input to A 5 shall not exceed 1440 MM BTU during any one day nor 525,600 MM BTU during any consecutive 12-month period.~~
 - ~~c. The heat input to A 6 shall not exceed 3024 MM BTU during any one day nor 1,103,760 MM BTU during any consecutive 12-month period.~~
- ~~[Basis: Offsets and Cumulative Increase]~~

31. The Permit Holder shall conduct a characterization of the landfill gas at the site on an annual basis. The landfill gas samples shall be drawn from the main landfill gas headers (one sample from the upper canyon header and one sample from the lower canyon header) concurrent with the annual source test required by Part 30 above. In addition to the compounds listed in Part 30b, the landfill gas shall be analyzed for the organic and sulfur compounds listed below. All concentrations shall be reported on a dry basis. The test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 45 days of the test date. (Basis: Toxic Risk Management Policy, Cumulative Increase, and Regulations 8-34-412 and 9-1-302)

Organic Compounds

acrylonitrile
benzene
carbon tetrachloride
chlorobenzene
chlorodifluoromethane
chloroethane
chloroform
1,1 dichloroethane
1,1 dichlorethene
1,2 dichlorethene
1,4 dichlorobenzene
dichlorodifluoromethane
dichlorofluoromethane
ethylbenzene

Organic Compounds

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
xylene

Sulfur Compounds

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

32. The Permit Holder shall retain all records related to compliance with parts ~~22-3418-31~~ for a minimum of 5 years. Such records include source test reports, continuous temperature records, gas flow rate records, and start-up and shut-down dates and times. All records shall be kept on site and made available to District staff upon request. [Basis: Regulations 8-34-501, and 2-6-501]
33. 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, 2002 through September 30, 2003. This first increment report shall be submitted by October 31, 2003. The reporting periods and report submittal due dates for all subsequent increments of the Regulation 8-34-411 report shall be synchronized with the reporting periods and report submittal due dates for the semi-annual MFR Permit monitoring reports that are required by Section I.F. of the MFR Permit for this site. (Basis: Regulation 8-34-411 and 40 CFR Part 63.1980(a))

34. The A-4 Landfill Gas Flare shall be permanently shut down and the Permit to Operate surrendered to the District within 90 days of the initial start-up date for the A-7 Landfill Gas Flare. The A-5 Landfill Gas Flare shall be permanently shut down and the Permit to Operate surrendered to the District within 90 days of the initial start-up date for the A-8 Landfill Gas Flare. The A-6 Landfill Gas Flare shall be permanently shut down and the Permit to Operate surrendered to the District within 90 days of the initial start-up date for the A-9 Landfill Gas Flare. Upon receiving notification that a flare has been permanently shut down, the APCO may delete all obsolete text concerning that flare from the parts above in accordance with the administrative permit amendment procedures of Regulation 2-6-413. (Basis: Offsets and Cumulative Increase)

MONITORING ASSESSMENT

This section discusses the proposed monitoring requirements for all new federally enforceable numerical limits.

Nitrogen Oxide Limits:

NO_x Limits

S# & Description	Limit Citation	Federally Enforceable Limit	Monitoring
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD Condition # 10164, Part 28b	0.052 pounds of NO _x , calculated as NO ₂ , per MM BTU or ≤ 39 ppmv of NO _x , corrected to 3% O ₂ , dry	Annual Source Test

This facility is currently subject to an annual source test requirement for NO_x limits at the existing landfill gas fired flares. The new flares will have the same annual combustion capacity as the existing flares and will emit less than 50 tons/year of NO_x (total). The new flares are not expected to have any difficulty complying with the proposed NO_x limit. Annual source testing is a standard monitoring method for NO_x emissions from landfill gas fire equipment. Therefore, annual source testing is adequate.

Carbon Monoxide Limits:

CO Limits

S# & Description	Limit Citation	Federally Enforceable Limit	Monitoring
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD Condition # 10164, Part 29b	0.15 pounds of CO per MM BTU or ≤ 184 ppmv of CO, corrected to 3% O ₂ , dry	Annual Source Test

This facility is currently subject to an annual source test requirement for CO limits at the existing landfill gas fired flares. The new flares will have the same annual combustion capacity as the existing flares and will have a lower potential to emit than the existing flares. The new flares are not expected to have any difficulty complying with the proposed CO limit. Annual source testing is a standard monitoring method for CO emissions from landfill gas fire equipment. Therefore, annual source testing is adequate.

Sulfur Dioxide Limits:

Sulfur Limits

S# & Description	Limit Citation	Federally Enforceable Limit	Monitoring
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD 9-1-301	Property Line Ground Level SO ₂ Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤ 0.05 ppm for 24 hours	None
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD 9-1-302	Gas Stream SO ₂ Limit: ≤ 300 ppm (dry)	Annual Sulfur Analysis of Landfill Gas
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD Condition # 10164, Part 21	Concentration of Total Reduced Sulfur Compounds in Landfill Gas: ≤ 150 ppmv as H ₂ S	Annual Sulfur Analysis of Landfill Gas

BAAQMD Regulation 9-1-301: As discussed below for BAAQMD Regulation 9-1-302, this facility will be subject to a federally enforceable limit, which will ensure compliance with the Regulation 9-1-302 gas stream emission limit of 300 ppmv of SO₂ in the exhaust from each flare. Based on modeling analyses conducted at other landfill sites, sources complying with the Regulation 9-1-302 limit are not expected to result in an excess of the ground level concentration limits listed in Regulation 9-1-301. Monitoring for ground level SO₂ concentrations in addition to the proposed annual landfill gas sulfur analysis would not be appropriate.

BAAQMD Regulation 9-1-302: This facility will be subject to a federally enforceable limit of 150 ppmv of TRS in the landfill gas (BAAQMD Condition # 10164, Part 21). This limit will result in maximum sulfur dioxide emissions from a flare of 31 ppmv SO₂ at 0% oxygen, dry basis. The margin of compliance with the Regulation 9-1-302 sulfur dioxide limit is 10 to 1. As discussed below, site data indicates that the actual landfill gas sulfur content is well below 150 ppmv of TRS and does not vary appreciably. Since the margin of compliance is very high and the landfill gas sulfur content variations at this site are negligible compared to the limit, annual testing of the landfill gas for total reduced sulfur content is adequate for demonstrating compliance with this limit.

BAAQMD Condition # 10164, Part 21: This part limits the landfill gas sulfur concentration to 150 ppmv expressed as H₂S. This facility has been monitoring the hydrogen sulfide concentration in the landfill gas on a quarterly basis for the last two years. The average H₂S concentration was found to be 18.3 ppmv with a range of 17-20 ppmv. For Bay Area landfills, the TRS content can be determined by multiplying 1.2 times the H₂S concentration that is measured by draeger tubes. The total reduced sulfur for this site 20-24 ppmv with an average of 22 ppmv. The margin of compliance with the proposed limit is at least 6 to 1. The variability of the TRS content is negligible compared to the proposed limit. Therefore, the landfill gas at this site is not ever expected to exceed the TRS limit of 150 ppmv. Continuation of the quarterly draeger tube monitoring procedure is not justifiable. The District is proposing to impose an annual test of the landfill gas for total reduced sulfur compounds pursuant to Condition # 10164, Part 31. Annual testing is appropriate considering the high compliance margin and low variability of the sulfur content in the landfill gas at this site.

Particulate Matter Limits:

PM Limits

S# & Description	Limit Citation	Federally Enforceable Limit	Monitoring
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD 6-301	Ringelmann 1.0	None
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD 6-310	0.15 gr/dscf	None

BAAQMD Regulation 6-301: Visible particulate emissions are normally not associated with combustion of gaseous fuels, such as natural gas or landfill gas. Since violations of Ringelmann 1.0 limit are not expected and PM10 emissions are not substantial, periodic monitoring for the Ringelmann limit would not be appropriate for these flares.

BAAQMD Regulation 6-310: Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. Based on an AP-42 emission factor, the outlet grain loading from the proposed flares will be 0.012 grains/dscf at 0% oxygen. The compliance margin is more than 12 to 1. Since the Regulation 6-310 grain loading limit is far above any expected PM emissions, it would not be appropriate to add periodic monitoring for this standard.

Organic Compound Limits:

Organic Compound Limits

S# & Description	Limit Citation	Federally Enforceable Limit	Monitoring
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD 8-34-301.3 and 40 CFR 60.752 (b)(2)(iii)(B)	98% removal of NMOC by weight OR Outlet Concentration < 30 ppmv of NMOC, expressed as methane, @ 3% O ₂ , dry basis	Annual Source Test, Continuous Monitoring of Flare Temperature, and Records

Annual source testing to demonstrate compliance with the NMOC emission limits is required pursuant to Regulation 8-34-412 and BAAQMD Condition # 10164, Part 30. In addition, the annual source test will establish a minimum combustion zone temperature at which the flare will meet the NMOC limit. This minimum combustion zone temperature will be reflected in Condition # 10164, Part 23. The flares temperature will be continuously monitored pursuant to Regulation 8-34-507 and Condition # 10164, Part 24 and automatically shut down (Part 27), if the minimum flare temperature is not met. These procedures will ensure compliance with the NMOC emission limits at all times. No additional monitoring is justified.

Other Limits:

Other Limits

S# & Description	Limit Citation	Federally Enforceable Limit	Monitoring
Landfill Gas Flares (A-4, A-5, A-6, A-7, A-8, and A-9)	BAAQMD Condition # 10164, Part 20	Total Landfill Gas Flow Rate to All Flares: 3807.6 million scf per 12-month period, expressed as landfill gas with 50% CH ₄ at 70 °F and 1 atm	Continuous Gas Flow Meter, Monthly Methane Analysis, and Monthly Records
Landfill Gas Flares (A-7, A-8, and A-9)	BAAQMD Condition # 10164, Part 23	Minimum Flare Temperatures: A-7: 1400 °F, 3-hour average A-8: 1400 °F, 3-hour average A-9: 1400 °F, 3-hour average	Continuous Flare Temperature Monitoring

The annual landfill gas flow rate limit of 3807.6 million scf was imposed to ensure that facility-wide NOx emissions would not exceed 50 tons/year and that CO cumulative emission increases for this application would not exceed 100 tons/year. The landfill gas flow rates from each collection system will be monitored continuously pursuant to Regulation 8-34-508 and Condition # 10164, Part 26. These flow rates need to be converted to standardized flow rates for comparison to the limit. The fuel meter will report flow rates at a standard temperature and pressure. Since methane content can vary, the District is proposing to require monthly methane testing of the landfill gas and monthly records to provide a more accurate determination of the standardized landfill gas flow rate. Monthly methane testing is an adequate frequency for evaluating compliance with the annual flow rate limit.

Continuous temperature monitoring is a standard monitoring method for demonstrating compliance with temperature limits.

Non-Federally Enforceable Limits:

BAAQMD Regulation 9-2-301: Regulation 9-2-301 limits the fence-line ground level hydrogen sulfide concentration. Hydrogen sulfide can be detected by its odor at concentrations as low as 0.0005 ppmv and is generally identified by its characteristic rotten egg smell at a concentration of 0.005 ppmv or less. Therefore, H₂S emissions are typically discovered by smell well before the concentration approaches the lowest Regulation 9-2-301 emission limit of 0.03 ppmv. The District rarely receives complaints about hydrogen sulfide odors from Bay Area landfills and has no complaints about H₂S odors from this site. Since H₂S odors have not been detected at this facility, the concentration of H₂S at the property line is expected to be well below the Regulation 9-2-301 limits. Furthermore, the maximum expected H₂S emissions are not expected to be significant and the BAAQMD Regulation 9-2-301 emission limits are not federally enforceable. Monitoring for ground level H₂S concentrations would not be appropriate when no H₂S odor problem exists.

BAAQMD Condition # 10164, Part 22: These TAC concentration limits were used in conjunction with an assumed TAC destruction efficiency to calculate annual TAC emissions. These annual TAC emission estimates were necessary for a risk screening analysis that was required pursuant to the District's Risk Management Policy. Therefore, these TAC concentration limits are not federally enforceable. An exceedence of one of these limits requires the Permit Holder to submit a permit application so that staff can conduct a new risk screening analysis, if required. Analysis of the landfill gas is a standard method of demonstrating compliance with TAC concentration limits in landfill gas. Since the TAC concentration limits reflect annual emission limits, an annual analysis of the landfill gas is adequate.

RECOMMENDATIONS

Issue an Authority to Construct for the following equipment subject to Condition # 10164:

- A-7 Landfill Gas Flare, Perennial Energy, Inc., Model EGS-2000-60, 60 MM BTU/hour, 2000 scfm of landfill gas at 500 BTU/scf.**
- A-8 Landfill Gas Flare, Perennial Energy, Inc., Model EGS-2000-60, 60 MM BTU/hour, 2000 scfm of landfill gas at 500 BTU/scf.**
- A-9 Landfill Gas Flare, Perennial Energy, Inc., Model EGS-4200-126, 126 MM BTU/hour, 4200 scfm of landfill gas at 500 BTU/scf.**

Archive the Permits to Operate for the following equipment, after receiving notification that the flare has been permanently shut-down.

- A-4 Landfill Gas Flare.**
- A-5 Landfill Gas Flare.**
- A-6 Landfill Gas Flare.**

By: Carol S. Allen
Senior Air Quality Engineer

October 20, 2003
Date