Engineering Evaluation
South San Francisco-San Bruno Water Quality Plant
Application No. 32022
Plant No. 5876

BACKGROUND

South San Francisco-San Bruno Water Quality Plant (WQP) has applied to obtain a Permit to Operate (P/O) for the following existing equipment:

S-17 Dual-Fueled Digester Gas/Natural Gas Boiler, #3
Make: Cleaver-Brooks, Model 3700-60
Maximum Input Heat Capacity: 2.51 MMBtu/Hr

The dual-fueled digester gas/natural gas boiler is located at 195 Belle Air Road in South San Francisco, California. The boiler is used to provide supplemental heat to the anaerobic digesters, S-190. The boiler is fired primarily on digester gas from S-190 that is conditioned by S-12, Digester Gas Conditioning System, but also has the capability of using natural gas. The facility indicates that the boiler was installed without an Authority to Construct around2000.

The criteria pollutants associated with S-17 are nitrogen oxides (NO_X), precursor organic compounds (POC), particulate matter 10 microns in size (PM_{10}), particulate matter 2.5 microns in size ($PM_{2.5}$), sulfur dioxide (SO_2), and carbon monoxide (CO).

EMISSIONS CALCULATIONS

Boiler Operation

Due to the age of the boiler, the WQP had limited supporting documents for the boiler, but were able to include NO_x and CO testing conducted by Blue Sky Environmental Inc. on February 23, 2023. The facility notes that the testing performed on February 23, 2023 is meant to be a preliminary/internal source test to show that the boiler can meet emission limits as per District Regulation 9-7. All calculations have been made assuming 3% excess O_2 during combustion.

Natural Gas:
The emission factor for SO_2 in pipeline natural gas was calculated using AP-42 Chapter 1.4, Table 2 and PG&E Gas Rule 21, Section C. AP-42 states an SO_2 emission factor of 0.6 lb/MMscf, assuming pipeline sulfur concentration of 2,000 gr/MMscf, while PG&E states a maximum allowable pipeline sulfur concentration of 10,000 gr/MMscf in Gas Rule 21, Section C. Footnote d of AP-42 Table 1.4-2 states that the SO_2 emission factor should be multiplied by the ratio of actual pipeline sulfur concentration to the assumed concentration in AP-42 Table 1.4-2. Therefore, the SO_2 emission factor for pipeline natural gas is assumed to be 3.0 lb/MMscf. It is assumed that the sulfur will be converted to SO_2 during combustion according to the following equation:

$$S + O_2 \rightarrow SO_2$$

The following table provides a summary of the boiler information, which was provided by the applicant.

Basis:
Maximum Fuel Rate: 2.51 MMBtu/hr
2,461 scfh
Fuel Heat Value: 1,020 Btu/scf
Fuel Usage: 60.24 MMBtu/day
Operating Rate: 8,760 hours/yr
F_d Factor: 8,710 dscf/MMBtu
AP-42 Factors:
PM: 7.6 lb/10^6 scf
POC: 5.5 lb/10^6 scf

Table 1. Daily and Annual Emissions from S-17 (Natural Gas Combustion)

Pollutant	Emission Factor (lb/MMBtu)	Source	Volumetric Emission (ppm)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NOx	--	B	30 @3% O_2	2.19	800	0.400
POC	5.39E-03	A		0.32	119	0.059
CO	--	B	200 @3% O_2	8.90	3,274	1.624
$PM_{2.5}$	7.45E-03	A		0.45	164	0.082
PM_{10}	7.45E-03	A		0.45	164	0.082
SO_2	2.94E-03	C		0.18	65	0.032

- A: AP-42, 5th edition, Table 1.4-2
- B: NO_X - Regulation 9-7-307.7, CO – 90% of BACT trigger
- C: AP-42, 5th edition, Table 1.4-2 and PG&E Gas Rule 21, Section C

NO_x: (21-0/21-3)*30
= 35 ppmv, dry at 0% oxygen
(35 scf NO_x/10E6 scf flue gas)*(46 lb NO_x/lb-mol NO_x)*(8,710 dscf flue gas/MMBtu)*(lb-mol NO_x/385.3 scf NO_x)
= 3.64E-02 lb/MMBtu
POC: (5.5 lb/MMscf)*(MMscf/10E6 scf)/ (scf/1,020 Btu)*(10E6 Btu/MMBtu)
= 5.39E-03 lb/MMBtu
CO: (21-0)/(21-3)*200
= 233.3 ppmv, dry at 0% oxygen
(233.3 scf CO/10E6 scf flue gas)*(28 lb CO/lb-mol CO)*(8,710 dscf flue gas/MMBtu)*(lb-mol CO/385.3 scf CO)
= 1.48E-01 lb/MMBtu
PM: (7.6 lb/MMscf)*(MMscf/10E6 scf)/(scf/1,020 Btu)*(10E6 Btu/MMBtu)
= 7.45E-03 lb/MMBtu
SO_2: (0.6 lb SO_2/MMscf)*(10,000 gr SO_2 PG&E/10^6 scf / 2,000 gr SO_2 AP-42/10^6 scf)*(scf/1020 Btu)
= 2.94E-03 lb/MMBtu

Digester Gas:
The sulfur content in digester gas fuel, 5 ppm total sulfur, is based on Permit Condition #27355.6, which states "The owner/operator shall ensure that the digester gas fired at S-15 and S-16 does not exceed a total sulfur content of 5 ppmv.". The permit condition will be edited to include S-17 as part of this permit application. It is assumed that all H_2S will be converted to SO_2 during combustion for Best Available Control Technology (BACT) pollutant emissions review, as discussed above. The following table provides a summary of the boiler information, which was provided by the applicant.

Basis:
Maximum Fuel Rate: 2.51 MMBtu/hr
4,736 scfh
Fuel Heat Value: 530 Btu/scf
Fuel Usage: 60.24 MMBtu/day
Operating Rate: 8,760 hours/yr
F_d Factor: 9,597 dscf/MMBtu (Assumed Value)
Digester Gas Total S: 5 ppm
AP-42 Factors:
PM: 7.6 lb/10^6 scf
POC: 5.5 lb/10^6 scf

Table 2. Daily and Annual Emissions from S-17 (Digester Gas Combustion)

Pollutant	Emission Factor (lb/MMBtu)	Source	Volumetric Emission (ppm)	Max Daily Emissions (lb/day)	Annual Emissions (lb/yr)	Annual Emissions (tons/yr)
NOx	--	B	30 @3% O_2	2.42	882	0.441
POC	5.5	A		0.63	228	0.114
CO	--	B	200 @3% O_2	9.80	3,578	1.789
$PM_{2.5}$	7.6	A		0.86	315	0.158
PM_{10}	7.6	A		0.86	315	0.158
SO_2	--	C	5	0.09	34	0.017

- A: AP-42, 5th edition, Table 1.4-2
- B: NO_X - Regulation 9-7-307.7, CO – 90% of BACT trigger
- C: Permit Condition #27355.6.

NO_x: (21-0/21-3)*30
= 35 ppmv, dry at 0% oxygen
(35 scf NO_x/10E6 scf flue gas)*(46 lb NO_x/lb-mol NO_x)*(9,597 dscf flue gas/MMBtu)*(lb-mol NO_x/385.3 scf NO_x)
= 4.01E-02 lb/MMBtu
POC: (5.5 lb/MMscf)*(MMscf/10E6 scf)/ (scf/530 Btu)*(10E6 Btu/MMBtu)
= 1.04E-02 lb/MMBtu
CO: (21-0)/(21-3)*200
= 233.3 ppmv, dry at 0% oxygen
(233.3 scf CO/10E6 scf flue gas)*(28 lb CO/lb-mol CO)*(9,597 dscf flue gas/MMBtu)*(lb-mol CO/385.3 scf CO)
= 1.63E-01 lb/MMBtu
PM: (7.6 lb/MMscf)*(MMscf/10E6 scf)/(scf/530 Btu)*(10E6 Btu/MMBtu)
= 1.43E-02 lb/MMBtu
SO_2: (5 scf SO_2/10E6 scf DG)*(64 lb SO_2/lb-mol SO_2)*(scf/530 Btu)*(lb-mol SO_2/385.3 scf SO_2)*(10E6 Btu/MMBtu)
= 1.57E-03 lb/MMBtu

TOXIC RISK SCREENING

The combustion of natural gas and digester gas from S-17 will result in the emissions of toxic air contaminants (TACs). Emission factors from BAAQMD TAC Emission Factor Guidelines, Appendix A, Default TAC Emission Factors for Specific Source Categories, dated August 2020, were used to calculate TAC emissions from S-17.

The emission factor for hydrogen sulfide was calculated assuming a total sulfur destruction efficiency of 98%.

H_2S Emission Factor, Digester Gas Combustion:

lb/MMBtu = (1- destruction eff)*[concentration$_{sulfur}$]*MW*/(digester gas heat content*V_M),
lb/MMBtu = (1-0.98)*[5 ppm$_{sulfur}$*(1 /10^6 ppm)]* 34 lb/lb-mole/(530 Btu/scf *1 MMBtu/10^6 Btu*385.3 scf/lb-mole),
lb/MMBtu = **1.66E-05**;

Where: destruction efficiency = 98%, MW = molecular weight of H_2S = 34 lb/lb-mole, V_M = molar volume = 385.3 scf/mole (corrected to 68 °F), Digester gas heat content = 530 Btu/scf

The TAC emission factors along with their trigger levels and emissions from the operation of the boiler are summarized below.

Table 4. Toxic Air Contaminant Emissions for S-17

TAC	E.F. (lb/MMBtu)	Emissions (lb/hr)	Acute Trigger Level (lb/hr)	TAC Trigger (Y/N)	Emissions (lb/yr)	Chronic Trigger Level (lb/yr)	TAC Trigger (Y/N)
Acetaldehyde	4.22E-06	1.06E-05	2.10E-01	No	9.28E-02	2.90E+01	No
Acrolein	2.65E-06	6.65E-06	1.10E-03	No	5.83E-02	1.40E+01	No
Arsenic	1.96E-07	4.92E-07	8.80E-05	No	4.31E-03	1.60E-03	Yes
Benzene	7.84E-06	1.97E-05	1.20E-02	No	1.72E-01	2.90E+00	No
Beryllium	5.88E-09	1.48E-08	--	No	1.29E-04	3.40E-02	No
Cadmium	1.08E-06	1.08E-06	--	No	2.37E-02	1.90E-02	Yes
Copper	8.33E-07	2.09E-06	4.40E-02	No	1.83E-02	--	No
Ethylbenzene	9.31E-06	2.34E-05	--	No	2.05E-01	3.30E+01	No
Formaldehyde	2.17E-04	5.45E-04	2.40E-02	No	4.77E+00	1.40E+01	No
n-Hexane	6.18E.06	1.55E-05	--	No	1.36E-01	2.70E+05	No
Lead	4.90E-07	1.23E-06	--	No	1.08E-02	2.90E-01	No
Manganese	3.73E-07	9.36E-07	--	No	8.20E-03	3.50E+00	No
Mercury	2.55E-07	6.40E-07	2.70E-04	No	5.61E-03	2.10E-01	No
Naphthalene	5.98E-07	1.50E-06	--	No	1.31E-02	2.40E+00	No
Nickel	2.06E-06	5.17E-06	8.80E-05	No	4.53E-02	3.10E-01	No
PAH	6.60E-09	1.66E-08	--	No	1.45E-04	3.30E-03	No
Propylene	7.17E-04	1.80E-03	--	No	1.58E+01	1.20E+05	No
Selenium	1.18E-08	2.96E-08	--	No	2.59E-04	8.00E+00	No
Toluene	3.59E-05	9.01E-08	2.2E+00	No	7.89E-01	1.60E+04	No
Vanadium	2.25E-06	5.65E-06	1.30E-02	No	4.95E-02	--	No
Xylenes	2.67E-05	6.70E-05	9.7E+00	No	5.87E-01	2.70E+04	No
Hydrogen Sulfide	1.66E-05	4.18E-05	1.90E-02	No	3.66E-01	3.90E+02	No

The TAC emission factors are on a MMBtu basis because the same factors have been used for both digester gas and natural gas.

As shown in Table 4, arsenic and cadmium emissions from S-17 exceed the regulatory health thresholds of Regulation 2, Rule 5. There is one related project within the last five years, Application #28991. The permit application was for S-190, Four (4) Anerobic Digesters with A-380, Industrial Flare, and S-15 and S-16, Dual-Fueled Digester/Natural Gas Boilers. A health screen risk analysis was therefore performed.

The results of the HRA were: a Cancer Risk of **0.055 in a million,** a Chronic Hazard Index (HI) of **0.019,** and an Acute HI of **3.4**. In accordance with the District's Regulation 2-5-301, S-17 is not required to meet TBACT because the source cancer risk does not exceed 1.0 in a million and the chronic HI does not exceed 0.20. The estimated project cancer risk does not exceed 10.0 in a million and the chronic HI does not exceed 1.0, however the project's acute HI exceeds 1.0. The result indicate that to reduce the acute HI to less than 1.0, the facility would need to limit H2S hourly emissions from S-190 to 0.21 lbs/hr. As per Permit Condition #27356, the facility is limited to an hourly H2S emissions rate of 0.08 lbs/hr (rounded to 0.1 lbs/hr in the permit condition text). Therefore, S-17 is in compliance with the District's Regulation 2-5-302 project risk requirements.

PLANT CUMULATIVE EMISSION

The following table summarizes the cumulative increase in BACT pollutant emissions that will result from this application.

Table 5. Cumulative Increase

Pollutant	Existing, tpy	S-17, tpy	Total, tpy
NOx	9.380	0.441	9.821
CO	16.842	1.789	18.631
PM10	0.181	0.158	0.339
PM2.5	0.180	0.158	0.338
SO_2	0.019	0.017	0.036
POC	5.941	0.114	6.055

BEST AVAILABLE CONTROL TECHNOLOGY

In accordance with Regulation 2-2-301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NO_X, CO, SO_2, or PM_{10}, $PM_{2.5}$. Based on the emissions displayed above, BACT is not triggered for any pollutant.

OFFSETS

The following table provides a summary of the facility's potential to emit (PTE).

Table 6. Potential to Emit

Pollutant	Existing PTE, tpy	S-17 - PTE, tpy	New PTE, tpy
NOx	8.923	0.441	9.364
POC	16.496	0.114	16.610
PM10	0.442	0.158	0.600
PM2.5	0.439	0.158	0.597
SO_2	0.281	0.017	0.298
CO	23.795	1.789	25.584

Emission offset requirements for POC and NO_x are set out in Regulation 2, Rule 2, Section 302. POC and NO_x offsets are required for new or modified sources at a facility that emits or will be permitted to emit 10 tons per year or more of that pollutant. The facility has a PTE greater than 10 ton/yr of POC, but no more than 35 tons/yr. Pursuant to Regulation 2, Rule 2, Section 302.1, the facility is required to provide offsets at a 1:1 ratio. However, Regulation 2, Rule 2, Section 302.1 also allows the facility to obtain offsets from the District's Small Facilities Bank (SFB), as long as the account is not exhausted. Therefore, offsets for POC will be taken from the SFB. Offsets for NO_x are not required for this application as the PTE for NOx is less than 10 tpy.

The offsets requirements for $PM_{10,}$ $PM_{2.5}$, and SO_x are specified in Regulation 2, Rule 2, Section 303. Per Section 303, $PM_{10,}$ $PM_{2.5}$, and SO_x emission offsets are required for any new or modified source that is a major facility for $PM_{10,}$ $PM_{2.5}$, or SO_x emissions. The WQP is not a major facility for $PM_{10,}$ $PM_{2.5}$, and SO_x emissions. Therefore, offsets for $PM_{10,}$ $PM_{2.5}$, and SO_x are not required for this application.

STATEMENT OF COMPLIANCE

Regulation 6, Rule 1: Particulate Matter: General Requirements

Pursuant to Regulations 6-1-301 and 6-1-302, a person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree and/or an emission equal to or greater than 20% opacity as perceived by an opacity sensing device, where such a device is required by District regulations. S-17 is expected to meet the requirements of Regulations 6-1-301 and 6-1-302.

The boiler is expected to comply with the 0.15 grain PM/dscf standard in Section 6-1-310.1 because it uses gaseous fuels.

Boilers are exempt from Sections 6-1-310.2 and 6-1-311.2 per the exemption in Section 6-1-114.1.

The boiler is exempt from the testing requirement in Section 6-1-504 per the exemption in Section 6-1-114.3 because it is a gas-fuel fired indirect heat exchanger. It is also exempt from the testing because it emits less than 2,000 kg of TSP/yr.

Regulation 9, Rule 1: Inorganic Gaseous Pollutants: Sulfur Dioxide

Pursuant to Regulation 9-1-301, the ground level concentrations of SO_2 shall not exceed 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours. Pursuant to Regulation 9-1-302, a person shall not emit from any source, a gas stream containing SO_2 in excess of 300 ppm (dry). Lastly, pursuant to Regulation 9-1-304, a person shall not burn any liquid fuel having a sulfur content in excess of 0.5% by weight. Compliance with Regulation 9-1 is expected due to a fuel total sulfur limit of 5 ppm for S-17.

Regulation 9 Rule 2: Inorganic Gaseous Pollutants: Hydrogen Sulfide

Pursuant to Regulation 9-2-301, a person shall not emit during any 24-hour period, H_2S in such quantities as to result in ground level concentration in excess of 0.06 ppm average over three consecutive minutes or 0.03 ppm averaged over any 60 consecutive minutes. On March 7, 2024, the Air District modeled H_2S emissions to determine whether S-17 will comply with the Rule. The results of the dispersion modeling showed a maximum 1-hour average H_2S concentration of 0.29 ppm. The results indicate that to reduce the H_2S ground level concentration to below 0.03 ppm, the facility would need to limit H_2S hourly emissions from S-190 to 0.08 lbs/hr. As per Permit Condition #27356, the facility is limited to an hourly H_2S emissions rate of 0.08 lbs/hr (rounded to 0.1 lbs/hr in the permit condition text). Therefore, S-17 is in compliance with Regulation 9-2-301.

Regulation 9, Rule 7: Inorganic Gaseous Pollutants: Nitrogen Oxides and Carbon Monoxide from Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters

This rule limits the emissions of NO_x and CO from boilers. S-17 is expected to comply with the requirements of Regulation 9, Rule 7.

S-17 is subject to the final emissions limits of 9-7-307.7 for NO_x (30 ppmv, dry at 3% O_2) and CO (400 ppmv, dry at 3% O_2) when firing with digester gas. However, in order to stay under BACT, the facility has agreed to a 200 ppmv, dry at 3% O_2 limit for CO. This limit will be incorporated into the permit condition for S-17. S-17 will comply with 9-7-307.7 when firing digester gas.

The boiler is subject to Regulation 9-7-311, which states that no person shall operate a boiler or steam generator unless the exposed, external surface of the device, including all pipes and ducts heated by the device, does not exceed a temperature of 120 °F. S-17 will comply with 9-7-311.

The stack gas temperature limit for boilers or steam generators of a fire tube design, burning gaseous fuel, is presented in Regulation 9-7-312 and states that such boilers shall not be operated with a stack gas temperature (downstream of any economizer) that exceeds 100 °F over saturated steam temperature for steam boilers, 100 °F over hot water temperature for hot water boilers, or 250 °F greater than combustion temperature, whichever is higher. S-17 will comply with 9-7-312.

Pursuant to Regulation 9-7-403, an initial demonstration of compliance is required. The initial demonstration specifies that source tests be performed to determine compliance with the limitations of Regulation 9-7-307, unless the device has an input heat rating less than 10 MMBtu/hr; at which point a portable analyzer may be used. S-17 has an input heat rating less than 10 MMBtu/hr. Therefore, a portable analyzer may be used.

Lastly, Regulation 9-7-503 requires the following records to be kept for at least 24 months from the date of entry, which are to be made available to District staff upon request.

- Documentation verifying the hours of equipment testing using non-gaseous fuel, and of total operating hours using non-gaseous fuel during each calendar month;
- Results of any testing required by Regulation 9-7-506; and,
- Total operating hours and operating hours firing or co-firing digester gas.

California Environmental Quality Act (CEQA) Requirements

Pursuant to Regulation 2-1-311, an application for a proposed new or modified source will be classified as ministerial and will accordingly be exempt from the CEQA requirement of Regulation 2-1-310 if the District's engineering evaluation and basis for approval or denial of the permit application for the project is limited to the criteria set forth in Regulation 2-1-428 and to the specific procedures, fixed standards, and objective measurements set forth in the District's Permit Handbook and Best Available Control Technologies (BACT)/BACT for Toxics (TBACT) Workbook. This project does not trigger BACT or TBACT, therefore the permit approval is a ministerial action, which is a statutory exemption from CEQA review.

Prevention of Significant Deterioration (PSD)

The PSD requirements in District Regulation 2, Rule 2, Section 304 and 305 apply to major modifications at a major facility. This site is not a major facility. Therefore, Regulation 2-2-304 and 2-2-305 do not apply.

New Source Performance Standards (NSPS)

NSPS for boilers is covered in 40 Code of Federal Regulations (CFR) Part 60, Subparts Db and Dc. As S-17 has a maximum heat input less than 10 MMBtu/hr, neither 40 CFR 60, Subpart Db or Dc apply.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The following NESHAPs may apply to the facility.

40 CFR Part 63, Subpart DDDDD

Pursuant to §63.7485, industrial, commercial, and institutional boilers or process heaters, which are located at a major source of hazardous air pollutants (HAP)s, are subject to the requirements of this regulation. The facility is not major for HAPs, and therefore S-17 is not subject to this subpart.

40 CFR Part 63 Subpart JJJJJJ
Pursuant to §63.11193, industrial, commercial, and institutional boilers, which are located at an area source of HAPs, are subject to the requirements of this regulation. The facility is an area source of HAPs.

S-17 is a gas-fired boiler. Pursuant to §63.11195, gas-fired boilers are exempt from the standard.

California Health & Safety Code §42301.6 and Regulation 2-1-412
Pursuant to California Health & Safety Code §42301.6(a), prior to approving an application for a permit to construct or modify a source, which is located within 1,000 feet from the outer boundary of a school site and which results in the increase in emissions of any substance into the ambient air which has been identified by the California Air Resources Board (CARB) or the APCO as a toxic air contaminant or a hazardous air contaminant or which is on the list required to be prepared pursuant to subdivision (a) of Section 25532 or Section 44321 subsections (a) through (f) inclusive to the Health and Safety Code, or is located within an Overburdened Community (OBC) as defined in Regulation 2-1-243 and for which a Health Risk Assessment (HRA) is required pursuant to Regulation 2-5-401, the District shall prepare a public notice as detailed in §42301.6.

§42301.9(a) defines a "school" as any public or private school used for the purposes of the education of more than 12 children in kindergarten or any grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in private homes.
Using the GreatSchools.org website and searching with Google Maps, it has been determined that the source will not be located within 1,000 feet of the outer boundary of any K-12 school site.

However, the facility is located within an OBC as defined in Regulation 2-1-243 and an HRA was required as per District Regulation 2-5-401. Therefore a public notice is required as per Regulation 2-1-412.

CONDITIONS

COND #27355 ----------

This permit condition, as initially adopted in New Source Review Application #28991, is further amended within New Source Review Application #32022.

GENERAL REQUIREMENTS

1. The owner/operator of the Dual Fueled Digester Gas/Natural Gas Water Tube Boilers (S15 and S16) and Dual Fueled Digester Gas/Natural Gas Fire Tube Boiler (S17) shall only operate the sources on digester gas generated from the Anaerobic Digesters (S190) and processed by the Renewable Gas Conditioning System (S12) and/or Public Utilities Commission regulated natural gas. [Basis: Cumulative Increase]

2. The owner/operator of S15 and S16 shall not allow the heat input to each source exceed 13,140 MMBtu during any consecutive 12 month period. The owner/operator of S17 shall not allow the heat input to this source to exceed 21,988 MMBtu during any consecutive 12 month period. [Basis: Cumulative Increase]

3. The owner/operator of S15, ~~and~~ S16, and S17 shall operate these sources only when a non resettable totalizing fuel meter is installed in each fuel line for each source. [Basis: Regulation 9-7-501]

4. The owner/operator shall ensure that the H2S and siloxane absorption media at S12 is not desorbed onsite. [Basis: Cumulative Increase]

EMISSION LIMITATIONS

5. The owner/operator shall ensure that the following pollutant concentrations, in the combustion gases exhausting from S15, ~~and~~ S16, and S17, are less than the following limits:

    a. NOx: 30 ppmv @ 3% O2, on a dry basis, when firing digester gas, or a combination of digester gas and natural gas.
    b. CO: 200 ppmv @ 3% O2, on a dry basis, when firing digester gas, or a combination of digester gas and natural gas.

    [Basis: Cumulative Increase, BACT, and Regulation 9-7-307]

6. The owner/operator shall ensure that the digester gas fired at S15, ~~and~~ S16, and S17 does not exceed a total sulfur content of 5 ppmv. [Basis: Cumulative Increase]

MONITORING REQUIREMENTS

7. To demonstrate compliance with the standard in Part 6 of this condition, the owner/operator shall monitor and record the sulfur content of the digester gas processed at S12 at least once every calendar week. If the owner/operator can demonstrate 3 months of digester gas sulfur content results lower than 2.5 ppmv, the monitoring frequency for sulfur analysis may be reduced to at least once every calendar month. If any subsequent results, from monthly monitoring, are above the 2.5 ppmv, the owner/operator shall monitor every week until the owner/operator can demonstrate 3 months of digester gas sulfur content results lower than 2.5 ppmv, at which time the monitoring frequency for sulfur analysis may return to at least once every calendar month. [Basis: Cumulative Increase]

8. The owner/operator shall conduct the monitoring required by Part 7 of this condition in accordance with any of the following methodologies:

    a. Draeger Tube Test Method: A Draeger Tube test or a meter using a Draeger H2S sensor, Part No 680910, or equivalent, demonstrating an H2S level up to 200 ppmv shall demonstrate compliance with the above limit. An H2S measurement by Draeger Tube exceeding 200 ppmv shall not be deemed a violation but shall trigger a requirement to demonstrate compliance using either methods of Part 8(b) and (c) of this condition.
    b. Portable Instrument Method: A Draeger PAC III (or equivalent) portable meter with an H2S sensor capable of measuring over 800 ppmv H2S. In the event that H2S levels exceed 800 ppmv, the owner/operator shall commence to perform a source test using the method of Part 8(c) of this condition.
    c. Chromatographic Method: The owner/operator may sample and test for sulfides according to BAAQMD Lab Method 44A (Manual of Procedures, Volume III), or by ASTM Method 5504, or by any other equivalent method, approved in advance by the District.

    [Basis: Cumulative Increase and Regulation 2-1-403]

9. To demonstrate compliance with Part 5 of this condition, within 60 days from the startup of S15, ~~and~~ S16, and S17, and within a frequency of no less than once every 12 months after each subsequent reading, the owner/operator shall measure NOx and CO volumetric concentrations and oxygen content (%) using a portable analyzer. [Basis: Regulations 2-1-403, 9-7-403, and 9-7-606]

RECORDKEEPING REQUIREMENTS

10. The owner/operator of S15, ~~and~~ S16, and S17 shall maintain the following records for a minimum of two (2) years and be made available to the District upon request:

    a. Total operating hours firing on natural gas only;
    b. Total operating hours co firing on digester gas;
    c. Monthly records of digester gas and natural gas consumed;
    d. Total sulfur content records required by Part 7 of this condition; and,
    e. Initial and annual monitoring results required by Part 9 of this condition.

    [Basis: Regulation 2-1-403]

RECOMMENDATION

The District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue a Permit to Operate for the equipment listed below. However, the proposed source will be located in an OBC, which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received and reviewed, the District will make a final determination on the permit.

I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of a Permit to Operate for the following source:

S-17 Dual-Fueled Digester Gas/Natural Gas Boiler, #3
Make: Cleaver-Brooks, Model 3700-60
Maximum Input Heat Capacity: 2.51 MMBtu/Hr

By: _____ Date: _____

Perry Ng
Senior Air Quality Engineer