

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

Emission Evaluation and Statement of Basis

| | | | | |
|------------------|----------------|-------------------|----------------|----|
| ENGINEER: | Nancy Fletcher | ATC # | <u>C-10-93</u> | |
| | | SIC Code # | <u>8221</u> | |
| | | UTM E | <u>608.8</u> | km |
| | | UTM N | <u>4266.2</u> | km |

FACILITY NAME: University of California, Davis

LOCATION: The equipment is located at 4115 Primate Drive (Comparative Medicine), CAAN 4684, Zone #S036 in Davis. The equipment is not located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

PROPOSAL: The facility is proposing a significant Title V permit modification for the modification of P-54-00, by replacing the boiler with a low NOx 3.0 MMBtu/hr boiler .

The facility is currently operating under Title V Operating Permit F-00454-18, effective February 2, 2011. This evaluation will serve as both the District emission evaluation and the Title V Statement of Basis. This evaluation reflects only the requirements pertaining to C-10-93. Emission units that are not affected by this proposal were evaluated in the original Statement of Basis or the subsequent iterations and will not be reviewed in this evaluation.

The changes to the Title V permit will include changes evaluated under ATC C-10-105.

PROCESS: Boiler: Space Heating

FLOW DIAGRAM: See File

IDENTIFICATION: P-54-00(a)

EQUIPMENT: One (1) 3.0 MMBtu/hr AERCO International natural gas fired boiler, Model Number BMK 3.0 LN, Serial Number G-10-0835

CONTROL EQUIPMENT: Low NOx Burner

APPLICATION DATA:

| | <u>Units</u> | <u>Formula Symbol</u> | <u>Reference</u> |
|----------------------------|--------------|-----------------------|------------------|
| Boiler Heat Input Rating = | 3 MMBtu/hr | BR | Applicant |

| <u>Max. Operational Schedule</u> | <u>Units</u> | <u>Formula Symbol</u> | <u>Reference</u> |
|----------------------------------|--------------|-----------------------|------------------|
| Daily = | 24 hours | HD | Applicant |
| 1st Quarter = | 90 days | Q1 | Applicant |
| 2nd Quarter = | 91 days | Q2 | Applicant |
| 3rd Quarter = | 92 days | Q3 | Applicant |
| 4th Quarter = | 92 days | Q4 | Applicant |
| Yearly = | 365 days | DY | Applicant |

ASSUMPTIONS:

| | <u>Units</u> | <u>Formula Symbol</u> | <u>Reference</u> |
|------------------------|--------------|-----------------------|------------------|
| VOC Molecular Weight = | 16.0 lb/mole | MWvoc | District |
| CO Molecular Weight = | 28.0 lb/mole | MWco | District |

| | | | |
|--------------------------|------------------------|-------|------------------------------------|
| NO2 Molecular Weight = | 46.0 lb/mole | MWno2 | STAPPA/ALAPCO, Pg. 12-30 (5/30/91) |
| SO2 Molecular Weight = | 64.0 lb/mole | MWso2 | STAPPA/ALAPCO, Pg. 12-30 (5/30/91) |
| Flue Gas to Fuel Ratio = | 0.618 moles/lb @ 3% O2 | N | STAPPA/ALAPCO, Pg. 12-30 (5/30/91) |
| Higher Heating Value = | 23,440 Btu/lb | HV | STAPPA/ALAPCO, Pg. 12-30 (5/30/91) |
| Fuel Btu Content = | 1,000 Btu/scf | HH | District |
| F-Factor = | 8,710 scf/MMBtu | FF | District |
| Standard Molar Volume = | 385 scf/mole | MV | District |

EMISSION FACTORS:

| | <u>Units</u> | <u>Formula Symbol</u> | <u>Reference</u> |
|-----------------|----------------|-----------------------|--|
| VOC | 5.50 lb/MMScf | EFvoc | AP 42 Table 1.4-2; (7/98) |
| CO | 44.29 lb/MMScf | EFco ¹ | 60.00 ppm @ 3% O2 |
| NOx | 36.38 lb/MMScf | EFnox ² | 30.00 ppm @ 3% O2 |
| SOx | 0.60 lb/MMScf | EFsox | AP 42 Table 1.4-2; (7/98) ³ |
| TSP/PM10 | 7.60 lb/MMScf | EFpm | AP 42 Table 1.4-2; (7/98) ⁴ |

- 1) Calculated [CO, lb/MMScf] = [CO, ppm @ 3% O2] * MWco * N * HH / HV
- 2) Calculated [NOx, lb/MMScf] = [NOx, ppm @ 3% O2] * MWno2 * N * HH / HV
- 3) Assumes a 100% conversion of the sulfur in natural gas to SO2.
- 4) Assumes all particulate matter is less than 10 micrometer aerodynamic diameter.

CALCULATIONS:

1. Determine Maximum Fuel Consumption:

| | <u>Units</u> | <u>Formula Symbol</u> | <u>Reference</u> |
|--------------------------|---------------------------|-----------------------|-------------------|
| Daily Throughput = | 0.072 million cubic feet | Td | BR * HD / HH |
| 1st Quarter Throughput = | 6.480 million cubic feet | T1 | BR * HD * Q1 / HH |
| 2nd Quarter Throughput = | 6.552 million cubic feet | T2 | BR * HD * Q2 / HH |
| 3rd Quarter Throughput = | 6.624 million cubic feet | T3 | BR * HD * Q3 / HH |
| 4th Quarter Throughput = | 6.624 million cubic feet | T4 | BR * HD * Q4 / HH |
| Yearly Throughput = | 26.280 million cubic feet | Ty | BR * HD * DY / HH |

EMISSION CALCULATIONS:

1. Determine VOC Emissions:

| | |
|--|----------------|
| Max Daily VOC Emissions = Td * EFvoc = | 0.4 lb/day |
| 1st Quarter VOC Emissions = T1 * EFvoc = | 36 lb/quarter |
| 2nd Quarter VOC Emissions = T2 * EFvoc = | 36 lb/quarter |
| 3rd Quarter VOC Emissions = T3 * EFvoc = | 36 lb/quarter |
| 4th Quarter VOC Emissions = T4 * EFvoc = | 36 lb/quarter |
| Max Yearly VOC Emissions = (Ty * EFvoc)*(1 ton/2,000 lb) = | 0.07 tons/year |

2. Determine CO Emissions:

| | |
|---|----------------|
| Max. Daily CO Emissions = Td * EFco = | 3.2 lb/day |
| 1st Quarter CO Emissions = T1 * EFco = | 287 lb/quarter |
| 2nd Quarter CO Emissions = T2 * EFco = | 290 lb/quarter |
| 3rd Quarter CO Emissions = T3 * EFco = | 293 lb/quarter |
| 4th Quarter CO Emissions = T4 * EFco = | 293 lb/quarter |
| Max. Yearly CO Emissions = (Ty * EFco)*(1 ton/2,000 lb) = | 0.58 tons/year |

3. Determine NOx Emissions:

| | |
|---|----------------|
| Max. hourly NOx Emissions = Td * EFnox * (1/HD) = | 0.1 lb/hour |
| Max. Daily NOx Emissions = Td * EFnox = | 2.6 lb/day |
| 1st Quarter NOx Emissions = T1 * EFnox = | 236 lb/quarter |
| 2nd Quarter NOx Emissions = T2 * EFnox = | 238 lb/quarter |

$$\begin{aligned} \text{3rd Quarter NOx Emissions} &= T3 * EF_{nox} = && 241 \text{ lb/quarter} \\ \text{4th Quarter NOx Emissions} &= T4 * EF_{nox} = && 241 \text{ lb/quarter} \\ \text{Max. Yearly NOx Emissions} &= (Ty * EF_{nox}) * (1 \text{ ton}/2,000 \text{ lb}) = && 0.48 \text{ tons/year} \end{aligned}$$

4. Determine SOx Emissions:

$$\begin{aligned} \text{Max. hourly SOx Emissions} &= Td * EF_{sox} * (1/HD) = && 0.002 \text{ lb/hour} \\ \text{Max. Daily SOx Emissions} &= Td * EF_{sox} = && 0.0 \text{ lb/day} \\ \text{1st Quarter SOx Emissions} &= T1 * EF_{sox} = && 4 \text{ lb/quarter} \\ \text{2nd Quarter SOx Emissions} &= T2 * EF_{sox} = && 4 \text{ lb/quarter} \\ \text{3rd Quarter SOx Emissions} &= T3 * EF_{sox} = && 4 \text{ lb/quarter} \\ \text{4th Quarter SOx Emissions} &= T4 * EF_{sox} = && 4 \text{ lb/quarter} \\ \text{Max. Yearly SOx Emissions} &= (Ty * EF_{sox}) * (1 \text{ ton}/2,000 \text{ lb}) = && 0.01 \text{ tons/year} \end{aligned}$$

5. Determine TSP/PM10 Emissions:

$$\begin{aligned} \text{Max. Daily PM10 Emissions} &= Td * EF_{pm} * (1/HD) = && 0.023 \text{ lb/hour} \\ \text{Max. Daily PM10 Emissions} &= Td * EF_{pm} = && 0.5 \text{ lb/day} \\ \text{1st Quarter PM10 Emissions} &= T1 * EF_{pm} = && 49 \text{ lb/quarter} \\ \text{2nd Quarter PM10 Emissions} &= T2 * EF_{pm} = && 50 \text{ lb/quarter} \\ \text{3rd Quarter PM10 Emissions} &= T3 * EF_{pm} = && 50 \text{ lb/quarter} \\ \text{4th Quarter PM10 Emissions} &= T4 * EF_{pm} = && 50 \text{ lb/quarter} \\ \text{Max. Yearly PM10 Emissions} &= (Ty * EF_{pm}) * (1 \text{ ton}/2,000 \text{ lb}) = && 0.10 \text{ tons/year} \end{aligned}$$

6. Determine Sulfur Emissions Concentration:

$$\text{SOx \%} = [\text{SOx, lb/hr}] * MV / \text{MW}_{so2} / BR / FF * 100\% = 0.00004 \%$$

7. Determine Particulate Matter Emissions Concentration:

$$\text{PM Conc.} = [\text{TSP, lbs/hr}] / BR / FF * (7,000 \text{ grains/lb}) = 0.006 \text{ gr/dscf}$$

RULE & REGULATION COMPLIANCE EVALUATION:

District Rule 2.3-Ringelmann

This rule specifies the allowable opacity limit for all sources operating in the District.

Compliance Status: The rule applies to any visible emissions at the stationary source. The version of the rule used in this evaluation is the rule adopted on October 1, 1971, and is part of the California State Implementation Plan (SIP). The source is currently in compliance with the requirements of the rule.

Requirement: A person shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour which is:

- a. As dark or darker in shade as that designated as No. 2 on the Ringelmann Chart as published by the United States Bureau of Mines; or
- b. Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection a. of this rule. [SIP approved version of District Rule 2.3]

Subsuming Demonstration: On January 13, 2010 the District revised Rule 2.3 and is currently taking steps to include the revised rule in the SIP. The revised version of the rule reads:

The permit holder shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour which is:

- a. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart; or
- b. Greater than 20% opacity. [District Rule 2.3]

Permit Condition: The permit holder shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three (3) minutes in any one hour which is:

- a. As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart; or
- b. Greater than 20% opacity. [District Rule 2.3 and 3.4]

District Rule 2.5-Nuisance

This rule requires that sources are not a public nuisance.

Compliance Status: The rule applies to all emission units at the stationary source. The source is currently in compliance with the requirements of the rule.

Permit Condition: The Permit Holder shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health, or safety of any such persons or the public or which cause to have a natural tendency to cause injury or damage to business or property.

A condition will not be placed on the ATC, but will be added to the PTO upon implementation.

[The permit condition is federally enforceable because it derives from District Rule 2.5 - Nuisance which is currently part of the SIP. The District is taking steps to remove District Rule 2.5 from the SIP. Once the U.S. Environmental Protection Agency (EPA) has taken final action to remove District Rule 2.5 from the SIP, this permit condition will become State-enforceable only.]

District Rule 2.11 - Particulate Matter

This rule specifies the allowable particulate matter (PM) emission rate at standard conditions. For the purpose of this evaluation, the PM emissions are considered to be 100% PM10 (PM with an aerodynamic diameter of 10 microns or less).

Compliance Status: The boiler is subject to this rule. The version of the rule used in this evaluation is the rule adopted on June 19, 1974 and included in the current SIP. The proposed boiler is currently in compliance with the requirements of the rule.

Requirement: Except as otherwise permitted by law, no person shall release or discharge into the atmosphere, from any source, particulate matter in excess of 0.3 grains per cubic foot of exhaust volume as calculated standard conditions. [SIP approved version of District Rule 2.11]

Subsuming Demonstration: On January 13, 2010 the District revised Rule 2.11 and is currently taking steps to include the revised rule in the SIP. The revised version of the rule reads:

A person shall not release or discharge into the atmosphere, from any single source operation, dust fumes or total suspended particulate matter emissions in excess of 0.1 grain per cubic foot of gas at dry standard conditions. [District Rule 2.11]

As shown above in Emission Calculations #7, the PM concentration is expected to be in compliance with this requirement.

| <u>Emission Rate (gr/dscf)</u> | <u>Allowable Rate (gr/dscf)</u> | <u>Compliance</u> |
|--------------------------------|---------------------------------|-------------------|
| 0.01 | 0.1 | Yes |

Permit Condition: The permit holder shall not release or discharge into the atmosphere, from any single source operation, dust fumes or total suspended particulate matter emissions in excess of 0.01 grain per cubic foot of gas at dry standard conditions. [District Rule 2.3 and District Rule 3.4]

District Rule 2.12 Specific Contaminants

This rule specifies the allowable sulfur dioxide and particulate matter combustion contaminant emission rates at standard conditions. For the purposes of this evaluation, the sulfur oxide (SOx) emissions are considered to be 100% SO2.

Compliance Status: The boiler is subject to this rule. The rule applies to any source operation which emits, or may emit sulfur gaseous emissions and particulate matter combustion contaminants. The version of the used in this evaluation is the rule adopted on January 21, 1972 and included in the current SIP. The proposed boiler is currently in compliance with the requirements of the rule.

Requirement: A person shall not discharge into the atmosphere from any single source of emission whatsoever, any one or more of the following contaminants, in any state or combination thereof, in excess of the following concentrations at the point

of discharge:

A. Sulfur compounds calculated as sulfur dioxide (SO₂) 0.2%, by volume at standard conditions.

B. Particulate Matter Combustion Contaminants: 0.3 grains per cubic foot of gas calculated to 12 percent of carbon dioxide (CO₂) at standard conditions, except during the start of an operation or change in energy source, during the necessary to bring the combustion process up to operating level. In measuring the combustion contaminants from incinerators used to dispose of combustible refuse by burning, the carbon dioxide (CO₂) produced by combustion of any liquid or gaseous fuels shall be excluded from the calculation to 12 percent of carbon dioxide (CO₂). [SIP approved version of District Rule 2.12]

Subsuming Demonstration: On January 13, 2010 the District revised Rule 2.12 and is currently taking steps to include the revised rule in the SIP. The revised version of the rule reads:

A person shall not discharge into the atmosphere from any single source of emission whatsoever, any one or more of the following contaminants, in any state or combination thereof, in excess of the following concentrations at the point of discharge:

A. Sulfur compounds calculated as sulfur dioxide (SO₂) 0.2%, by volume at standard conditions.

B. Particulate Matter Combustion Contaminants: 0.1 grains per cubic foot of gas calculated to 12 percent of carbon dioxide (CO₂) at standard conditions. [District Rule 2.12]

As shown above in Emission Calculations #6, the sulfur concentration (in percent) is expected to be in compliance with the requirement. Compliance with the particulate limit is demonstrated in Calculation #7 (See 2.11).

| <u>Emission Rate (% SO_x as SO₂)</u> | <u>Allowable Rate (% SO_x as SO₂)</u> | <u>Compliance</u> |
|---|--|-------------------|
| 0.00004 | 0.2 | Yes |

Permit Condition: SO_x emissions shall not exceed negligible lb/day, 4 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.01 tons/year. [District Rule 3.4/C-10-93]

District Rule 2.16 - Fuel Burning or Power Generation

This rule specifies the allowable sulfur dioxide, nitrogen oxides calculated as nitrogen dioxide, and combustion particulate limits for non-mobile fuel burning equipment for a heat or power generating unit in the District.

Compliance Status: The boiler is subject to this rule. The version of the rule used in this evaluation is the rule adopted on October 1, 1971 and included in the current SIP. The proposed boiler is currently in compliance with the requirements of the rule.

Requirement: A person shall not build, expand, or operate any non-mobile fuel burning equipment for a heat or power generator unit unless the discharge into the atmosphere of contaminants will not and does not exceed any one or more of the following rates:

1. 200 pounds per hour of sulfur compounds, calculated as SO₂;
2. 140 pounds per hour of nitrogen oxides, calculated as nitrogen dioxide (NO₂);
3. 40 pounds per hour of combustion particulate derived from the fuel. [SIP approved version of District Rule 2.16]

| <u>Pollutant</u> | <u>Allowable</u> | <u>Actual</u> | <u>Compliance</u> |
|------------------|------------------|---------------|-------------------|
| SO _x | 200 lb/hr | 0.0 lb/hr | Yes |
| NO _x | 140 lb/hr | 0.1 lb/hr | Yes |
| PM | 40 lb/hr | 0.0 lb/hr | Yes |

Subsuming Demonstration: The requirements of the SIP can be subsumed by the Authority of District Rule 3.4, New Source Review. P-54-00(a) is also subject to the federally applicable SO_x emission limit of negligible lbs/day, NO_x emission limit of 2.6 lbs/day and particulate emission limit of 0.5 lbs/day (established by Rule 3.4, Section 409.2).

Permit Condition: SO_x emissions shall not exceed negligible lb/day, 4 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.01 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: NO_x emissions shall not exceed 2.6 lb/day, 236 lb/1st calendar quarter, 238 lb/2nd calendar quarter, 241 3rd calendar quarter, 241 lb/4th calendar quarter, and 0.48 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: PM₁₀ emissions shall not exceed 0.5 lb/day, 49 lb/1st calendar quarter, 50 lb/2nd calendar quarter, 50

lb/3rd calendar quarter, 50 lb/4th calendar quarter and 0.10 tons/year. [District Rule 3.4/C-10-93]

District Rule 2.27 - Industrial, Institutional, & Commercial Boilers, Steam Generators and Process Heaters

This rule limits emissions of nitrogen oxides (Nox) and carbon monoxide (CO) from industrial, institutional, and commercial boilers, steam generators, and process heaters.

Compliance Status: The version of the rule used in this evaluation is the rule adopted on August 14, 1996 and included in the current SIP. The rule applies to units with rated heat inputs of greater than or equal to 5 million Btu per hour. The proposed boiler has a heat input rating below 5 million Btu per hour and is therefore not subject to the requirements of the rule.

Permit Condition: Equipment Description: 3.0 MMBtu/hr AERCO International natural gas fired boiler, Model Number BMK 3.0 LN [District Rule 3.4/C-10-93]

District Rule 3.1-General Permit Requirements

The purpose of this rule is to provide an orderly procedure for the review of new sources of air pollution and of the modification and operation of existing sources through the issuance of permits.

Compliance Status: The source has satisfied the provisions of General Permit Requirements. The rule applies to all emission units at the stationary source. The version of the rule used in this evaluation was adopted on February 23, 1994 and is part of the current SIP. The General Permit Requirements are shown below.

Permit Condition: No person shall build, erect, alter, or replace any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants, without first obtaining an authorization to construct from the Air Pollution Control Officer as specified in Section 401 of District Rule 3.1. [District Rule 3.1, §301.1]

Permit Condition: No person shall operate any facility, article, machine, equipment, or other contrivance, for which an authorization to construct is required by District Rules and Regulations without first obtaining a written permit from the Air Pollution Control Officer. [District Rule 3.1, §302.1]

Permit Condition: No person shall operate any facility, article, machine, equipment, or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, without obtaining a permit from the Air Pollution Control Officer or the Hearing Board. [District Rule 3.1, §302.2]

Permit Condition: (Title V permit only) To assure compliance with all applicable regulations, the Air Pollution Control Officer may impose written conditions on any authorization to construct or permit to operate. The Air Pollution Control Officer may, after 30-day notice to the permittee, add or amend written conditions on any permit upon annual renewal to ensure compliance with and enforceability of any applicable rule or regulation. Additional provisions, as required by Title V of the Federal Clean Air Act, for the reopening of permits are specified in Rule 3.8, FEDERAL OPERATING PERMITS. Commencing work or operation under such a revised permits shall be deemed acceptance of all of the conditions so specified. [District Rule 3.1, §402]

Permit Condition: The owner or operator of any facility, article, machine, equipment, or other contrivance for which a permit to operate is in effect shall notify the District office whenever a breakdown, malfunction, or operational upset condition exists which would tend to increase emissions of air pollutants or whenever any operating condition contrary to any provision of the permit to operate exists. Such notice shall be given to the District no later than four hours after occurrence during regular workday hours or no later than two hours of the District workday following an occurrence not during regular District workday hours. The notice shall provide the District information as to causes and corrective action being taken, with a schedule for return to required operating conditions. [District Rule 3.1, §405.3]

District Rule 3.4-New Source Review

This rule applies to all new stationary sources and emissions units and all modifications to existing stationary sources and emissions units which are subject to Rule 3.1, General Permit Requirements, and which, after construction or modification, emit or may emit any affected pollutants. This rule shall not apply to prescribed burning of forest, agriculture or range land, road construction or any other non-point source common to timber harvesting or agricultural practices. The purpose of this rule is to provide for the review of new and modified stationary air pollution sources and to provide mechanisms, including emission

offsets, by which authorities to construct to such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.

Compliance Status: The source has satisfied the provisions of New Source Review. The New Source Review requirements will be imposed on the Authority to Construct (ATC) issued to the source. The version of the rule used in this evaluation was adopted on August 13, 1997 and is part of the current SIP.

PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT

| | <u>Daily</u> | <u>Yearly</u> | |
|------|--------------|---------------|------------------------|
| VOC | 0.4 lb | 0.07 tons | Use for annual billing |
| CO | 3.2 lb | 0.58 tons | Use for annual billing |
| NOx | 2.6 lb | 0.48 tons | Use for annual billing |
| SOx | 0.0 lb | 0.01 tons | Use for annual billing |
| PM10 | 0.5 lb | 0.10 tons | Use for annual billing |

| | <u>Quarterly</u> | | | |
|-----------|------------------|------------|------------|------------|
| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
| VOC (lb) | 36 | 36 | 36 | 36 |
| CO (lb) | 287 | 290 | 293 | 293 |
| NOx (lb) | 236 | 238 | 241 | 241 |
| SOx (lb) | 4 | 4 | 4 | 4 |
| PM10 (lb) | 49 | 50 | 50 | 50 |

Previous quarterly potential to emit for modified permit*

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 22 | 22 | 23 | 23 |
| CO (lb) | 122 | 124 | 125 | 125 |
| NOx (lb) | 583 | 590 | 596 | 596 |
| SOx (lb) | 3 | 4 | 4 | 4 |
| PM10 (lb) | 70 | 71 | 72 | 72 |

* From PTO P-54-00

Historic potential emissions for modified permit*

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 22 | 22 | 23 | 23 |
| CO (lb) | 122 | 124 | 125 | 125 |
| NOx (lb) | 583 | 590 | 596 | 596 |
| SOx (lb) | 3 | 4 | 4 | 4 |
| PM10 (lb) | 70 | 71 | 72 | 72 |

* The throughput report from 2009 documented 23.65 mmscf of natural gas, which was 100% of permitted throughput. Therefore, because the historic emissions are over 80% in at least one year out of the last five, the historic potential equals the previous potential to emit.

| <u>Pollutant</u> | <u>Trigger</u> (lb/day) | <u>BACT</u> <u>Proposed</u> (lb/day) | <u>Quarterly Increase</u> | <u>BACT</u> |
|------------------|----------------------------|--|---------------------------|-------------|
| VOC | 10 | 0 | Yes | No |
| CO | 250 | 3 | Yes | No |
| NOx | 10 | 3 | No | No |
| SOx | 80 | 0 | Yes | No |
| PM10 | 80 | 1 | No | No |

OFFSETS

Quarterly permitted emissions for other permits at the stationary source*

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 13,596 | 13,654 | 13,767 | 13,830 |
| CO (lb) | 207,536 | 209,488 | 211,664 | 211,904 |
| NOx (lb) | 51,097 | 51,272 | 51,699 | 51,960 |
| SOx (lb) | 7,543 | 7,550 | 7,558 | 7,560 |
| PM10 (lb) | 10,718 | 10,787 | 10,870 | 10,887 |

* See attached quarterly potential to emit determination

Quarterly permitted emissions for the stationary source including proposed emissions

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 13,632 | 13,690 | 13,803 | 13,866 |
| CO (lb) | 207,823 | 209,778 | 211,957 | 212,197 |
| NOx (lb) | 51,333 | 51,510 | 51,940 | 52,201 |
| SOx (lb) | 7,547 | 7,554 | 7,562 | 7,564 |
| PM10 (lb) | 10,767 | 10,837 | 10,920 | 10,937 |

Offset triggers

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 7,500 | 7,500 | 7,500 | 7,500 |
| CO (lb) | 49,500 | 49,500 | 49,500 | 49,500 |
| NOx (lb) | 7,500 | 7,500 | 7,500 | 7,500 |
| SOx (lb) | 13,650 | 13,650 | 13,650 | 13,650 |
| PM10 (lb) | 13,650 | 13,650 | 13,650 | 13,650 |

Quantity of offsets required

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 14 | 14 | 13 | 13 |
| CO (lb) | 165 | 166 | 168 | 168 |
| NOx (lb) | 0 | 0 | 0 | 0 |
| SOx (lb) | 0 | 0 | 0 | 0 |
| PM10 (lb) | 0 | 0 | 0 | 0 |

Quantity of offsets required (ERCs generated same source; 1.0 to 1.0 Ratio)

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 14 | 14 | 13 | 13 |
| CO (lb) | 165 | 166 | 168 | 168 |
| NOx (lb) | 0 | 0 | 0 | 0 |
| SOx (lb) | 0 | 0 | 0 | 0 |
| PM10 (lb) | 0 | 0 | 0 | 0 |

Quantity of offsets required (ERCs generated < 15 miles; 1.2 to 1.0 Ratio)

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 16 | 17 | 16 | 16 |
| CO (lb) | 198 | 199 | 202 | 202 |
| NOx (lb) | 0 | 0 | 0 | 0 |
| SOx (lb) | 0 | 0 | 0 | 0 |
| PM10 (lb) | 0 | 0 | 0 | 0 |

Quantity of offsets required (ERCs generated > 15 miles but < 50 miles; 1.5 to 1.0 Ratio)

| | <u>1st</u> | <u>2nd</u> | <u>3rd</u> | <u>4th</u> |
|-----------|------------|------------|------------|------------|
| VOC (lb) | 20 | 21 | 20 | 20 |
| CO (lb) | 248 | 249 | 253 | 253 |
| NOx (lb) | 0 | 0 | 0 | 0 |
| SOx (lb) | 0 | 0 | 0 | 0 |
| PM10 (lb) | 0 | 0 | 0 | 0 |

MAJOR MODIFICATION

Facility Total Potential to Emit

29.57 TPY VOC
423.32 TPY CO
152.88 TPY NO_x
7.74 TPY SO_x
20.60 TPY PM₁₀

Major Source Thresholds

25 TPY VOC
100 TPY CO
25 TPY NO_x
100 TPY SO_x
100 TPY PM₁₀

Last five year emission aggregate

5.22 TPY VOC
7.68 TPY CO
15.10 TPY NO_x
0.53 TPY SO_x
6.61 TPY PM₁₀

Major Modification Thresholds

25 TPY VOC
100 TPY CO
25 TPY NO_x
40 TPY SO_x
25 TPY PM₁₀

Result: The proposed modification is not a major modification

PUBLIC NOTICE

"Increase in historic potential to emit"

14 lb VOC/quarter
168 lb CO/quarter
-347 lb NO_x/quarter
1 lb SO_x/quarter
-21 lb PM₁₀/quarter

Exemption level for notification

7,500 lb VOC/quarter
49,500 lb CO/quarter
7,500 lb NO_x/quarter
13,650 lb SO_x/quarter
13,650 lb PM₁₀/quarter

Result: Public notice is not required

Permit Condition: VOC emissions shall not exceed 0.4 lb/day, 36 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.07 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: CO emissions shall not exceed 3.2 lb/day, 287 lb/1st calendar quarter, 290 lb/2nd calendar quarter, 293 lb/3rd calendar quarter, 293 lb/4th calendar quarter and 0.58 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: NO_x emissions shall not exceed 2.6 lb/day, 236 lb/1st calendar quarter, 238 lb/2nd calendar quarter, 241 3rd calendar quarter, 241 lb/4th calendar quarter, and 0.48 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: SO_x emissions shall not exceed negligible lb/day, 4 lb/1st, 2nd, 3rd, and 4th calendar quarter, and 0.01 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: PM₁₀ emissions shall not exceed 0.5 lb/day, 49 lb/1st calendar quarter, 50 lb/2nd calendar quarter, 50 lb/3rd calendar quarter, 50 lb/4th calendar quarter and 0.10 tons/year. [District Rule 3.4/C-10-93]

Permit Condition: The maximum amount of natural gas consumption shall not exceed 0.072 million cubic feet/day, 6.480 million cubic feet/1st calendar quarter, 6.552 million cubic feet/2nd calendar quarter, 6.624 million cubic feet/3rd calendar quarter, 6.624 million cubic feet/4th calendar quarter, and 26.280 million cubic feet/year. [District Rule 3.4/C-10-93]

Permit Condition: The permit holder shall not release or discharge into the atmosphere, from any single source operation, dust fumes or total suspended particulate matter emissions in excess of 0.006 grain per cubic foot of gas at dry standard conditions. [District Rule 2.3 and District Rule 3.4]

Permit Condition: The boiler(s) shall be fired only on Public Utility Commission (PUC) grade pipeline natural gas. [District Rule 3.4/C-10-93]

Permit Condition: A non-resettable, totalizing gaseous fuel flow meter shall be installed and utilized to measure the quantity (in cubic feet) of natural gas combusted by the boiler(s). [District Rule 3.4/C-10-93]

Permit Condition: For the boiler(s) operating under P-54-00(a) the Permit Holder shall monitor and record the cumulative quarterly and annual natural gas fuel usage (in cubic feet) for the boiler(s). The records shall be updated quarterly and made available to the District upon request. Historic annual data for the five (5) previous calendar years shall be kept and made available to the District upon request. [District Rule 3.4 and 3.8/C-10-93]

Permit Condition: (ATC only) The Emission Reduction Credits (ERCs) quantified above shall be surrendered to the District prior to beginning construction as authorized by Authority to Construct (ATC) C-10-93.. [District Rule 3.4/C-10-93]

District Rule 3.8-Federal Operating Permits

This rule implements the requirements of Title V of the Federal Clean Air Act as amended in 1990 (CAA) for permits to operate. Title V provides for the establishment of operating permit programs for sources which emit regulated air pollutants, including attainment and non-attainment pollutants.

Compliance Status: The Rule was originally adopted on January 26, 1994. The most recent revision dated April 11, 2001 and is part of the current SIP. The source is currently in compliance with the requirements of the rule.

Per Section 102, this rule applies to all major sources, acid rain units subject to Title IV of the Federal Clean Air Act (CAA), solid waste incinerators, and any other sources specifically designated by the rule of US EPA.

The facility is a federal major source due to potential to emit over 25 tons VOC per year, 100 tons CO per year, and 25 tons NOx per year. The facility has an existing Title V Permit. Revisions to the Title V permit will be processed immediately following the approval of this application. The proposed revisions to the Title V permit will concurrently undergo a 30-day public comment period and a 45-day EPA comment period. Enhanced NSR has been requested by the applicant, as allowed by District Rule 3.4. The requirements of this ATC will be incorporated into the Title V permit upon written request from the applicant after all noticing has been done and the project is completed.

The facility's Title V Permit will be issued with all applicable operating, monitoring, and recordkeeping requirements. Per Section 302.6, the source will be required to maintain all required records for a period of five (5) years.

Title V General Requirements - Permit Conditions

The following conditions will not be placed on the ATC or PTO. These requirements will be included in the Title V Operating Permit only.

Permit Condition -Right of Entry:

The permit shall require that the source allow the entry of the District, ARB, or U.S. EPA officials for the purpose of inspection and sampling, including:

- a. Inspection of the stationary source, including equipment, work practices, operations, and emissions-related activity;
- b. Inspection and duplication of records required by the permit to operate; and
- c. Source sampling or other monitoring activities. [District Rule 3.8, §302.10]

Permit Condition -Compliance with Permit Conditions:

The Permit Holder shall comply with all Title V permit conditions. [District Rule 3.8, §302.11a]

The permit does not convey property rights or exclusive privilege of any sort. [District Rule 3.8, §302.11b]

Non-compliance with any permit condition is grounds for permit termination, revocation and reissuance, modification, enforcement action, or denial of permit renewal. [District Rule 3.8, §302.11c]

The Permit Holder shall not use the "need to halt or reduce a permitted activity in order to maintain compliance" as a defense for non-compliance with any permit condition. [District Rule 3.8, §302.11d]

A pending permit action or notification of anticipated non-compliance does not stay any permit condition. [District Rule 3.8, §302.11e]

Within a reasonable time period, the Permit Holder shall furnish any information requested by the APCO, in writing, for the purpose of determining:

- a. Compliance with the permit; or
- b. Whether or not cause exists for a permit or enforcement action. [District Rule 3.8, §302.11f]

Permit Condition -Emergency Provisions:

Within two weeks of an emergency event, the owner or operator shall submit to the District a properly signed contemporaneous log or other relevant evidence demonstrating that:

- a. An emergency occurred;
- b. The Permit Holder can identify the cause(s) of the emergency;
- c. The facility was being properly operated at the time of the emergency;
- d. All steps were taken to minimize the emissions resulting from the emergency; and
- e. Within two working days of the emergency event, the Permit Holder provided the District with a description of the emergency and any mitigating or corrective actions taken; and

In any enforcement proceeding, the Permit Holder has the burden of proof for establishing that an emergency occurred. [District Rule 3.8, §302.12]

Permit Condition -Severability:

If any provision, clause, sentence, paragraph, section or part of these conditions for any reason is judged to be unconstitutional or invalid, such judgment shall not affect or invalidate the remainder of these conditions. [District Rule 3.8, §302.13]

Compliance Certification:

Requirement: Section 302.14(a) of Rule 3.8 requires "the responsible official shall submit a compliance certification to the U.S. EPA and the APCO every twelve (12) months unless required more frequently by an applicable requirement. All compliance reports and other documents required to be submitted to the District by the responsible official shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete."

Streamlining Demonstration: As shown in the following permit conditions, the standard annual compliance certification reporting language of Rule 3.8 (Federal Operating Permits), will be streamlined under the provisions of Rule 3.4 to include specific reporting and submittal dates:

Permit Condition -Compliance Certification:

The Responsible Official shall submit a compliance certification to the U.S. EPA and the APCO every twelve (12) months unless required more frequently by an applicable requirement. The twelve (12) month period will begin on January 1 and end on December 31, and will be due by January 31 for the previous reporting year, unless otherwise approved in writing by the District. All compliance reports and other documents required to be submitted to the District by the responsible official shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

The compliance certification shall identify the basis for each permit term or condition (e.g., specify the emissions limitation, standard, or work practice) and a means of monitoring compliance with the term or condition consistent with Sections 302.5, 302.6, and 302.7 of Rule 3.8. [District Rule 3.8, §302.14b]

The compliance certification shall include a statement of the compliance status, whether compliance was continuous or intermittent, and method(s) used to determine compliance for the current time period and over the entire reporting period. [District Rule 3.8, §302.14c]

The compliance certification shall include any additional inspection, monitoring, or entry requirement that may be promulgated pursuant to Sections 114(a) and 504(b) of the Federal Clean Air Act. [District Rule 3.8, §302.14d]

Permit Condition -Permit Life:

The Title V permit shall expire five years from the date of issuance. Title V permit expiration terminates the stationary source's right to operate unless a timely and complete Title V permit application for renewal has been submitted. [District Rule 3.8, §302.15]

Permit Condition -Payment of Fees:

An owner or operator shall pay the appropriate Title V permit fees on schedule. If fees are not paid on schedule, the permit is forfeited. Operation without a permit subjects the source to potential enforcement action by the District and the U.S. EPA pursuant to Section 502(a) of the CAA. [District Rule 3.8, §302.16]

Permit Condition -Permit Revision Exemption:

No permit revision shall be required under any approved economic incentives, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in the permit. [District Rule 3.8, §302.22]

Permit Condition -Application Requirements:

An owner or operator shall submit a standard District application for renewal of the Title V permit, no earlier than 18 months and no later than six months before the expiration date of the current permit to operate. [District Rule 3.8, §402.2]

An owner or operator shall submit a standard District application for each emissions unit affected by a proposed permit revision that qualifies as a significant Title V permit modification. The application shall be submitted after obtaining any required preconstruction permits. Upon request by the APCO, the owner or operator shall submit copies of the latest preconstruction permit for each affected emissions unit. The emissions unit(s) shall not commence operation until the APCO approves the permit revision. [District Rule 3.8, §402.3]

An owner or operator shall submit a standard District application for each emissions unit affected by the proposed permit revision that qualifies as a minor permit modification. The application shall be submitted after obtaining any required preconstruction permits. The emissions unit(s) shall not commence operation until the APCO approves the permit revision. In the application, the owner or operator shall include the following:

- a. A description of the proposed permit revision, any change in emissions, and additional applicable federal requirements that will apply;
- b. Proposed permit terms and conditions; and
- c. A certification by a responsible official that the permit revision meets criteria for use of minor permit modification procedures and a request that such procedures be used. [District Rule 3.8, §402.4]

Permit Condition -Permit Reopening for Cause:

Circumstances that are cause for reopening and revision of a permit include, but are not limited to, the following:

- a. The need to correct a material mistake or inaccurate statement;
- b. The need to revise or revoke a permit to operate to assure compliance with applicable federal requirements;
- c. The need to incorporate any new, revised, or additional applicable federal requirements, if the remaining authorized life of the permit is 3 years or greater, no later than 18 months after the promulgation of such requirement (where less than 3 years remain in the authorized life of the permit, the APCO shall incorporate the requirements into the permit to operate upon renewal); or
- d. Additional requirements promulgated pursuant to Title IV as they become applicable to any acid rain unit governed by the permit. [District Rule 3.8, §413.1]

Permit Condition -Recordkeeping:

The permit holder shall record maintenance of all monitoring and support information required by any applicable federal requirement, including:

- a. Date, place, and time of sampling;
- b. Operating conditions at the time of sampling;
- c. Date, place, and method of analysis; and
- d. Results of the analysis. [District Rule 3.8, §302.6a]

The permit holder shall retain records of all required monitoring data and support information for a period of at least five years from the date of sample collection, measurement, report, or application. [District Rule 3.8 §302.6b]

Permit Condition -Reporting Requirements:

Any deviation from permit requirements, including that attributable to upset conditions (as defined in the permit), shall be

promptly reported to the APCO. For the purpose of this condition prompt means as soon as reasonably possible, but no later than 10 days after detection. [District Rule 3.8, §302.7a]

A semi-annual monitoring report shall be submitted at least once every six (6) consecutive calendar months and shall identify any deviation from permit requirements, including that previously reported to the APCO pursuant to Section 302.7(a) of Rule 3.8. Unless otherwise approved in writing by the District, the following shall apply:

a. The first six (6) month monitoring period will begin on January 1 and end on June 30, and the report will be due by July 31 of the reporting year; and

b. The second six (6) month period will begin on July 1 and end on December 31, and the report will be due on January 31 of the following calendar year.

All reports of deviation from permit requirements shall include the probable cause of the deviation and any preventive or corrective action taken. [District Rule 3.8, §302.7c]

Each monitoring report shall be accompanied by a written statement from the responsible official that certifies the truth, accuracy, and completeness of the report. [District Rule 3.8, §302.7e]

District Rule 3.20-Ozone Transport Mitigation

As documented above, the facility total potential to emit is above 10 tons per year for VOC or NOx, and therefore the post-project Stationary Source Potential to Emit (SSPE) will be calculated.

Annual permitted emissions for the stationary source including proposed emissions

| | | |
|-----------------|---------|-----|
| VOC (lb) | 59,140 | lbs |
| NOx (lb) | 305,760 | lbs |

Annual permitted emissions for equipment which is exempt from Rule 3.4*

| | | |
|-----------------|---------|-----|
| VOC (lb) | 5,340 | lbs |
| NOx (lb) | 130,500 | lbs |

* See attached quarterly potential to emit determination

Post -project Stationary Source Potential to Emit (SSPE)

| | | |
|-----------------|---------|-----|
| VOC (lb) | 53,800 | lbs |
| NOx (lb) | 175,260 | lbs |

Because the post-project SSPE is greater than 10 tons (20,000) lbs per year for VOC or NOx, per section 301.1, calculations shall be performed to determine the quantity of mitigation required, if any.

Pre -project Stationary Source Potential to Emit (SSPE)

| | | |
|-----------------|---------|-----|
| VOC (lb) | 53,740 | lbs |
| NOx (lb) | 176,640 | lbs |

Quantity of offsets required by Rule 3.4

| | | |
|-----------------|----|-----|
| VOC (lb) | 55 | lbs |
| NOx (lb) | 0 | lbs |

Quantity of Mitigation required by Rule 3.20*

| | | |
|-----------------|---|-----|
| VOC (lb) | 5 | lbs |
| NOx (lb) | 0 | lbs |

* The above ozone transport mitigation calculations indicate the source will be required to surrender mitigation credits. However, this is due to rounding based on the conversion between tons and pounds. Therefore, no mitigation credits will be required.

District Risk Management Plan and Risk Assessment Guidelines

| Natural Gas Combustion | Emission Factor* | Yearly Emissions | | Screening Level | Less Than Screening |
|------------------------|------------------|------------------|----------|-----------------|---------------------|
| | lb/MMScf | (lb/year) | (g/s) | (lb/year) | |
| Arsenic | 2.0E-04 | 0.0053 | 7.56E-08 | 0.024 | Yes |
| Benz[a]anthracene | 1.8E-06 | 0.0000 | 6.80E-10 | 0.04 | Yes |
| Benzene | 2.1E-03 | 0.0552 | 7.94E-07 | 6.70 | Yes |
| Benzo[a]pyrene | 1.2E-06 | 0.0000 | 4.54E-10 | 0.04 | Yes |
| Benzo[b]fluoroanthene | 1.8E-06 | 0.0000 | 6.80E-10 | 0.04 | Yes |
| Benzo[k]fluoroanthene | 1.8E-06 | 0.0000 | 6.80E-10 | 0.04 | Yes |
| Dibenz[a,h]anthracene | 1.2E-06 | 0.0000 | 4.54E-10 | 0.04 | Yes |
| Beryllium | 1.2E-05 | 0.0003 | 4.54E-09 | 0.015 | Yes |
| Cadmium | 1.1E-03 | 0.0289 | 4.16E-07 | 0.046 | Yes |
| Copper | 8.5E-04 | 0.0223 | 3.21E-07 | 463.0 | Yes |
| Dichlorobenzene | 1.2E-03 | 0.0315 | 4.54E-07 | 68.0 | Yes |
| Formaldehyde | 7.5E-02 | 1.9710 | 2.84E-05 | 33.0 | Yes |
| Lead | 5.0E-04 | 0.0131 | 1.89E-07 | 29.00 | Yes |
| Manganese | 3.8E-04 | 0.0100 | 1.44E-07 | 77.0 | Yes |
| Mercury | 2.6E-04 | 0.0068 | 9.83E-08 | 57.9 | Yes |
| n-Hexane | 1.8E+00 | 47.3040 | 6.80E-04 | 83,000 | Yes |
| Naphthalene | 6.1E-04 | 0.0160 | 2.31E-07 | 270.0 | Yes |
| Nickel | 2.1E-03 | 0.0552 | 7.94E-07 | 0.73 | Yes |
| Selenium | 2.4E-05 | 0.0006 | 9.07E-09 | 96.5 | Yes |
| Toluene | 3.4E-03 | 0.0894 | 1.29E-06 | 38,600 | Yes |
| Zinc | 2.9E-02 | 0.7621 | 1.10E-05 | 6,760 | Yes |

* AP-42, Section 1.4 (7/98)

Further Toxics Review Not Required

Because no HAP emissions were above their respective prioritization level, a screening health risk assessment was not performed for this application and T-BACT is not triggered.

COMMENTS: BACT and TBACT are not triggered. This is not considered a major modification.

Copies of the ATC, Title V Statement of Basis Addendum/Evaluation, and proposed Title V permit changes will be mailed to the California Air Resources Board (ARB) and the United States Environmental Protection Agency (US EPA) Region IX.

RECOMMENDATIONS: Perform the required public and regulatory notice.

Engineer: _____

Date: _____

Reviewed by: _____

Date: _____

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