San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING

July 21, 2023

Mr. Jennifer Loving-Biggert
Fresno/Clovis Regional WWTP
5607 W Jensen Ave
Fresno, CA 93706

Re: Proposed ATC / Certificate of Conformity (Significant Mod)
Facility Number: C-535
Project Number: C-1193676

Dear Mr. Loving-Biggert:

Enclosed for your review is the District's analysis of an application for Authorities to Construct for the facility identified above. You requested that Certificates of Conformity with the procedural requirements of 40 CFR Part 70 be issued with this project. Fresno/Clovis Regional Wastewater Reclamation Facility has requested to install two 75.1 MMBtu/hr ultra-low emission flares that will become the primary means to dispose of the digester gas, to designate an existing 36.3 MMBtu/hr flare as an emergency flare, and to remove the conditions limiting total NOx emissions from the existing 36.3 MMBtu/hr flare and two transportable diesel-fueled IC engines.

The notice of preliminary decision for this project has been posted on the District's website (www.valleyair.org). After addressing all comments made during the 30-day public notice and the 45-day EPA comment periods, the District intends to issue the Authorities to Construct with Certificates of Conformity. Please submit your comments within the 30-day public comment period, as specified in the enclosed public notice. Prior to operating with modifications authorized by the Authorities to Construct, the facility must submit an application to modify the Title V permit as an administrative amendment, in accordance with District Rule 2520, Section 11.5.

If you have any questions, please contact Mr. Nick Peirce, Permit Services Manager, at (209) 557-6400.

Samir Sheikh
Executive Director/Air Pollution Control Officer

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www.valleyair.org www.healthyairliving.com

Thank you for your cooperation in this matter.

Sincerely,

Brian Clements
Director of Permit Services

Enclosures

cc: Courtney Graham, CARB (w/enclosure) via email
cc: Gerardo Rios, EPA (w/enclosure) via EPS

San Joaquin Valley Air Pollution Control District
Authority to Construct Application Review

Installation of Two Ultra-Low Emission Digester Gas Flares

Facility Name:	Fresno/Clovis Regional Wastewater Reclamation Facility	Date:	June 26, 2023
Mailing Address:	5607 W Jensen Ave Fresno, CA 93706	Engineer:	Ramon Norman
		Lead Engineer:	Derek Fukuda
Contact Person:	Jennifer Loving-Biggert		
Telephone:	(559) 621-5122		
Cell Phone:	(559) 396-5787		
E-Mail:	Jennifer.Loving@fresno.gov		
Application #s:	C-535-9-19, -24-6, -44-2, -50-0, and -51-0		
Project #:	C-1193676		
Deemed Complete:	January 25, 2023		

I. Proposal

Fresno/Clovis Regional Wastewater Reclamation Facility, permitted by the District as Fresno/Clovis Regional WWTP, has requested Authority to Construct (ATC) permits to modify their existing waste digester system as follows:

- Install two new 75.1 MMBtu/hr John Zink ultra-low emission flares, which will each have a rated capacity to flare up to 2,000 standard cubic feet per minute (scfm) of digester gas (ATC Permits C-535-50-0 and -51-0),
- Remove an existing 58.5 MMBtu/hr temporary flare that is currently authorized under Permit to Operate (PTO) C-535-45-0, which will be replaced by the two new 75.1 MMBtu/hr ultra-low emission flares,
- Redesignate an existing 36.3 MMBtu/hr flare (Permit Unit C-535-9) to emergency use and limit its non-emergency operation for maintenance and testing purposes to 1,815 MMBtu/year (equivalent to 50 hour/year at maximum rating),
- Permanently remove an existing 16.7 MMBtu/hr boiler, currently operating under PTO C-535-6-18, to partially offset the emissions increases from the two new 75.1 MMBtu/hr ultra-low emission flares,
- Additionally, the applicant requested to limit the total combined annual NO_X emissions from the proposed 75.1 MMBtu/hr ultra-low emission digester gas flares to reduce the quantity of NO_X Emission Reduction Credits (ERCs) required for the project. Based on the amount of NO_X ERCs that the applicant has that may be used for Federal Major Modification

offsetting purposes, the total combined emissions from the flare will be limited to no more than 26,056 lb-NO_X per year.[1]

The following conditions will be included on ATC Permits C-535-50-0 and -51-0 for the proposed 75.1 MMBtu/hr ultra-low emission digester gas flares to ensure the existing boiler and flare are removed from service and to limit the existing 36.3 MMBtu/hr flare (Unit C-535-9) to emergency use with the exception of limited flaring for maintenance and testing:

- *Within 90 days of startup of the equipment authorized by this Authority to Construct (ATC), Permits to Operate (PTOs) C-535-6-18 and -45-0 shall each be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201]*

- *Authority to Construct (ATC) C-535-9-19 shall be implemented concurrently or prior to implementation of this ATC. [District Rule 2201]*

Furthermore, the current PTOs for the existing waste digester system served by a 36.3 MMBtu/hr flare (Permit Unit C-535-9-18), a transportable diesel-fired IC engine powering an air compressor (Permit Unit C-535-24-5), and a transportable diesel-fired IC engine powering an pump (Permit Unit C-535-44-1) include specific limiting conditions (SLCs) that limit the total combined annual potential to emit for NO_X from these permit units to no more than 19,272 pounds in any calendar year. In addition to the modifications discussed above, this SLC condition will be removed from ATC permits C-535-9-19, -24-6 and -44-2 because this limit will be unnecessary since the total combined post-project potential NO_X emissions from these units (11,106 lb/yr) will be reduced to below the current combined NO_X SLC limit (19,272 lb/yr). Additionally, the permit conditions for the 125 bhp Tier 3 diesel-fired IC engine under Permit Unit C-535-24 require compliance with the California Air Toxic Control Measure (ATCM) for portable diesel engines, which will require the existing engine to be removed from service, unless operation of the engine is reduced to no more than 200 hours per year or it is designated an emergency engine. Fresno/Clovis Regional WWTP and the September 2022 District inspection report indicate that Permit Unit C-535-24 is being retired from service and will be replaced with a 122 bhp Tier 4 Final-certified diesel-fired IC engine powering an air compressor for which Fresno/Clovis Regional WWTP received an ATC permit under Project C-1230270.

The removal of the SLC NO_X limit conditions from the proposed ATC permits for the flare and transportable engines is to simplify the permits by removing conditions that are no longer needed. As shown below, since the majority of the potential emissions in the existing NO_X SLC limit for the these units were from the existing flare (Permit Unit C-535-9) and the maximum combined NO_X emissions for the two transportable IC engines (Permit Units C-535-24 and -44) are much lower than the current total combined SLC NO_X limit for the three units; both of the engines were allowed to operate at their full permitted capacity under the SLC and the removal of the SLC limit will not result allow increases operation of the engines. Because removing these SLC conditions limiting the total NO_X emissions from the transportable IC engines will not result

[1] The combined NO_X emission limit from the flares is equivalent to the NO_X emissions that would occur from operation of the flares at approximately 79% of their total combined rated capacity. Limiting the total NO_X emissions from the flares is expected to also limit the emissions of other pollutants; however, the applicant requested that the emissions of other pollutants be permitted at their full potential to provide the facility with more flexibility.

in any changes in hours of operation, production rate, or method of operation of the existing engines, that which would necessitate a change in permit conditions, pursuant to District Rule 2201 – New and Modified Stationary Source Review Rule for the transportable IC engines, the removal of the NO_X SLC conditions for the engines will not trigger any New Source Review (NSR) requirements.

Current PTOs C-535-6-18, -9-18, -25-5, -44-1, and -45-0 for the units being modified or removed from service are included in Appendix A. Draft ATC permits C-535-9-19, -25-6, -44-2, 50-0, and -51-0 for the modified and new units are included in Appendix B.

Fresno/Clovis Regional WWTP received their Title V Permit on March 23, 2001. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, the 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Fresno/Clovis Regional WWTP must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 2201	New and Modified Stationary Source Review Rule (8/15/19)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (8/15/19)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4311	Flares (12/17/20)
Rule 4701	Internal Combustion Engines - Phase 1 (8/21/03)
Rule 4702	Internal Combustion Engines (8/19/21)
Rule 4801	Sulfur Compounds (12/17/92)
40 CFR Part 60	Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
40 CFR Part 63	Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

California Code of Regulations (CCR), Title 17 (Public Health), Division 3 (Air Resources), Chapter 1 (Air Resources Board), Subchapter 7.5 (Air Toxic Control Measures), Measure 93115 (Stationary Diesel Engines)
California Code of Regulations (CCR), Title 17 (Public Health), Division 3 (Air Resources), Chapter 1 (Air Resources Board), Subchapter 7.5 (Air Toxic Control Measures), Measure 93116 (Portable Diesel Engines)

CH&SC 41700	Risk Management Review
CH&SC 42301.6	School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The facility is located at 5607 W Jensen Ave in Fresno, CA. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

The primary business of the Fresno/Clovis Regional WWTP is the processing of wastewater produced by the cities of Fresno and Clovis. The sewage treatment plant receives and treats millions of gallons of sewage from the cities of Fresno and Clovis each day. The Fresno/Clovis Regional WWTP operates an anaerobic treatment tanks to reduce the biological oxygen demand (BOD) and pathogens in the wastewater that is processed. The anaerobic treatment tanks are designed to accelerate and control the decomposition of organic matter by microorganisms in the absence of oxygen. Anaerobic decomposition results in the conversion of organic compounds in the material into methane (CH_4), carbon dioxide (CO_2), and water. The gas generated by this process is known as biogas, waste gas, or digester gas. In addition to methane and carbon dioxide, biogas may also contain small amounts of Nitrogen (N_2), Oxygen (O_2), Hydrogen Sulfide (H_2S), and Ammonia (NH_3). Biogas may also include trace amounts of various VOCs that remain from incomplete digestion of the volatile solids in the incoming substrate. Because biogas is mostly composed of methane, the main component of natural gas, the gas produced in the digester can be cleaned to remove H_2S and other impurities and used as fuel.

Fresno/Clovis Regional WWTP operates a raw digester gas treatment system (Permit Unit C-535-26) to remove moisture, and undesirable constituents such as H_2S, siloxanes, and carbon dioxide from the digester gas so it can be used as a fuel in the facility's boiler (Permit Unit C-535-6). Excess digester gas that cannot be burned in the existing boiler is currently combusted in the facility's existing 36.3 MMBtu/hr enclosed flare (Permit Unit C-535-9) or 58.5 MMBtu/hr temporary flare (Permit Unit C-535-45).

Permit Unit C-535-6 (Digester Gas/Natural Gas-Fired Boiler)

Fresno/Clovis Regional WWTP currently operates a 16.7 MMBtu/hr digester gas/natural gas-fired boiler, which is used to produce hot water and steam to heat the digester tanks and the buildings at the facility. The boiler currently authorized to use the following fuels: 1) raw digester gas after treatment in the SulfaTreat system listed on the permit; 2) conditioned digester gas treated in the digester gas treatment system authorized under Permit Unit C-535-26; and 3) California Public Utilities Commission (PUC) quality natural gas. The existing boiler is currently permitted to operate 24 hours per day and 365 days per year. As discussed above, Fresno/Clovis Regional WWTP has requested to permanently remove the existing 16.7 MMBtu/hr boiler from service and cancel the permit for the unit, and use the emission reductions from the removal of the boiler to partially offset the emission increases from the installation of the proposed flares.

Permit Units C-535-9 and -45-0 (Digester Tanks with Enclosed Flares)

Excess digester gas produced in the digester tanks is combusted in an existing 36.3 MMBtu/hr enclosed flare (Permit Unit C-535-9) or an existing 58.5 MMBtu/hr temporary enclosed flare

(Permit Unit C-535-45). The existing digester gas flares incinerate excess digester gas, primarily to control odors and to address safety issues associated with venting of a flammable gas.

Each of the flares is equipped with an automatic ignition system or a continuous pilot and a sensing device to determine if the pilot is operating. PTO C-535-9-18 requires the flare to operate with a minimum temperature of 1,400 °F and a minimum residence time of 0.6 seconds to ensure satisfactory combustion of the biogas. Permit Units C-535-9 and -45 are permitted to combust a maximum of 1,584,000 standard cubic feet (scf) per day and 2,160,000 scf per day of digester gas, respectively. Each of the flares is permitted to operate up to 365 days per year. The average sulfur content of the digester gas combusted in each of the flares is limited to 200 ppmv as H_2S. The total combined NO_X emissions from the existing 36.3 MMBtu/hr digester gas flare (Permit Unit C-535-9), an existing transportable 125 bhp diesel-fired IC engine powering an air compressor (Permit Unit C-535-24), and an existing transportable 74 bhp diesel-fired IC engine powering a pump (Permit Unit C-535-44) are limited to 19,272 lb-NO_X in any calendar year.

As discussed above, the proposed 75.1 MMBtu/hr ultra-low NO_X flares will replace the existing 36.3 MMBtu/hr enclosed flare (Permit Unit C-535-9) and the existing 58.5 MMBtu/hr temporary enclosed flare (Permit Unit C-535-45) as the primary devices used for combustion of the digester gas. After installation of the proposed flares, Permit Unit C-535-9 will be limited to emergency use with the exception of 1,815 MMBtu/year of flaring (equivalent to 50 hours per year at maximum rated capacity) for maintenance and testing and the 58.5 MMBtu/hr temporary enclosed flare will be removed from service and the permit for this unit will be cancelled.

Permit Unit C-535-24 (Transportable IC Engine Powering an Air Compressor)

The existing transportable 125 BHP diesel-fired IC engine powering an air compressor (Permit Unit C-535-24) is used to support pneumatic tools at the wastewater facility. The current permit does not limit the hours of operation of the engine; however, as discussed above the total combined NO_X emissions from this IC engine and Permit Units C-535-9 and -44 are limited to 19,272 lb-NO_X in any calendar year.

Permit Unit C-535-44 (Transportable IC Engine Powering a Pump)

The existing transportable 74 BHP diesel-fired IC engine powering a pump (Permit Unit C-535-44) is used at various locations throughout the existing facility to pump water from one pond to another as necessary to ensure proper operation of the wastewater treatment plant. The current permit limits the hours of operation of the engine to no more than 2,160 hours per year. As discussed above, the total combined NO_X emissions from Permit Units C-535-9 and -24, and this engine are limited to 19,272 lb-NO_X in any calendar year.

ATCs C-535-50-0 and -51-0 (Digester Tanks with Ultra-Low NO_X Flares)

In order to comply with the District Rule 4311, Fresno/Clovis Regional WWTP has proposed to install two 75.1 MMBtu/hr digester gas-fired John Zink ultra-low emission flares (ATCs C-535-50-0 and -51-0) to serve as the primary devices for combustion of the digester gas. Each of the proposed flares will have a rated capacity to flare up to 2,000 scfm of digester gas. The proposed flares will have a NO_X emission factor 0.025 lb-NO_X/MMBtu, a CO emission factor of 0.06 lb-

CO/MMBtu, and a VOC emission factor of 0.0027 lb-VOC/MMBtu. The maximum daily sulfur content of the digester gas combusted in each of the flares will be limited to 200 ppmv as H_2S.

The total combined NO_X emissions from the proposed 75.1 MMBtu/hr digester gas-fired flares will be limited to no more 26,056 lb-NO_X per year, equivalent to 79% of the total combined NO_X emissions of the flares if they each operated at their maximum rated capacity.

V. Equipment Listing

C-535-6

Digester Gas/Natural Gas-Fired Boiler that will be Removed:

C-535-6-18: 16.7 MMBTU/HR CLEAVER-BROOKS MODEL CBI-700-400 DIGESTER GAS/NATURAL GAS-FIRED BOILER WITH AN ALZETA MODEL CSB167R ULTRA-LOW NOX BURNER AND SULFATREAT DIGESTER GAS TREATMENT SYSTEM

C-535-9

Pre-Project Equipment Description:

C-535-9-18: 36.3 MMBTU/HR JOHN ZINK COMPANY WASTE GAS FLARE

Proposed Modification:

Convert existing flare to emergency flare and limit non-emergency use to 1,815 MMBtu/year for maintenance and testing

C-535-9-19: MODIFICATION OF WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 36.3 MMBTU/HR JOHN ZINK COMPANY ENCLOSED DIGESTER GAS FLARE: DESIGNATE AS EMERGENCY FLARE AND LIMIT NON-EMERGENCY USAGE TO 1,815 MMBTU/YEAR AND REMOVE TOTAL COMBINED NOX EMISSION LIMIT FOR UNITS C-535-9, -24, AND -44

Post-Project Equipment Description:

C-535-9-19: WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 36.3 MMBTU/HR JOHN ZINK COMPANY ENCLOSED EMERGENCY DIGESTER GAS FLARE

C-535-24

Pre-Project Equipment Description:

C-535-24-5: TRANSPORTABLE 125 BHP JOHN DEERE MODEL 4045HF275 TIER 3 CERTIFIED DIESEL-FIRED IC ENGINE POWERING AN AIR COMPRESSOR

Proposed Modification:

Remove SLC limiting total combined NO_X emissions from Permit Units C-535-9, -24, and -44

C-535-24-6: MODIFICATION OF TRANSPORTABLE 125 BHP JOHN DEERE MODEL 4045HF275 TIER 3 CERTIFIED DIESEL-FIRED IC ENGINE POWERING AN AIR COMPRESSOR: REMOVE TOTAL COMBINED NOX EMISSION LIMIT FOR UNITS C-535-9, -24, AND -44

Post-Project Equipment Description:

C-535-24-6: TRANSPORTABLE 125 BHP JOHN DEERE MODEL 4045HF275 TIER 3 CERTIFIED DIESEL-FIRED IC ENGINE POWERING AN AIR COMPRESSOR

C-535-44

Pre-Project Equipment Description:

C-535-44-1: TRANSPORTABLE 74 BHP JOHN DEERE MODEL 4045TFC03 TIER 4 FINAL CERTIFIED DIESEL-FIRED IC ENGINE POWERING A PUMP

Proposed Modification:

Remove SLC limiting total combined NO_X emissions from Permit Units C-535-9, -24, and -44

C-535-44-2: MODIFICATION OF TRANSPORTABLE 74 BHP JOHN DEERE MODEL 4045TFC03 TIER 4F CERTIFIED DIESEL-FIRED IC ENGINE POWERING A PUMP: REMOVE TOTAL COMBINED NOX EMISSION LIMIT FOR UNITS C-535-9, -24, AND -44

Post-Project Equipment Description:

C-535-44-2: TRANSPORTABLE 74 BHP JOHN DEERE MODEL 4045TFC03 TIER 4F CERTIFIED DIESEL-FIRED IC ENGINE POWERING A PUMP

C-535-45

Digester Gas Temporary Flare that will be Removed:

C-535-45-0: WASTE WATER TREATMENT PLANT OPERATION SERVED BY A TEMPORARY 58.5 MMBTU/HR JOHN ZINK COMPANY WASTE GAS FLARE

C-535-50

C-535-50-0: WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 75.1 MMBTU/HR JOHN ZINK ZULE ULTRA-LOW EMISSION ENCLOSED DIGESTER GAS FLARE

C-535-51

C-535-51-0: WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 75.1 MMBTU/HR JOHN ZINK ZULE ULTRA-LOW EMISSION ENCLOSED DIGESTER GAS FLARE

VI. Emission Control Technology Evaluation

Anaerobic Digester Tanks Controlled by Flares

Emissions from the wastewater treatment process may include VOCs and H_2S. Wastewater treatment can also be a source of nuisance odors. As previously discussed, anaerobic digester tanks are used as part of the wastewater treatment. The anaerobic digester tanks used reduce BOD and pathogens in the wastewater. Because the anaerobic digester tanks facilitate the conversion of VOCs in the wastewater to methane, the anaerobic digester tanks also reduce VOCs and odors from the wastewater.

The digester gas flares incinerate the digester gas produced in the digester tanks, primarily to control odors and to address safety issues associated with venting of a flammable gas. The combustion of the digester gas will control VOCs, odor, and methane in the digester gas. The complete combustion of VOCs and methane will convert these compounds to CO_2 and water vapor. However, combustion of the digester gas in the flares will produce other pollutants, including NO_X, SO_X, PM_{10}, and CO.

Permit C-535-9-18 requires the existing flare to operate with a minimum temperature of 1,400 °F and a minimum residence time of 0.6 seconds to ensure satisfactory combustion of the biogas, which will reduce PM, CO, and VOC emissions from the flare. Permit C-535-9-18 requires NO_X emissions from the flare to be no greater than 2.2 lb-NO_X/hour and requires VOC emissions from the flare to be no greater than 0.0027 lb-VOC/MMBtu. The NO_X and VOC emission rates from the existing flare have been confirmed by periodic source testing of the flare.

The proposed ultra-low emission flares have been designed and engineered to have low NO_X emissions while still maintaining adequate combustion of the digester gas, which results in low CO and VOC emissions. The flare supplier has guaranteed a methane destruction efficiency of greater than 99% and a minimum VOC control efficiency of 98%. The proposed flares will have a NO_X emission factor 0.025 lb-NO_X/MMBtu, a CO emission factor of 0.06 lb-CO/MMBtu, and a VOC emission factor of 0.0027 lb-VOC/MMBtu. Compliance with the NO_X and VOC emission factors for the proposed flares will be assured through periodic source testing.

SO_X and PM_{10} emissions from the flares are minimized by reducing the sulfur content of the digester gas prior to combustion. Fresno/Clovis Regional WWTP has proposed to maintain the digester gas sulfur content limit of 200 ppmv as H_2S for the existing and proposed flares. The sulfur content of the digester gas is controlled by adding either ferric chloride ($FeCl_3$) or ferrous chloride ($FeCl_2$) to the wastewater in the digester tanks. The process by which iron-chloride compounds reduce the H_2S concentration in the digester liquid is briefly explained as follows.

H_2S is a weak acid and disassociates resulting in the formation of the dissolved sulfide. Iron chlorides combine with the dissolved sulfide and form an iron sulfide precipitate.

The following reaction shows the disassociation of H_2S into dissolved sulfide:

$H_2S \leftrightarrow H^+ + HS^-$ (neutral and low pH water)

$HS^{--} \leftrightarrow S^{2-} + H^+$ (high pH water)

Ferrous chloride ($FeCl_2$) reduces the dissolved sulfides according to the following reaction:

$FeCl_2 + H_2S \rightarrow FeS + 2\ HCl$

Ferric chloride ($FeCl_3$) reduces the dissolved sulfides according to the following reaction:

$2\ FeCl_3 + 3\ H_2S \rightarrow Fe_2S_3 + 6\ HCl$

The precipitation of the iron sulfide reduces the sulfur content of the wastewater and the digester gas that is produced.

Fugitive Emissions from Digester Tanks and Associated Equipment

Previous analyses of digester gas have consistently demonstrated that the VOC content of digester gas is typically very low (less than 1% by weight). District Policy SSP 2015 – Procedures for Quantifying Fugitive VOC Emissions at Petroleum and SOCMI (Synthetic Organic Chemical Manufacturing Industry) Facilities specifies that fugitive VOC emissions are not assessed for piping and components handling fluid streams with a VOC content of 10% or less by weight. Therefore, because of the very low VOC content of the digester gas, fugitive VOC emissions from the digester tanks and associated equipment are assumed to be negligible, consistent with District Policy SSP 2015.

ATC C-535-24-6 (Transportable IC Engine Powering an Air Compressor)

The existing transportable engine powering a compressor is a Tier 3 certified IC engine that is only fueled with CARB certified diesel fuel with a maximum sulfur content of 0.0015% by weight. The existing engine currently complies with the requirements of the ATCM for Stationary Compression-Ignition Engines (17 CCR §93116) for portable engines.

Engines certified to the Tier 3 standards are designed reduce emissions of NO_X, PM, CO, and hydrocarbons, including VOC, in order to comply with the standards.

The use of CARB certified diesel fuel with a maximum sulfur content of 0.0015% by weight reduces SO_X emissions.

ATC C-535-44-2 (Transportable IC Engine Powering a Pump)

The existing transportable engine powering a pump is a Tier 4 Final (Tier 4F) certified IC engine that is only fueled with CARB certified diesel fuel with a maximum sulfur content of 0.0015% by

weight. The existing engine currently complies with the requirements of the ATCM for Stationary Compression-Ignition Engines (17 CCR §93116) for portable engines.

Engines certified to the Tier 4F standards are designed reduce emissions of NO_X, PM, CO, and hydrocarbons, including VOC. The engine design and controls of the existing Tier 4F certified IC engine reduce PM emissions by approximately 90% compared to the Tier 3 standards.

The use of CARB certified diesel fuel with a maximum sulfur content of 0.0015% by weight reduces SO_X emissions.

VII. General Calculations

A. Assumptions

Permit Units C-535-9 & -45 and ATCs C-535-50-0 & -51-0: Existing Digester Tanks Controlled by Existing and Proposed Flares

- The two proposed ultra-low emissions digester gas flares will become the primary devices used for disposal of the digester gas at the facility (applicant's proposal)

- After completion of the project the 36.3 MMBtu/hr enclosed flare (Permit Unit C-535-9) will be limited to emergency use except for flaring up to 1,815 MMBtu/year (equivalent to 50 hour/year at maximum rated capacity) for maintenance and testing and the 58.5 MMBtu/hr temporary enclosed flare (Permit Unit C-535-45) will be removed from service and the permit for this flare will be cancelled (applicant's proposal)

- The maximum design rating of each of the two proposed ultra-low emission digester gas flares is 75.1 MMBtu/hr (applicant's proposal) and each of the flares will be limited to flaring a maximum of 1,802.4 MMBtu in any day

- The existing and proposed digester gas flares only combust digester gas with the exception of the flare pilot light, which is fueled with PUC regulated natural gas (previous projects and applicant's proposal)

- Consistent with District practice for flares, the pilot light of the flare will be treated as a separate emission unit that is considered to have insignificant emissions and will be exempt from District permitting requirements as a low-emitting unit

- Volumetric/Molar composition of typical digester gas is typically approximately 60%-70% methane (CH_4) and 30%-40% carbon dioxide (CO_2) with trace amounts of hydrogen sulfide and other compounds[2]

[2] U.S. EPA. Anaerobic Digestion and its Applications (October 2015) Office of Research and Development, National Risk Management Research Laboratory (NRMRL) Land Remediation and Pollution Control Division (LRPCD) Cincinnati, OH. Report No. EPA/600/R-15/304. https://www.epa.gov/sites/production/files/2016-07/documents/ad_and_applications-final_0.pdf; and U.S. EPA "AgSTAR Project Development Handbook - A Handbook for Developing Anaerobic Digestion/Biogas Systems on Farms in the United States, 3rd Edition" (2020). EPA 430-B-20-001. https://www.epa.gov/sites/default/files/2014-12/documents/agstar-handbook.pdf

- The maximum amount of digester gas that is allowed to be flared by the existing flare (Permit Unit C-535-9) is limited to 1,584,000 scf/day (current permit)

- The maximum amount of digester gas that is allowed to be flared by the temporary flare that will be replaced (Permit Unit C-535-45) is limited to 2,160,000 scf/day (current permit)

- The maximum sulfur content of the digester gas combusted in the existing flare (Permit Unit C-535-9), the flare that will be replaced (Permit Unit C-535-45), and the proposed ultra-low emission flares (ATCs C-535-50-0 and -51-0): 200 ppmv as H_2S (current permits and applicant's proposal)

- The maximum pre-project operating schedule of the existing flare (Permit Unit C-535-9) and the temporary flare that will be replaced (Permit Unit C-535-45) is 24 hours per day and 365 days per year

- After the project, the maximum existing flare will be an emergency flare permitted to operate 24 hours per day and up to 1,815 MMBtu/year for maintenance and testing with unlimited operation for emergencies

- The maximum pre-project hourly NO_X and CO emissions from Permit Unit C-535-9 are limited to 2.2 lb-NO_X/hr and 10.5 lb-CO/hr (current permit) and post-project hourly NO_X and CO emissions from the unit will be the same as the pre-project hourly NO_X and CO emissions (project proposal)

- The permit for Unit C-535-9 includes an hourly emission limit for SO_X of 1.8 lb-SO_X/hr. Information in the evaluation for District Project C-930377, which established the 1.8 lb-SO_X/hr, indicates that this limit was based on calculating SO_X as sulfur monoxide (SO) rather than SO_2. The maximum pre-project and post-project hourly SO_X emissions from Permit Unit C-535-9 will be corrected to 2.2 lb-SO_X/hr as sulfur dioxide (SO_2) to correspond with the sulfur content limit of 200 ppmv as H_2S in the gas flared

- The permit for Unit C-535-9 includes an hourly emission limit for PM_{10} of 0.18 lb-PM_{10}/hr. As discussed below, the PM_{10} emission factor used to calculate emissions from the flare will be updated, which will also update the maximum pre-project and post-project hourly PM_{10} emissions from the flare

- As discussed above, the total combined annual potential to emit for NO_X from Permit Unit C-535-9 (existing digester gas flare), Permit Unit C-535-24 (transportable diesel-fired IC engine powering an air compressor), and Permit Unit C-535-44 (transportable diesel-fired IC engine powering a pump) is limited to 19,272 lb in any calendar year (current permits). Because the designation of C-535-9 as an emergency flare will reduce the total combined PE for NO_X from the units to less than 19,272 lb/yr, the limit is no longer necessary and Permit Units C-535-9, -24, and -44 will be modified to remove from this limit and the PE2 for NO_X from these units will be calculated based on the total maximum PE2 for NO_X from each unit.

- The maximum post-project operating schedule of the proposed ultra-low emission flares (ATCs C-535-50-0 and -51-0) is 24 hours per day and 365 days per year (applicant's proposal)

- The maximum total combined post-project annual potential to emit for NO_X emissions from operation of the proposed ultra-low emission flares (ATCs C-535-50-0 and -51-0) will be limited to 26,056 lb-NO_X/year, equivalent to operation of the flares at approximately 79% of their total combined capacity (based on amount of ERCs available for federal offsetting)

- Although limiting the NO_X emissions from the proposed ultra-low emission flares is also expected to limit the emissions of other pollutants from the flares, based on the applicant's request, the emissions of other pollutants will not be limited to provide the facility with greater flexibility (applicant's proposal)

- The flares are used to control VOC, H_2S, CH_4, and odors from the gas that is generated by the anaerobic digester tanks and are therefore emissions control devices

- Previous results of digester gas analyses have consistently shown very low VOC content (less than 1% by weight). As explained above, District Policy SSP 2015 specifies that fugitive VOC emissions are not assessed for piping and components handling fluid streams with a VOC content of 10% or less by weight. Therefore, consistent with District Policy SSP 2015, the fugitive VOC emissions from the digester system will be assumed to be negligible

Permit Units C-535-6: Existing Boiler that will be Removed from Service

- As part of this project, the existing 16.7 MMBtu/hr boiler, currently operating under PTO C-535-6-18, will be removed from service, the permit for the boiler will be canceled, and the emission reductions from the removal of the boiler will be used to partially offset the emission increases from the project (applicant's proposal)

- The 16.7 MMBtu/hr boiler is permitted to use digester gas and natural gas as fuel (current permit)

- The boiler is permitted to operate up to 24 hr/day and 365 day/yr (current permit)

Permit Units C-535-24 & -44: Existing Transportable Diesel IC Engines

- Maximum Daily operating schedule of each engine: 24 hr/day

- Maximum Annual operating schedule for Permit Unit C-535-24: up to 365 day/year (current permit)

- Maximum Annual operating schedule for Permit Unit C-535-44: 2,160 hr/year (current permit and no proposed change)

- The IC engines are only fueled with ultra-low sulfur diesel fuel (0.0015% fuel S by weight), as required by the current permits and applicable regulations

- Density of diesel fuel: 7.1 lb/gal (District Policy Guideline for Expedited Application Review (GEAR) 11D.1 - Diesel-Fired Emergency Standby IC Engines Powering Electrical Generators (11/4/2019))

- Typical higher heating value (HHV) of ultra-low sulfur diesel fuel with sulfur content less than 15 parts per million: 137,381 Btu/gal (Based on information from the US Energy Information Administration[3])

- bhp to Btu/hr conversion: 2,545 Btu/hp·hr

- Mechanical efficiency of diesel IC engines: commonly ≈ 35%

- F Factor for diesel fuel, corrected to 60°F (15.6°C) (District standard temperature): 9,051 dscf/MMBtu (corrected from oil F Factor of 9,190 dscf/MMBtu at 20 °C (68 °F) given in 40 CFR 60, Appendix A)

- As discussed above, the total combined annual potential to emit for NO_X from Permit Unit C-535-9 (existing digester gas flare), Permit Unit C-535-24 (transportable diesel-fired IC engine powering an air compressor), and Permit Unit C-535-44 (transportable diesel-fired IC engine powering a pump) is currently limited to 19,272 lb in any calendar year (current permits). Because the modification of the existing flare will reduce the maximum total combined PE2 of these units to much lower than the current combined NO_X limit, Permit Units C-535-9, -24, and -44 will be modified to remove from this limit and the PE2 for NO_X from these units will be calculated based on the total maximum PE2 for NO_X from each of the units

- As discussed above, information from District inspection report and Fresno/Clovis Regional WWTP indicate that Permit Unit C-535-24 for the transportable 125 bhp diesel-fired IC engine powering an air compressor is being retired from service. Fresno/Clovis Regional WWTP indicates that Permit Unit C-535-24 will be replaced with a 122 bhp Tier 4 Final-certified diesel-fired IC engine powering an air compressor and received an ATC permit for the replacement engine under Project C-1230270

Assumption for $PM_{2.5}$

- $PM_{2.5}$ emissions from the combustion of digester gas, diesel, and other fuels are assumed to be equal to PM_{10} emissions

[3] US Energy Information Administration Units and Calculators Explained webpage, last updated: June 1, 2023, Source: US Energy Information Administration Monthly Energy Review, May 2023. https://www.eia.gov/energyexplained/units-and-calculators/

B. Emission Factors

Emission Factors for C-535-6 (16.7 MMBtu/hr Digester Gas/Natural Gas boiler that will be Removed)

The emission factors for NO_X (0.011 lb/MMBtu), SO_X (0.026 lb/MMBtu), PM_{10} (0.0048 lb/MMBtu), CO (0.061 lb/MMBtu), and VOC (0.0055 lb/MMBtu) for the 16.7 MMBtu/hr digester gas/natural gas boiler that will be removed are taken from PTO C-535-6-18. The NO_X emission factor is based on the current District Rule 4320 emission limit for the boiler. The NO_X and CO emission factors have been confirmed by periodic source testing as required by District Rules 4305, 4306, and 4320.

The SO_X emission factor in the permit was based on the maximum sulfur content of the digester gas in the current permit (5 grains/100 dscf of total sulfur) (see equation below). Digester gas has a variable higher heating value (HHV) with a typical value of approximately 600 Btu/scf. The applicant previously proposed to use a HHV of 550 Btu/scf to calculate the SO_X emission factor, which results in slightly higher and more conservative SO_X emission factor.

SO_X – 5 grain Sulfur (as H_2S) per 100 scf in Gas Flared with HHV of 550 Btu/scf

$$\frac{5\ \text{gr S}}{100\ \text{ft}^3} \times \frac{1\ \text{lb}}{7{,}000\ \text{gr}} \times \frac{64.06\ \text{lb} - \text{SO}_2}{32.06\ \text{lb} - \text{S}} \times \frac{1\ \text{ft}^3}{550\ \text{Btu}} \times \frac{10^6\ \text{Btu}}{\text{MMBtu}} = 0.026\ \frac{\text{lb} - \text{SO}_X}{\text{MMBtu}}$$

The VOC emission factor in the permit is from AP-42, Table 1.4-2 (July 1998).

The emission factors that will be used to calculate the potential to emit for Permit Unit C-535-6 for the existing digester gas/natural gas-fired boiler are shown in the table below.

Emission Factors for C-535-6 (Existing 16.7 MMBtu Digester Gas/Natural Gas Boiler)		
Pollutant	**lb/MMBtu**	**Source**
NO_X	0.011	Current Permit based on District Rule 4320 limit
SO_X	0.026	Current Permit (Based on 5 grain sulfur per 100 scf in digester gas)
PM_{10}	0.0048	Current Permit
CO	0.061	Current Permit
VOC	0.0055	Current Permit from AP-42, Table 1.4-2 (July 1998)

Emission Factors for C-535-9 (Existing Digester Tanks with 36.3 MMBtu/hr Flare)

The emission factors for NO_X (0.06 lb/MMBtu) and CO (0.29 lb/MMBtu) for the flare are the emission factors from District Project C-930377 that were used to calculate the hourly NO_X and CO emission limits in the current permit. The emission factor for VOC (0.0027 lb/MMBtu) is from the current permit. The NO_X and VOC emission factors have been confirmed by periodic source testing as required by District Rule 4311. A previous source test of the flare also indicated compliance with the CO emission factor.

The SO_X emission factor (33.76 lb/MMscf) for the flare is based on the maximum sulfur content of the digester gas in the permit (200 ppmv as H_2S). Based on the maximum volume of gas permitted to be flared each day (1,584,000 scf/day) and the maximum rating of the flare (36.3 MMBtu/hr), this value is equivalent to 0.0614 lb-SO_X/MMBtu (see equation below). The applicant also proposed this SO_X emission factor based on the maximum sulfur content of the digester gas in the current permit and digester gas higher heating value of 550 Btu/scf

<u>SO_X – 200 ppmvd Sulfur (as H_2S) in Gas Flared, Permit Limit of 1,584,000 scf/day, and Maximum Permitted Flare Rating of 36.3 MMBtu/hr</u>

$$\frac{200\ \text{ft}^3\ \text{H}_2\text{S}}{10^6\ \text{ft}^3} \times \frac{32.06\ \text{lb} - \text{S}}{\text{lb} - \text{mol}\ \text{H}_2\text{S}} \times \frac{\text{lb} - \text{mol}}{379.5\ \text{ft}^3} \times \frac{64.06\ \text{lb} - \text{SO}_2}{32.06\ \text{lb} - \text{S}} = 33.76\ \frac{\text{lb} - \text{SO}_\text{X}}{10^6\ \text{ft}^3}$$

$$\frac{33.76\ \text{lb} - \text{SO}_\text{X}}{10^6\ \text{ft}^3} \times \frac{1{,}584{,}000\ \text{ft}^3}{\text{day}} = 53.5\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{Day}} \times \frac{1\ \text{Day}}{24\ \text{hr}} \div \frac{36.3\ \text{MMBtu}}{\text{hr}} = 0.0614\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{MMBtu}}$$

As discussed above, information in the evaluation for District Project C-930377 indicates that the hourly SO_X emission limit of 1.8 lb-SO_X/hr in the current permit for Unit C-535-9 was calculated using SO, which has a molecular mass of approximately 48 lb/lb-mol, as the reference for SO_X rather than SO_2, which has a molecular mass of approximately 64 lb/lb-mol. Current District practice and recent District regulations specify that SO_X emissions should be calculated as SO_2. Therefore, the pre-project and post-project hourly permit limit for SO_X will be corrected to 2.2 lb-SO_X/hr with SO_X referenced as SO_2; however, the hourly limit for SO_X will not specifically be included in the ATC permit since the SO_X emission factor in the permit will ensure compliance with the emission limits for SO_X.

The hourly PM_{10} emission limit of 0.18 lb-PM_{10}/hr in the current permit was calculated in District Project C-930377 using an emission factor of 0.005 lb-PM_{10}/MMBtu. This emission factor was proposed by the applicant and appears to be based on the PM_{10} emission factor for combustion of natural gas in a boiler in a previous version of AP-42. This emission factor is outdated and is not representative of flaring digester gas. Therefore, pursuant to District Policy APR 1110 - *Use of Revised Generally Accepted Emission Factors*, the pre-project and post-project PM_{10} emission factor for the flare will be based on the value given for landfill gas-fired flares in AP-42, Draft Section 2.4 Municipal Solid Waste Landfills (October 2008) (0.015 lb/MMBtu). This value is more conservative than the outdated PM_{10} emission factor in the current permit and expected to better reflect PM_{10} emissions from flaring digester gas. The updated PM_{10} emission factor for the flare will also result in updating the hourly PM_{10} emission limit to 0.54 lb-PM_{10}/hr; however, the hourly limit for PM_{10} will not specifically be included in the ATC permit since the PM_{10} emission factor in the permit will ensure compliance with the emission limits for PM_{10}.

The emission factors, in lb/MMBtu, that will be used to calculate the potential to emit for Permit Unit C-535-9 for the existing digester gas-fired flare are shown in the table below.

Emission Factors for C-535-9 (Existing Digester Tanks with 36.3 MMBtu/hr Flare)		
Pollutant	**lb/MMBtu**	**Source**
NO_X	0.06	Hourly limit in current permit/District Project C-930377
SO_X	0.0614	200 ppmvd sulfur in gas flared & limit for daily scf of gas flared (Current Permit and proposed by applicant – See Equation Above)
PM_{10}	0.015	AP-42 Draft Table 2.4.4 (October 2008) (Value for Landfill Gas Flares)
CO	0.29	Hourly limit in current permit/District Project C-930377
VOC	0.0027	Current permit/Rule 4311

Emission Factors for ATC C-535-24-6 (Transportable IC Engine Powering an Air Compressor)

The emission factors for NO_X, PM_{10}, CO, and VOC for the existing transportable diesel-fired IC engine are the certified emission factors included in the current permit. The emission factor for SO_X is based on the use of ultra-low diesel fuel.

Emission Factors for C-535-24		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	4.10	Current Permit
SO_X	0.0051	Ultra-Low Sulfur Fuel* See Mass Balance Equation Below
PM_{10}	0.19	Current Permit
CO	0.75	Current Permit
VOC	0.30	Current Permit

**The SOx EF is based on the use of ultra-low sulfur diesel fuel with 0.0015% sulfur by weight, as shown in the equation below.*

$$\frac{0.0015\ \text{lb}-\text{S}}{100\ \text{lb}-\text{Diesel}} \times \frac{64\ \text{lb}-\text{SO}_2}{32\ \text{lb}-\text{S}} \times \frac{7.1\ \text{lb}-\text{Diesel}}{\text{gal}-\text{Diesel}} \times \frac{1\ \text{gal}-\text{Diesel}}{137{,}381\ \text{Btu}} \times \frac{1\ \text{Btu}_{\text{in}}}{0.35\ \text{Btu}_{\text{out}}} \times \frac{2{,}545\ \text{Btu}}{1\ \text{bhp}-\text{hr}} \times \frac{453.59\ \text{g}}{1\ \text{lb}} = 0.0051\ \frac{\text{g}-\text{SO}_X}{\text{bhp}-\text{hr}}$$

Emission Factors for ATC C-535-44-2 (Transportable IC Engine Powering a Pump)

The emission factors for NO_X, PM_{10}, CO, and VOC for the existing transportable diesel-fired IC engine are the certified emission factors included in the current permit. The emission factor for SO_X is based on the use of ultra-low diesel fuel.

Emission Factors for C-535-44		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	3.12	Current Permit
SO_X	0.0051	Ultra-Low Sulfur Fuel See Mass Balance Equation Above
PM_{10}	0.0007	Current Permit
CO	0.0746	Current Permit
VOC	0.16	Current Permit

Emission Factors for Permit Unit C-535-45-0 (Temporary 58.5 MMBtu/hr Digester Flare that will be Removed)

The emission factors for NO_X (0.06 lb/MMBtu) and VOC (0.0027 lb/MMBtu) for the temporary flare that will be replaced and removed are from PTO C-535-45-0. The NO_X and VOC emission factors have been confirmed by periodic source testing as required by District Rule 4311.

The SO_X emission factor (0.0519 lb/MMBtu) for the flare is based on the maximum sulfur content of the digester gas in the ATC permit (200 ppmv as H_2S), the maximum volume of gas permitted to be flared each day (2,160,000 scf/day), and the maximum rating of the flare (58.5 MMBtu/hr) (see equation below).

SO_X – 200 ppmvd Sulfur (as H_2S) in Gas Flared, Permit Limit of 2,160,000 scf/day, and Maximum Permitted Flare Rating of 58.5 MMBtu/hr

$$\frac{200\ \text{ft}^3\ \text{H}_2\text{S}}{10^6\ \text{ft}^3} \times \frac{32.06\ \text{lb} - \text{S}}{\text{lb} - \text{mol}\ \text{H}_2\text{S}} \times \frac{\text{lb} - \text{mol}}{379.5\ \text{ft}^3} \times \frac{64.06\ \text{lb} - \text{SO}_2}{32.06\ \text{lb} - \text{S}} = 33.76\ \frac{\text{lb} - \text{SO}_\text{X}}{10^6\ \text{ft}^3}$$

$$\frac{33.76\ \text{lb} - \text{SO}_\text{X}}{10^6\ \text{ft}^3} \times \frac{2{,}160{,}000\ \text{ft}^3}{\text{day}} = 72.9\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{Day}} \times \frac{1\ \text{Day}}{24\ \text{hr}} \div \frac{58.5\ \text{MMBtu}}{\text{hr}} = 0.0519\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{MMBtu}}$$

Permit C-535-45-0 does not include any emission factors or emission limits for PM_{10}. The PM_{10} emission factor of 0.005 lb-PM_{10}/MMBtu used in District Project C-1170082 was based on the PM_{10} emission factor for combustion of natural gas in a boiler in a previous version of AP-42. This emission factor is outdated and is not representative of flaring digester gas. Therefore, the PM_{10} emission factor for the flare that will be replaced will be based on the value given for landfill gas-fired flares in AP-42, Draft Section 2.4 Municipal Solid Waste Landfills (October 2008) (0.015 lb/MMBtu). This value is expected to better reflect PM_{10} emissions from flaring digester gas.

Permit C-535-45-0 does not include any emission factors or emission limits for CO. A CO emission factor of 0.20 lb/MMBtu, which was guaranteed by the flare manufacturer and previously proposed by the applicant and used to calculate CO emissions in District Project C-1170082 for issuance of ATC C-535-45-0, will be used to calculate potential CO emissions from the flare.

The emission factors, in lb/MMBtu, that will be used to calculate the potential to emit for Permit Unit C-535-45, the digester gas-fired flare being replaced, are shown in the table below.

Emission Factors for PTO C-535-45-0 (58.5 MMBtu/hr Digester Flare Being Removed)		
Pollutant	**lb/MMBtu**	**Source**
NO_X	0.06	Permit C-535-45-0
SO_X	0.0519	200 ppmvd sulfur in gas flared & limit for daily scf of gas flared (Permit C-535-45-0 – See Equation Above)
PM_{10}	0.015	AP-42 Draft Table 2.4.4 (October 2008) (Value for Landfill Gas Flares)
CO	0.20	District Project C-1170082/Flare manufacturer guarantee and Proposed by Applicant
VOC	0.0027	Permit C-535-45-0/Rule 4311

Emission Factors for ATCs C-535-50-0 & -51-0 (Proposed 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The emission factor for NO_X (0.025 lb/MMBtu) for the proposed ultra-low emission flares was proposed by the applicant for compliance with District Rule 4311 and also guaranteed by the flare supplier. The NO_X emission factor will be confirmed by periodic source testing as required by District Rule 4311.

The SO_X emission factor (0.0614 lb/MMBtu) was proposed by the applicant based on the maximum sulfur content of the digester gas in the current permit (200 ppmv as H_2S) (see equation below). As mentioned above, digester gas has a variable HHV with a typical value of approximately 600 Btu/scf. The applicant proposed to use a HHV of 550 Btu/scf to calculate the SO_X emission factor, which results in slightly higher and more conservative SO_X emission factor.

SO_X – 200 ppmvd Sulfur (as H_2S) in Gas Flared with HHV of 550 Btu/scf

$$\frac{200\ \text{ft}^3\ \text{H}_2\text{S}}{10^6\ \text{ft}^3} \times \frac{32.06\ \text{lb} - \text{S}}{\text{lb} - \text{mol}\ \text{H}_2\text{S}} \times \frac{\text{lb} - \text{mol}}{379.5\ \text{ft}^3} \times \frac{64.06\ \text{lb} - \text{SO}_2}{32.06\ \text{lb} - \text{S}} \times \frac{1\ \text{ft}^3}{550\ \text{Btu}} \times \frac{10^6\ \text{Btu}}{\text{MMBtu}} = 0.0614\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{MMBtu}}$$

The PM_{10} emission factor for the proposed flares (0.015 lb/MMBtu) is based on the value given for landfill gas-fired flares in AP-42, Draft Section 2.4 Municipal Solid Waste Landfills (October 2008).

The CO emission factor for the proposed flares (0.06 lb/MMBtu) was guaranteed by the flare supplier and proposed by the applicant.

The VOC emission factor (0.0027 lb/MMBtu) for the proposed flares was proposed by the applicant. The NO_X ad VOC emission factor will be confirmed by periodic source testing as required by District Rule 4311.

The emission factors, in lb/MMBtu, that will be used to calculate the potential to emit for the proposed ultra-low emission flares (ATCs C-535-50-0 and -51-0).

Emission Factors for ATC C-535-50-0 and -51-0 (75.1 MMBtu/hr Ultra-Low-Emission Digester Flares)		
Pollutant	**lb/MMBtu**	**Source**
NO_X	0.025	Rule 4311 Requirement Flare manufacturer guarantee and proposed by applicant
SO_X	0.0614	200 ppmvd sulfur in gas flared (Proposed by applicant – See Equation Above)
PM_{10}	0.015	AP-42 Draft Table 2.4.4 (October 2008) (Value for Landfill Gas Flares)
CO	0.06	Flare manufacturer guarantee and proposed by applicant
VOC	0.0027	Proposed by Applicant

C. Calculations

1. Pre-Project Potential to Emit (PE1)

PE1 for C-535-6 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler that will be Removed)

The PE1 for the 16.7 MMBtu/hr digester gas/natural gas-fired boiler being removed as part of this project is calculated in the tables below using the maximum rating of the boiler and operation for up to 24 hour/day and 365 day/year.

Daily PE1 for C-535-6-18 (16.7 MMBtu/hr Boiler being Removed)							
Pollutant	Emission Factor (lb/MMBtu)	x	Rating (MMBtu/hr)	x	Daily Operation (hr/day)	=	PE1 (lb/day)
NO_X	0.011	x	16.7	x	24	=	**4.4**
SO_X	0.026	x	16.7	x	24	=	**10.4**
PM_{10}	0.0048	x	16.7	x	24	=	**1.9**
CO	0.061	x	16.7	x	24	=	**24.4**
VOC	0.0055	x	16.7	x	24	=	**2.2**

Annual PE1 for C-535-6-18 (16.7 MMBtu/hr Boiler being Removed)									
Pollutant	Emission Factor (lb/MMBtu)	x	Rating (MMBtu/hr)	x	Daily Operation (hr/day)	x	Annual Operation (day/yr)	=	PE1 (lb/year)
NO_X	0.011	x	16.7	x	24	x	365	=	**1,609**
SO_X	0.026	x	16.7	x	24	x	365	=	**3,804**
PM_{10}	0.0048	x	16.7	x	24	x	365	=	**702**
CO	0.061	x	16.7	x	24	x	365	=	**8,924**
VOC	0.0055	x	16.7	x	24	x	365	=	**805**

PE1 for C-535-9 (Existing Digester Tanks with 36.3 MMBtu/hr Flare)

The PE1 for the existing digester gas flare being modified in this project is calculated in the tables below based on the maximum heating value of the digester gas flared each hour and operation of the flare for up to 24 hour/day and 365 day/year.

Daily PE1 for C-535-9 (Existing Digester Tanks with 36.3 MMBtu/hr Flare)							
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Rate (MMBtu/hr)	x	Daily Operation (hr/day)	=	PE1 (lb/day)
NO_X	0.06	x	36.3	x	24	=	**52.3**
SO_X	0.0614	x	36.3	x	24	=	**53.5**
PM_{10}	0.015	x	36.3	x	24	=	**13.1**
CO	0.29	x	36.3	x	24	=	**252.6**
VOC	0.0027	x	36.3	x	24	=	**2.4**

Annual PE1 for C-535-9 (Existing Digester Tanks with 36.3 MMBtu/hr Flare)									
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Rate (MMBtu/hr)	x	Daily Operation (hr/day)	x	Annual Operation (day/yr)	=	PE1 (lb/year)
NO_X	0.06	x	36.3	x	24	x	365	=	**19,079**
SO_X	0.0614	x	36.3	x	24	x	365	=	**19,524**
PM_{10}	0.015	x	36.3	x	24	x	365	=	**4,770**
CO	0.29	x	36.3	x	24	x	365	=	**92,217**
VOC	0.0027	x	36.3	x	24	x	365	=	**859**

PE1 for C-535-24 (Transportable IC Engine Powering an Air Compressor)

Daily PE1 for C-535-24 (Transportable IC Engine Powering Air Compressor)							
Pollutant	EF (g/bhp-hr)	x	Engine bhp	x	(hr/day)	÷ 453.59 (g/lb) =	lb/day
NO_X	4.10	x	125	x	24	÷ 453.59 (g/lb) =	**27.1**
SO_X	0.0051	x	125	x	24	÷ 453.59 (g/lb) =	**0.0**
PM_{10}	0.19	x	125	x	24	÷ 453.59 (g/lb) =	**1.3**
CO	0.75	x	125	x	24	÷ 453.59 (g/lb) =	**5.0**
VOC	0.30	x	125	x	24	÷ 453.59 (g/lb) =	**2.0**

Annual PE1 for C-535-24 (Transportable IC Engine Powering Air Compressor)									
Pollutant	EF (g/bhp-hr)	x	Engine bhp	x	(hr/yr)	x	(day/yr)	÷ 453.59 (g/lb) =	lb/yr
NO_X	4.10	x	125	x	24	x	365	÷ 453.59 (g/lb) =	**9,898**
SO_X	0.0051	x	125	x	24	x	365	÷ 453.59 (g/lb) =	**12**
PM_{10}	0.19	x	125	x	24	x	365	÷ 453.59 (g/lb) =	**459**
CO	0.75	x	125	x	24	x	365	÷ 453.59 (g/lb) =	**1,811**
VOC	0.30	x	125	x	24	x	365	÷ 453.59 (g/lb) =	**724**

PE1 for C-535-44 (Transportable IC Engine Powering a Pump)

Daily PE1 for C-535-44 (Transportable IC Engine Powering a Pump)							
Pollutant	EF (g/bhp-hr)	x	Engine bhp	x	(hr/day)	÷ 453.59 (g/lb) =	lb/day
NO_X	3.12	x	74	x	24	÷ 453.59 (g/lb) =	**12.2**
SO_X	0.0051	x	74	x	24	÷ 453.59 (g/lb) =	**0.0**
PM_{10}	0.0007	x	74	x	24	÷ 453.59 (g/lb) =	**0.0**
CO	0.0746	x	74	x	24	÷ 453.59 (g/lb) =	**0.3**
VOC	0.16	x	74	x	24	÷ 453.59 (g/lb) =	**0.6**

As discussed in Section VII.A, above, the current permit limits operation of the transportable engine powering a pump to no more than 2,160 hours per year.

Annual PE1 for C-535-44 (Transportable IC Engine Powering a Pump)							
Pollutant	EF (g/bhp-hr)	x	Engine bhp	x	(hr/yr)	÷ 453.59 (g/lb) =	lb/yr
NO_X	3.12	x	74	x	2,160	÷ 453.59 (g/lb) =	**1,099**
SO_X	0.0051	x	74	x	2,160	÷ 453.59 (g/lb) =	**2**
PM_{10}	0.0007	x	74	x	2,160	÷ 453.59 (g/lb) =	**0**
CO	0.0746	x	74	x	2,160	÷ 453.59 (g/lb) =	**26**
VOC	0.16	x	74	x	2,160	÷ 453.59 (g/lb) =	**56**

Total PE1 for NO_X from C-535-9-18, -24-5, and -44-1

As discussed in Section I above, Current PTOs C-535-9-18, -24-5, and -44-1 limit the total combined annual PE1 for NO_X from these units to no more than 19,272 lb-NO_X/year.

PE1 for C-535-45-0 (58.5 MMBtu/hr Digester Flare that will be Removed)

The PE1 for the temporary digester gas flare that will be replaced and removed as part of this project is calculated in the tables below using the maximum heating value of the digester gas flared each hour and operation of the flare for up to 24 hour/day and 365 day/year.

Daily PE1 for C-535-45-0 (58.5 MMBtu/hr Digester Flare being Removed)							
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Rate (MMBtu/hr)	x	Daily Operation (hr/day)	=	PE1 (lb/day)
NO_X	0.06	x	58.5	x	24	=	**84.2**
SO_X	0.0519	x	58.5	x	24	=	**72.9**
PM_{10}	0.015	x	58.5	x	24	=	**21.1**
CO	0.20	x	58.5	x	24	=	**280.8**
VOC	0.0027	x	58.5	x	24	=	**3.8**

Annual PE1 for C-535-45-0 (58.5 MMBtu/hr Digester Flare being Removed)								
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Rate (MMBtu/hr)	x	Daily Operation (hr/day)	x	Annual Operation (day/yr)	=	PE1 (lb/year)
NO_X	0.06	x	58.5	x	24	x	365	=	**30,748**
SO_X	0.0519	x	58.5	x	24	x	365	=	**26,597**
PM_{10}	0.015	x	58.5	x	24	x	365	=	**7,687**
CO	0.20	x	58.5	x	24	x	365	=	**102,492**
VOC	0.0027	x	58.5	x	24	x	365	=	**1,384**

PE1 for ATCs C-535-50-0 & -51-0 (Proposed 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

Because the proposed ultra-low emission digester flares are new equipment, PE1 from the flares = 0 for all affected pollutants.

2. Post-Project Potential to Emit (PE2)

PE2 C-535-6 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler that will be Removed)

Because the existing boiler will be removed as part of this project, PE2 from the boiler = 0 for all affected pollutants.

PE2 for C-535-9 (Existing Digester Tanks with 36.3 MMBtu/hr Flare)

The daily PE2 for the existing digester gas flare being modified in this project is calculated in the table below using the maximum heating value of the digester gas flared each hour and operation of the flare for up to 24 hour/day.

Because the digester gas flare will be designated as an emergency flare that will be permitted to flare up to 1,815 MMBtu/year (equivalent to 50 hours per year at maximum rated capacity) for non-emergency purposes, the annual PE2 for the flare is calculated in the table below using the maximum heating value of the digester gas flared each hour and assuming up to 1,815 MMBtu/year can be flared for non-emergency purposes.

Daily PE2 for C-535-9 (Existing Digesters with 36.3 MMBtu/hr Flare)							
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Rate (MMBtu/hr)	x	Daily Operation (hr/day)	=	PE2 (lb/day)
NO_X	0.06	x	36.3	x	24	=	**52.3**
SO_X	0.0614	x	36.3	x	24	=	**53.5**
PM_{10}	0.015	x	36.3	x	24	=	**13.1**
CO	0.29	x	36.3	x	24	=	**252.6**
VOC	0.0027	x	36.3	x	24	=	**2.4**

Annual PE2 for C-535-9 (Existing Digesters with 36.3 MMBtu/hr Flare)					
Pollutant	Emission Factor (lb/MMBtu)	x	Max Annual Heat Rate for Non-Emergency Purposes (MMBtu/yr)	=	PE2 (lb/year)
NO_X	0.06	x	1,815	=	**109**
SO_X	0.0614	x	1,815	=	**111**
PM_{10}	0.015	x	1,815	=	**27**
CO	0.29	x	1,815	=	**526**
VOC	0.0027	x	1,815	=	**5**

PE2 for C-535-24 (Transportable IC Engine Powering an Air Compressor)

The daily and annual PE2 for this unit is the same as PE1 calculated above and summarized in the table below.

PE2 for ATC C-535-24-6		
Pollutant	**Daily PE2 (lb/day)**	**Annual PE2 (lb/year)**
NO_X	27.1	9,898
SO_X	0.0	12
PM_{10}	1.3	459
CO	5.0	1,811
VOC	2.0	724

PE2 for C-535-44 (Transportable IC Engine Powering a Pump)

The daily and annual PE2 for this unit is the same as PE1 calculated above and summarized in the table below.

PE2 for ATC C-535-44-2		
Pollutant	**Daily PE2 (lb/day)**	**Annual PE2 (lb/year)**
NO_X	12.2	1,099
SO_X	0.0	2
PM_{10}	0.0	0
CO	0.3	26
VOC	0.6	56

PE2 for Permit Unit C-535-45-0 (58.5 MMBtu/hr Digester Flare that will be Removed)

Because the temporary digester gas flare will be replaced and removed as part of this project, PE2 from the flare = 0 for all affected pollutants

PE2 for ATCs C-535-50-0 & -51-0 (Proposed 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The PE2 for each of the proposed ultra-low emission digester flares is calculated in the tables below using the maximum heating value of the digester gas flared each hour and operation of the flare for up to 24 hour/day and 365 day/year.

Daily PE2 for ATCs C-535-50-0 & -51-0 (Each Proposed Low-Emission Flare)							
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Value of Gas Flared (MMBtu/hr)	x	Daily Hours of Operation (hr/day)	=	PE2 (lb/day)
NO_X	0.025	x	75.1	x	24	=	**45.1**
SO_X	0.0614	x	75.1	x	24	=	**110.7**
PM_{10}	0.015	x	75.1	x	24	=	**27.0**
CO	0.06	x	75.1	x	24	=	**108.1**
VOC	0.0027	x	75.1	x	24	=	**4.9**

Annual PE2 for ATCs C-535-50-0 & -51-0 (Each Proposed Low-Emission Flare)									
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Value of Gas Flared (MMBtu/hr)	x	Daily Hours of Operation (hr/day)	x	Day/Year Operated (day/yr)	=	PE2 (lb/year)
NO_X	0.025	x	75.1	x	24	x	365	=	**16,447**
SO_X	0.0614	x	75.1	x	24	x	365	=	**40,394**
PM_{10}	0.015	x	75.1	x	24	x	365	=	**9,868**
CO	0.06	x	75.1	x	24	x	365	=	**39,473**
VOC	0.0027	x	75.1	x	24	x	365	=	**1,776**

The previous tables contain the PE2 calculation for each of the 75.1 MMBtu/hr flares. As discussed in Section I (Proposal) above, the total combined annual PE2 for NO_X from the new flares will be limited to 26,056 lb-NO_X/year, equivalent to 79% of their total combined capacity.

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

The SSPE1 can be calculated by adding the PE1 from all units with valid ATCs or PTOs and the sum of the ERCs that have been banked at the source and which have not been used on-site ($Total_{ERC}$).

$SSPE1_{Total} = SSPE1_{Permit\ Unit} + Total_{ERC}$

The PE values for the units that are not calculated in Section VII.C.1 above are based on the PE calculations for the units in District Project C-1212800, C-1212802, and other recent District projects, or are calculated in Appendix C.

SSPE1 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
C-535-6-18 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler)	1,609	3,804	702	8,924	805
C-535-9-18 (Digester Tanks with 36.3 MMBtu/hr Flare)[a]	19,272	19,524	4,770	92,217	859
C-535-24-5 (Transportable 125 bhp IC Engine Powering an Air Compressor) [a]		12	459	1,811	724
C-535-44-1 (Transportable 74 bhp Diesel IC Engine Powering a Water Pump)[a]		2	0	26	56
C-535-10-4 (2,307 bhp Diesel Emergency IC Engine)	1,088	1	22	220	11
C-535-11-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	37	0	1	3	0
C-535-12-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	37	0	1	3	0
C-535-13-8 (150 Electric hp Odor Control Scrubbing System)	0	0	0	0	2,902
C-535-17-4 (455 bhp Diesel Emergency IC Engine)	113	0	4	30	6
C-535-26-7 (Digester Gas Treatment System with a 7.46 MMBtu/hr Waste Gas Combustion Device)	3,921	12,482	1,046	13,070	5,489
C-535-28-2 (Unconfined Abrasive Blasting Operation with a 600 lb Blasting Pot)[b]	0	0	1,050[b]	0	0
C-535-45-0 (Wastewater Treatment Plant Operation Served by a 58.5 MMBtu/hr Digester Flare)	30,748	26,597	7,687	102,492	1,384
C-535-48-1 (Metal Parts and Products and Wood Products Coating Operation with a Spray Booth with Exhaust Filters)	0	0	14	0	510
C-535-49-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-53-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-54-0 (539 bhp Diesel Emergency IC Engine)	157	0	7	119	8
$SSPE1_{Permit\_Units}$	**57,124**	**62,422**	**14,719**	**218,955**	**12,762**
ERC	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
ERC C-1211-1	-	-	-	-	22
ERC C-1211-2	260	-	-	-	-

SSPE1 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
ERC C-1211-3	-	-	-	56	-
ERC C-1211-4	-	-	18	-	-
$Total_{ERC}$	**260**	**0**	**18**	**56**	**22**
Total SSPE1	**57,384**	**62,422**	**14,737**	**219,011**	**12,784**

a. Current permit conditions limit the total combined annual PE1 for NO_X from Permit Units C-535-9, -24, and -44 to 19,272 lb-NO_X/year. Therefore, for these units this value is included in the SSPE1
b. Pursuant to California Health & Safety Code Sections 41901 to 41905, abrasive blasting operations are exempt from District New Source Review (NSR) rules and requirements. The SSPE values are only used to determine applicable NSR requirements; therefore, the potential emissions from the abrasive blasting operation are not included in the SSPE1

4. Post-Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

The SSPE2 can be calculated by adding the PE2 from all units with valid ATCs or PTOs and the sum of the ERCs that have been banked at the source and which have not been used on-site ($Total_{ERC}$).

$SSPE2_{Total} = SSPE2_{Permit\ Unit} + Total_{ERC}$

SSPE2 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
~~C-535-6-18 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler)~~[a]	0	0	0	0	0
ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)[b]	109	111	27	526	5
C-535-10-4 (2,307 bhp Diesel Emergency IC Engine)	1,088	1	22	220	11
C-535-11-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	37	0	1	3	0
C-535-12-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	37	0	1	3	0
C-535-13-8 (150 Electric hp Odor Control Scrubbing System)	0	0	0	0	2,902
C-535-17-4 (455 bhp Diesel Emergency IC Engine)	113	0	4	30	6
ATC C-535-24-6 (Transportable 125 bhp IC Engine Powering an Air Compressor)[b]	9,898	12	459	1,811	724

SSPE2 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
C-535-26-7 (Digester Gas Treatment System with a 7.46 MMBtu/hr Waste Gas Combustion Device)	3,921	12,482	1,046	13,070	5,489
C-535-28-2 (Unconfined Abrasive Blasting Operation with a 600 lb Blasting Pot)[c]	0	0	1,050[c]	0	0
ATC C-535-44-2 (Transportable 74 bhp Diesel IC Engine Powering a Water Pump)[b]	1,099	2	0	26	56
~~C-535-45-0 (Wastewater Treatment Plant Operation Served by a 58.5 MMBtu/hr Digester Flare)~~[a]	0	0	0	0	0
C-535-48-1 (Metal Parts and Products and Wood Products Coating Operation with a Spray Booth with Exhaust Filters)	0	0	14	0	510
C-535-49-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-53-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-54-0 (539 bhp Diesel Emergency IC Engine)	157	0	7	119	8
ATC C-535-50-0 (75.1 MMBtu/hr ultra-low emission flare)[d]	26,056	40,394	9,868	39,473	1,776
ATC C-535-51-0 (75.1 MMBtu/hr ultra-low emission flare)[d]		40,394	9,868	39,473	1,776
$SSPE2_{Permit\_Units}$	**42,657**	**93,396**	**21,323**	**94,794**	**13,271**
ERC	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
ERC C-1211-1	-	-	-	-	22
ERC C-1211-2	260	-	-	-	-
ERC C-1211-3	-	-	-	56	-
ERC C-1211-4	-	-	18	-	-
$Total_{ERC}$	**260**	**0**	**18**	**56**	**22**
Total SSPE2	**42,917**	**93,396**	**21,341**	**94,850**	**13,293**

a. The applicant has proposed to permanently remove Permit Units C-535-6 and C-535-45 for the exiting boiler and flare as part of this project. The existing boiler is not being replaced, while the flare is being replaced with the proposed ultra-low emission flares.
b. As discussed in Section I above, Permit Units C-535-9, -24, and -44 will be modified to remove the total combined NO_X limit of 19,272 lb-NO_X/year; therefore, the PE2 for NO_X from each of the units is included in the SSPE2
c. Pursuant to California Health & Safety Code Sections 41901 to 41905, abrasive blasting operations are exempt from District NSR rules and requirements. The SSPE values are only used to determine applicable NSR requirements; therefore, the potential emissions from the abrasive blasting operation are not included in the SSPE2
d. The total combined annual PE2 for NO_X from the new flares will be limited to 26,056 lb-NO_X/year.

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

As stated above, emissions from non-road IC engines are not included when determining if a facility is a major source. The facility has permits for four transportable IC engines (Units C-535-11, -12, -24, and -44) that do not remain at one particular site for more than 12 months and, as a result are non-road IC engines; therefore, the emissions from these engines are excluded when determining if the facility is a major source.

The SSPE1 and SSPE2 used for Major Source determination purposes are included in Appendix D and summarized in the table below.

Rule 2201 Major Source Determination (lb/year)						
	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO	VOC
Major Source SSPE1	57,117	62,408	14,276	14,276	217,168	12,004
Major Source SSPE2	31,846	93,382	20,880	20,880	93,007	12,513
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	Yes	No	No	No	No	No

Note: $PM_{2.5}$ assumed to be equal to PM_{10}

As seen in the table above, the facility is an existing Major Source for NO_X and CO and will remain a major source for NO_X, but will no longer be a major source for CO as a result of this project.

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 tons per year (tpy) for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO_2	VOC	SO_2	CO	PM	PM_{10}
Estimated Facility PE before Project Increase	28.6	6.0	31.2	108.6	7.1	7.1
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

As discussed in Section I above, Fresno/Clovis Regional WWTP has proposed to install two 75.1 MMBtu/hr ultra-low emission digester gas flares, to limit the operation of Permit Unit C-535-9 for an existing 36.3 MMBtu/hr flare to emergency use with the exception of 1,815 MMBtu per year for maintenance and testing, to permanently remove the existing 16.7 MMBtu/hr boiler authorized as Permit Unit C-535-6 and the existing 58.5 MMBtu/hr temporary flare authorized as Permit Unit C-535-45 from service, and cancel the permits for these units and use the emission reductions from the removal of the boiler and flare to partially offset the emission increases from the project. The existing transportable IC engines powering am air compressor and a water pump (Permit Units C-535-24 and -44) will also be modified to remove them from total combined NO_X limit shared with Permit Unit C-535-9.

The baseline emissions from the units included in the project are calculated below.

BE for C-535-6-18 (16.7 MMBtu/hr Boiler that will be Removed, C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare), C-535-24-6 (125 bhp Transportable IC Engine), C-535-44-2 (125 bhp Transportable IC Engine), & C-535-45-0 (58.5 MMBtu/hr Digester Flare that will be Removed)

a. BE NO_X

As shown in Section VII.C.5 above, the facility is a major source for NO_X emissions.

C-535-6-18 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler)

As discussed above, as part of this project, this boiler will be removed from operation.

Highly-Utilized Emissions Unit, located at a Major Source

District Rule 2201 defines a Highly Utilized Emissions Unit as follows:

> *Highly Utilized Emissions Unit: for a given pollutant, an emissions unit for which the average annual Actual Emissions during the two consecutive years immediately prior to filing of an application for an Authority to Construct were equal to or greater than 80% of the unit's pre-project Potential to Emit. The unit must have been in operation for at least two years and, during that entire period, the unit must have complied with all applicable emission limits and performance standards.*

For determination of Historical Actual Emissions (HAE), the applicant has provided the annual fuel usage for this unit for 2020 and 2021 (i.e. two years prior to the application). The HAE from Unit C-535-6 are calculated below using the quantity of raw digester gas, conditioned digester gas, and natural gas used to fuel the boiler, as supplied by the applicant (MMscf); the HHV (Btu/scf) and NO_X emission factor (lb-NO_X/MMBtu) for each fuel from recent source test reports for the boiler; and for natural gas a HHV of 1,000 Btu/scf pursuant to District Policy APR 1720 - Generally Accepted SO_X Emission Factor for Combustion of PUC-quality Natural Gas (12/20/2001). The years of 2020 and 2021 will be used to calculate the AE from the boiler.

The HAE NOx emissions from the boiler during the years 2020 and 2021 are calculated in the table below.

2020-2021 HAE for NO_X for C-535-6-18							
Year and Fuel	Quantity of Fuel Used (MMscf)	x	Heating Value of Fuel (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)
2020 Raw Digester Gas	89.9624	x	606.7621	x	0.0098	=	535
2020 Conditioned Digester Gas	16.4135	x	783.4961	x	0.0084	=	108
2020 Natural Gas	0.3354		1,000		0.008		3

2020-2021 HAE for NO_X for C-535-6-18							
Year and Fuel	Quantity of Fuel Used (MMscf)	x	Heating Value of Fuel (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)
2021 Raw Digester Gas	26.4539		606.7621		0.0098		157
2021 Conditioned Digester Gas	0.00339		783.4961		0.0084		0
2021 Natural Gas	0.0790	x	1,000	x	0.008	=	1
Total 2020-2021 Actual Emissions for NO_X						=	804
2020-2021 HAE for NO_X for C-535-6-18						=	**lb/yr**
							402

The PE1 for NO_X from the boiler is 1,609 lb-NO_X/year. The HAE for NO_X from the unit of 402 lb-NO_X/year only represents 25% of the PE1 for the unit. Therefore, the boiler is not a Highly Utilized Emissions Unit for NO_X emissions.

Fully Offset Emissions Unit, located at a Major Source

Offsets have not previously been provided for this permit unit. Therefore, pursuant to District Rule 2201, this permitted unit is not considered as a Fully Offset Emissions Unit.

Clean Emissions Unit, Located at a Major Source

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

Permit Unit C-535-6 is 16.7 MMBtu/hr boiler that is primarily fired on digester gas from the wastewater treatment plant. The District does not currently have a BACT guideline for boilers that are fired on digester gas. However, the District has generally accepted the Rule 4320 NO_X emission limits as satisfying BACT for NO_X from boilers. Rule 4320, Section 5.2.3, Table 1: Tier 1 NOx Emission Limits requires units at a wastewater treatment facility firing on less than 50%, by volume, PUC quality gas to meet final NO_X emission limits of 9 ppmv-NO_X @ 3% O2 or 0.011 lb-NO_X/MMBtu. Rule 4320, Section 5.2.3, Table 1: Tier 1 NOx Emission Limits requires units with a total rated heat input greater than 5.0 MMBtu/hr to less than or equal to 20.0 MMBtu/hr that are fired on digester gas to meet NO_X emission limits of 9 ppmv-NO_X @ 3% O2 or 0.011 lb-NO_X/MMBtu. Permit C-535-6-18 limits NO_X emissions from the boiler to no more than 9 ppmv-NO_X @ 3% O2 or 0.011 lb-NO_X/MMBtu; therefore, it appears to qualify as a Clean Emissions Unit. However, because the District does not have a current BACT guideline for boilers fired on digester gas and no District permits for boilers fueled with digester gas that were subject to BACT within the last five years could be located, the boiler will be treated as if

is not a Clean Emissions Unit for more conservative calculations of BE for NO_X emissions from the boiler.

BE for NO_X for C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr)

As discussed in Sections I and VII.A above, the conditions of the current permits for Permit Unit C-535-9 (existing digester gas flare), Permit Unit C-535-24 (transportable diesel-fired IC engine powering an air compressor), and Permit Unit C-535-44 (transportable diesel-fired IC engine powering a pump) limit the total combined annual PE for NO_X for these units to 19,272 lb-NO_X/year.

Pursuant to District Rule 2201, Section 3.8.1, the following provisions apply to the calculation of Baseline Emissions for units located at a major source subject to Specific Limiting Conditions (SLCs) that limit the total potential emit of the units included in SLC:

a) To be considered a Highly-Utilized Emissions Unit, all units combined under the SLC must have average combined annual Actual Emissions during the two consecutive years immediately prior to filing of an application for an ATC equal to or greater than 80% of the units' pre-project SLC limit
b) To be considered a Fully Offset Emissions Unit, all units under the SLC must also qualify as Fully Offset Emissions Units,
c) To be considered a Clean Emissions Unit, all units under the SLC also qualify as Clean Emissions Units.

Although the information from District inspection reports and Fresno/Clovis Regional WWTP indicates that Permit Unit C-535-24 for the transportable 125 bhp diesel-fired IC engine powering an air compressor was removed from service in January 2022, the permit for this unit has still not been cancelled; therefore, Permit Unit C-535-24 will be included when determining if the Permit Units C-535-9, -24, and -44 qualify as clean emission units, a highly-utilized emissions units, or a fully offset emission units for purposes of determining the BE for NO_X from these units.

C-535-9 (Digester Tanks with 36.3 MMBtu/hr Flare)

Highly-Utilized Emissions Unit, located at a Major Source

For determination of Historical Actual Emissions (HAE), the applicant has provided the annual amount of gas flared in 2020 and 2021 (i.e. two years prior to the application). The District will also use NO_X source test results from the 2020 and 2021 source tests for the unit to establish the HAE.

The HAE from the digester tanks with a 36.3 MMBtu/hr flare are calculated using the quantity of natural gas to the flare supplied by the applicant (MMscf) and the HHV (Btu/scf) and NO_X emission factor (lb-NO_X/MMBtu) from the source test reports for the flare for the calendar years of 2020 and 2021.

The HAE NOx emissions from the flare during the years 2020 and 2021 are calculated in the table below.

2020-2021 HAE for NO_X for C-535-9-19							
Dates	Quantity of Gas Flared (MMscf)	x	Heating Value of Gas Flared (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	HAE (lb)
1/1/2020 – 4/22/2020	87.2614	x	650.64	x	0.048	=	2,725
4/23/2020 – 4/13/2021	268.9847	x	588.08	x	0.049	=	7,751
4/14/2021 – 12/31/2021	203.6360	x	588.25	x	0.049	=	5,870
Total 2020-2021 Actual NO_X Emissions						=	16,346
2020-2021 HAE for NO_X for C-535-9-19						=	**lb/yr**
							8,173

Fully Offset Emissions Unit, located at a Major Source

Offsets have not previously been provided for this permit unit or the entire stationary source. Therefore, pursuant to District Rule 2201, this permitted unit is not considered as a Fully Offset Emissions Unit.

Clean Emissions Unit, Located at a Major Source

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

In District Project C-1170082 for issuance of ATC C-535-45-0 for the digester gas flare, which was finalized on February 27, 2019, the District accepted an enclosed flare with NO_X emissions no greater than 0.06 lb-NO_X/MMBtu and VOC emissions not exceeding 0.068 lb-VOC/MMBtu as achieved-in-practice BACT for wastewater treatment plant digesters served by flares.

Permit Unit C-535-9 (Digester Tanks with 36.3 MMBtu/hr Flare) uses an enclosed flare with emissions no greater than 0.06 lb-NO_X/MMBtu and 0.068 lb-VOC/MMBtu; therefore, the wastewater treatment plant digester tanks served by the flare satisfy the requirements for achieved-in-practice BACT accepted by the APCO during the five years immediately prior to the submission of the complete application.

C-535-24 (Transportable Diesel IC Engine Powering an Air Compressor)

Highly-Utilized Emissions Unit, located at a Major Source

For determination of Historical Actual Emissions (HAE), the District will use the annual fuel usage for this unit for 2020 and 2021 (i.e. two years prior to the application) that the applicant provided for the District's emissions inventory. There are no source tests available for this diesel IC engine. The IC engine is certified to a Tier 3 Family Emission Limit (FEL). The NO_X emission factor used to determine HAE from the unit will be calculated using the NO_X emission factor in the permit (4.10 g-NO_X/bhp-hr), a conversion factor of 7,000 Btu/bhp-hr from AP-42, Chapter 3.3 - Gasoline and Diesel Industrial Engines (October 1996), and HHV of 137,381 Btu/gal based on information from the US Energy Information Administration.[4]

The NO_X emission factor for the unit in lb-NO_X/gal is calculated as follows:

$$NO_X \text{ EF (lb-}NO_X\text{/gal)} = (4.10 \text{ g-}NO_X\text{/bhp-hr}) \times (1 \text{ lb}/453.59 \text{ g}) \div (7{,}000 \text{ Btu/bhp-hr}) \times (137{,}381 \text{ Btu/gal}) = 0.1774 \text{ lb-}NO_X\text{/gal}$$

The HAE NOx emissions from the engine during the years 2020 and 2021 are calculated in the table below.

2020-2021 HAE for NO_X for C-535-24					
Year	Quantity of Fuel Used (Gal)	x	Emission Factor (lb/Gal)	=	HAE (lb)
2020	600.9	x	0.1774	=	107
2021	79.56	x	0.1774	=	14
Total 2020-2021 Actual NO_X Emissions				=	121
2020-2021 HAE for NO_X for C-535-24				=	**lb/yr** **61**

Fully Offset Emissions Unit, located at a Major Source

Offsets have not previously been provided for this permit unit or the entire stationary source. Therefore, pursuant to District Rule 2201, this permitted unit is not considered as a Fully Offset Emissions Unit.

Clean Emissions Unit, Located at a Major Source

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements

[4] US Energy Information Administration Units and Calculators Explained webpage, last updated: June 29, 2022. Source: US Energy Information Administration Monthly Energy Review, May 2022. https://www.eia.gov/energyexplained/units-and-calculators/

for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

Permit Unit C-535-24 is a transportable 125 bhp IC engine certified to a Tier 3 Family Emission Limit (FEL) powering an air compressor. District BACT Guideline 3.2.11 - Transportable Compression - Ignited IC Engines (Non-Agricultural), last updated August 11, 2014, applies to the transportable diesel IC engines. To satisfy District BACT requirements for NO_X, District BACT Guideline 3.2.11 requires transportable IC engines to meet the latest available CARB certification standard for the particular horsepower range. For diesel engines rated 100 bhp or greater to less than 175 bhp, Tier 4 Final emission standards became were became effective in 2015. Even when considering that Tier 4 Final engine availability may have been delayed for one or two years to 2017, BACT for NO_X from a transportable 125 bhp diesel IC engine during the five years immediately prior to the submission of the complete application is the Tier 4 Final certification for NO_X emissions.

Permit Unit C-535-24 does not satisfy the requirements for achieved-in-practice BACT accepted by the APCO during the five years immediately prior to the submission of the complete application and is not a Clean Emissions Unit. As a result, Permit Units C-535-9, -24, and -44, do not qualify as Clean Emissions Units for calculation of Baseline Emissions for the project.

C-535-44 (Transportable Diesel-Fired IC Engine Powering a Pump)

Highly-Utilized Emissions Unit, located at a Major Source

For determination of Historical Actual Emissions (HAE), the District will use the annual fuel usage for this unit for 2020 and 2021 (i.e. two years prior to the application) that the applicant provided for the District's emissions inventory. There are no source tests available for this diesel IC engine. The IC engine is certified to the Tier 4 Final emission standards. The NO_X emission factor used to determine HAE from the unit will be calculated using the NO_X emission factor in the permit (3.12 g-NO_X/bhp-hr), the engine manufacturer's maximum rated fuel consumption provided in the application for District Project C-1152564 (4.79 gal/hr), and the maximum rating of the engine (74 bhp).

The NO_X emission factor for the unit in lb-NO_X/gal is calculated as follows:

$$NO_X \text{ EF (lb-}NO_X\text{/gal)} = (3.12 \text{ g-}NO_X\text{/bhp-hr}) \times (1 \text{ lb}/453.59 \text{ g}) \times (74 \text{ bhp}) \div (4.79 \text{ gal/hr})$$
$$= 0.1063 \text{ lb-}NO_X\text{/gal}$$

The HAE NOx emissions from the engine during the years 2020 and 2021 are calculated in the table below.

2020-2021 HAE for NO_X for C-535-44					
Year	Quantity of Fuel Used (Gal)	x	Emission Factor (lb/Gal)	=	HAE (lb)
2020	161.5	x	0.1063	=	17
2021	3,399.816	x	0.1063	=	361
Total 2020-2021 Actual NO_X Emissions				=	378
2020-2021 HAE for NO_X for C-535-44				=	**lb/yr** **189**

Fully Offset Emissions Unit, located at a Major Source

Offsets have not previously been provided for this permit unit. Therefore, pursuant to District Rule 2201, this permitted unit is not considered as a Fully Offset Emissions Unit.

Clean Emissions Unit, Located at a Major Source

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

Permit Unit C-535-44 is a transportable 74 bhp Tier 4 Final certified IC engine powering a pump. District BACT Guideline 3.2.11 - Transportable Compression - Ignited IC Engines (Non-Agricultural), last updated August 11, 2014, applies to the transportable diesel IC engines. To satisfy District BACT requirements for NO_X, District BACT Guideline 3.2.11 requires transportable IC engines to meet the latest available CARB certification standard for the particular horsepower range. For diesel engines rated 50 bhp or greater to less than 75 bhp, Tier 4 Final is the latest available CARB certification standard.

Permit Unit C-535-44 satisfies the requirements for achieved-in-practice BACT accepted by the APCO during the five years immediately prior to the submission of the complete application and is therefore, a Clean Emissions Unit. However, as stated above, because Permit Unit C-535-24 (transportable diesel-fired IC engine powering an air compressor) is not a Clean Emissions Unit, Permit Units C-535-9, -24, and -44, do not qualify as Clean Emissions Units for calculation of Baseline Emissions for the project.

Total HAE for NO_X for C-535-9, -24, & -44

The total HAE for NO_X from Permit Units C-535-9, -24, and -44 is shown in the table below.

Total HAE for NO_X for C-535-9, -24, & -44	
Permit Unit	**HAE for NO_X (lb/yr)**
C-535-9	8,173
C-535-24	61
C-535-44	189
HAE for NO_X	8,423

As discussed above, the current permit conditions for Units C-535-9, -24, & -44 limit the total combined PE1 for NO_X from the units to 19,272 lb-NO_X/year. The total combined HAE for NO_X from the units of 8,422 lb-NO_X/year only represents 43.7% of the total combined PE1 for the units in the SLC. Therefore, these units are not considered as a Highly Utilized Emissions Units for NO_X emissions.

BE for NO_X for C-535-45-0 (58.5 MMBtu/hr Digester Flare that will be Removed)

Pursuant to Rule 2201, a Clean Emissions Unit is defined as an emissions unit that is "equipped with an emissions control technology with a minimum control efficiency of at least 95% or is equipped with emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

In District Project C-1170082 for issuance of ATC C-535-45-0 for the digester gas flare, which was finalized on February 27, 2019, the District accepted an enclosed flare with NO_X emissions no greater than 0.06 lb-NO_X/MMBtu and VOC emissions not exceeding 0.068 lb-VOC/MMBtu as achieved-in-practice BACT for wastewater treatment plant digesters served by flares.

Permit Unit C-535-45-0 (58.5 MMBtu/hr Digester Flare that will be Removed) is an enclosed flare with emissions no greater than 0.06 lb-NO_X/MMBtu and 0.068 lb-VOC/MMBtu; therefore, the wastewater treatment plant digesters served by the flare satisfy the requirements for achieved-in-practice BACT accepted by the APCO during the five years immediately prior to the submission of the complete application.

BE for NO_X for C-535-45-0

C-535-45-0: 30,748 lb-NO_X/year

b. BE SO_X

As shown in Section VII.C.5 above, the facility is not a major source for SO_X emissions.

Therefore BE=PE1.

BE for SO_X

C-535-6-18: 3,804 lb-SO_X/year
C-535-9-19: 19,524 lb-SO_X/year
C-535-24-6: 12 lb-SO_X/year
C-535-44-2: 2 lb-SO_X/year
C-535-45-0: 26,597 lb-SO_X/year

c. BE PM_{10}

As shown in Section VII.C.5 above, the facility is not a major source for PM_{10} emissions.

Therefore BE=PE1.

BE for PM_{10}

C-535-6-18: 702 lb-PM_{10}/year
C-535-9-19: 4,770 lb-PM_{10}/year
C-535-24-6: 459 lb-PM_{10}/year
C-535-44-2: 0 lb-PM_{10}/year
C-535-45-0: 7,687 lb-PM_{10}/year

d. BE CO

As shown in Section VII.C.5 above, the facility is not a major source for CO emissions.

Therefore BE=PE1.

BE for CO

C-535-6-18: 8,924 lb-CO/year
C-535-9-19: 92,217 lb-CO/year
C-535-24-6: 1,811 lb-CO/year
C-535-44-2: 26 lb-CO/year
C-535-45-0: 102,492 lb-CO/year

e. BE VOC

As shown in Section VII.C.5 above, the facility is not a major source for CO emissions.

Therefore BE=PE1.

BE for VOC

C-535-6-18: 805 lb-VOC/year
C-535-9-19: 859 lb-VOC/year
C-535-24-6: 724 lb-VOC /year

C-535-44-2: 56 lb-VOC /year
C-535-45-0: 1,384 lb-VOC/year

BE for ATCs C-535-50-0 & -51-0 (New 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

Since the proposed ultra-low emission digester flares are new, BE = PE1 = 0 for all affected pollutants.

BE for Units C-535-6-18, -24-6, -44-2, -45-0, - 50-0, & -51-0

The BE for Units C-535-6-18, -9-19, -24-6, -44-2, -45-0, - 50-0, and -51-0 are summarized in the following table:

BE (lb/year)						
	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO	VOC
C-535-6-18	402	3,804	702	702	8,924	805
C-535-9-19	8,423*	19,524	4,770	4,770	92,217	859
C-535-24-6		12	459	459	1,811	724
C-535-44-2		2	0	0	26	56
C-535-45-0	30,748	26,597	7,687	7,687	102,492	1,384
C-535-50-0	0	0	0	0	0	0
C-535-51-0	0	0	0	0	0	0

* Historical Actual Emissions for NO_X for Permit Units C-535-9, -24, and -44, which are all included in the SLC limiting total NO_X emissions from the units.

7. SB 288 Major Modification

An SB 288 Major Modification for a given pollutant can only occur at a stationary source that is a major source for that specific pollutant. The only pollutant for which this facility is a major source is NO_X; therefore, this project is not an SB 288 Major Modification for any other pollutant.

Non-road engines shall not be considered in determining whether a project is an SB 288 Major Modification. The Federal CAA reserves the regulation of non-road engines to Title II (National Emission Standards) of the Clean Air Act (CAA). Therefore, the emissions from the non-road (i.e. transportable) included in this project (Permit Units C-535-24 and -44-2) will not be considered for purposes of determining in this project is an SB288 major modification.

Since this facility is a major source for NO_X, the project's PE2 is compared to the SB 288 Major Modification Threshold for NO_X in the following table in order to determine if further SB 288 Major Modification calculation is required.

As calculated in the Calculation section above:

SB 288 Major Modification Thresholds			
Pollutant	**Project PE2 (lb/year)**	**Threshold (lb/year)**	**SB 288 Major Modification Calculation Required?**
NO_X	26,165	50,000	No

Since none of the SB 288 Major Modification Thresholds are surpassed with this project, this project does not constitute an SB 288 Major Modification and no further discussion is required.

8. Federal Major Modification / New Major Source

Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

As defined in 40 CFR 51.165, Section (a)(1)(v) and part D of Title I of the CAA, a Federal Major Modification is any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act. The significant net emission increase threshold for each criteria pollutant is included in Rule 2201.

A Federal Major Modification for a given pollutant can only occur at a stationary source that is a major source for that specific pollutant. The only pollutant for which this facility is a major source is NO_X; therefore, this project is not a Federal Major Modification for any other pollutant.

Non-road engines shall not be considered in determining whether a project is a Federal Major Modification. The Federal CAA reserves the regulation of non-road engines to Title II (National Emission Standards) of the CAA; therefore, emissions from the transportable engines being modified in the project are excluded when determining if the facility is a federal major modification.

The determination of Federal Major Modification is based on a two-step test. For the first step, only the emission *increases* are counted. In step 1, emission decreases cannot cancel out the increases. Step 2 allows consideration of the project's net emissions increase as described in 40 CFR 51.165 and the Federal Clean Air Act Section 182 (e), as applicable.

Step 1: Project Emissions Increase

Project Emissions Increase for ATC C-535-9-19 (Digesters with 36.3 MMBtu/hr Flare)

The existing 36.3 MMBtu/hr digester gas flare that will be converted to an emergency use flare is considered a modified emission unit for major modification determination purposes.

For modified existing emissions units, according to 40 CFR 51.165(a)(2)(ii)(C), the project's emission increase for each pollutant is equal to the sum of the differences between the projected actual emissions (PAE) and the baseline actual emissions (BAE). Please note that in step 1, since the District is classified as extreme non-attainment for ozone, no NO_X and VOC emission decreases associated with the proposed project shall be accounted for.

Project Emissions Increase = ∑(PAE – BAE)

As described in 40 CFR 51.165(a)(1)(xxviii)(B), when using historical data and company's expected business activity to determine PAE, the portion of the emissions after the project that the existing unit could have accommodated (Unused Baseline Capacity, UBC) before the project (during the same 24-month baseline period used to determine BAE) and that are unrelated to the particular project (including emissions increases due to product demand growth) are to be excluded.

Otherwise, according to 40 CFR 51.165(a)(1)(xxvii)(B)(4), when determining PAE, in lieu of using the method described in 40 CFR 51.165 (a)(1)(xxviii)(B)(1)-(3), *Projected Actual Emissions*, the owner/operator may elect to use emissions unit's Potential to Emit. If appropriate projected actual emissions are not provided by the applicant, then the emissions unit's Potential to Emit is used to calculate the emissions increase.

Since the project proponent has not provided information required to calculate PAE, the District will use the PE2 to calculate the emissions increase:

Project Emissions Increase = ∑(PE2 – BAE)

Baseline Actual Emissions (BAE)

For emission units (other than electric utility steam generating units), according to according to 40 CFR 51.165(a)(1)(xxxv)(B), the BAE are calculated as the average, in tons/year, at which the emissions unit actually emitted during any 24-month period selected by the operator within the previous 10-year period.

The Baseline Actual Emissions (BAE) from the digester tanks with a 36.3 MMBtu/hr flare are calculated below using the quantity of gas flared, as supplied by the applicant (MMscf), and the HHV (Btu/scf) and NO_X emission factor (lb-NO_X/MMBtu) from recent source test reports for the flare. The applicant has chosen the calendar years of 2020 and 2021 as the baseline period.

The baseline actual NOx emissions from the flare during the 2020-2021 baseline period are calculated in the table below.

2020-2021 BAE for NO_X for C-535-9-19								
Dates	Quantity of Gas Flared (MMscf)	x	Heating Value of Gas Flared (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)	AE (ton)
1/1/2020 – 4/22/2020	87.2614	x	650.64	x	0.048	=	2,725	1.36
4/23/2020 – 4/13/2021	268.9847	x	588.08	x	0.049	=	7,751	3.88
4/14/2021 – 12/31/2021	203.6360	x	588.25	x	0.049	=	5,870	2.93
Total 2020-2021 Actual NO_X Emissions						=	16,346	8.17
2020-2021 BAE for NO_X for C-535-9-19						=	**lb/yr**	**ton/yr**
							8,173	**4.09**

Project Emissions Increase for C-535-9-19

As discussed above, the total NO_X emissions increase is calculated as PE2 – BAE. The total NO_X emissions increase is summarized in the following table:

NO_X Emissions Increase for C-535-9-19				
Pollutant	PE2 (lb/yr)	BAE (lb/yr)	Emissions Increase (lb/yr)	Emissions Increase (ton/yr)
NO_X	109	8,173	-8,064 → 0	0

As shown above, the modification of the flare to reduce hours of operation and designate it as an emergency flare will result in actual decreases in NO_X emissions. As discussed above, since the District is classified as extreme non-attainment for ozone, no NO_X emission decreases associated with the proposed project shall be accounted when determining if this project is a major modification. Therefore, the NO_X emissions decrease for the existing flare have been set to zero.

Project Emissions Increase for C-535-50-0 & -51-0 (New 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

For new emissions units, the increase in emissions is equal to the PE2 for each new unit included in this project:

Emission Increase = PE2

Total Project Emissions Increase for ATCs C-535-9-19, -50-0, & -51-0

The total project emissions increases for NO_X from ATCs C-535-9-19, -50-0, and -51-0 are shown in the table below.

Total Project Increases for NO_X from ATCs C-535-9-19, -50-0, and -51-0 (lb/year)	
ATC	**NO_X Increase (lb/yr)**
ATC C-535-9-19	0
ATC C-535-50-0*	26,056
ATC C-535-51-0*	
Total Project Increase	26,056

* The total combined annual PE2 for NO_X from the new flares will be limited to 26,056 lb-NO_X/year.

The project's total emissions increases for NO_X are summarized and are compared to the Federal Major Modification Thresholds in the following table.

Federal Major Modification Thresholds for Emission Increases			
Pollutant	**Total Emissions Increases (lb/yr)**	**Thresholds (lb/yr)**	**Federal Major Modification?**
NO_X*	26,056	0	Yes

*If there is any emission increases in NO_x, this project is a Federal Major Modification and no further analysis is required.

Since there is an increase in NO_X, this project constitutes a Federal Major Modification. Consequently, as discussed below in the offset section of this evaluation, pursuant to Section 7.4.2.1 of District Rule 2201, NO_X Emission Reduction Credits (ERCs) used to satisfy the offset quantity required under District Rule 2201 must be surplus at the time of use (ATC issuance).

Separately, the Federal Offset Quantities are calculated below.

New Major Source

As demonstrated above, this facility is not becoming a Major Source as a result of this project; therefore, this facility is not a New Major Source pursuant to 40 CFR 51.165 a(1)(iv)(A)(3).

Federal Offset Quantity Calculation

The Federal Offset Quantity (FOQ) is only calculated for the pollutants for which a project is a Federal Major Modification or a New Major Source. As determined above, the proposed project is a Federal Major Modification for NO_X.

Pursuant to 40 CFR 51.165(a)(3)(ii)(J), the federal offset quantity is the sum of the annual emission changes for all new and modified emission units in a project calculated as the potential to emit after the modification (PE2) minus the actual emissions (AE) for each emission unit times the applicable federal offset ratio.

FOQ = ∑(PE2 – AE) x Federal offset ratio

Actual Emissions

As described in 40 CFR 51.165(a)(1)(xii), actual emissions (AE), as of a particular date, shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive 24-month period which precedes the particular date and which is representative of normal source operation. The reviewing authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation.

As discussed above, as part of this project, Fresno/Clovis Regional WWTP has proposed to install two 75.1 MMBtu/hr ultra-low emission digester gas flares, to limit the operation of Permit Unit C-535-9 for an existing 36.3 MMBtu/hr flare to emergency use with the exception of 1,815 MMBtu per year for maintenance and testing, to permanently remove the existing 16.7 MMBtu/hr boiler authorized as Permit Unit C-535-6 and the existing 58.5 MMBtu/hr temporary flare authorized as Permit Unit C-535-45 from service, and cancel the permits for these units and use the emission reductions from the removal of the boiler and flare to partially offset the emission increases from the project. The changes in the actual emissions from these proposed changes will be calculated below and used to determine the quantity of Federal Offset Quantity (FOQ) for NO_X.

C-535-6-18 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler)

As discussed above, as part of this project, this boiler will be removed from operation.

The AE from Unit C-535-6 are calculated below using the quantity of raw digester gas, conditioned digester gas, and natural gas used to fuel the boiler, as supplied by the applicant (MMscf); the HHV (Btu/scf) and NO_X emission factor (lb-NO_X/MMBtu) for each fuel from recent source test reports for the flare; and for natural gas a HHV of 1,000 Btu/scf pursuant to District Policy APR 1720 - Generally Accepted SO_X Emission Factor for Combustion of PUC-quality Natural Gas (12/20/2001). The years of 2020 and 2021 will be used to calculate the AE from the boiler.

The AE for NO_X from the boiler during the years 2020-2021 are calculated in the table below.

2020-2021 AE for NO_X for C-535-6-18								
Year and Fuel	Quantity of Fuel Used (MMscf)	x	Heating Value of Fuel (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)	AE (ton)
2020 Raw Digester Gas	89.9624	x	606.7621	x	0.0098	=	535	0.27
2020 Conditioned Digester Gas	16.4135	x	783.4961	x	0.0084	=	108	0.05
2020 Natural Gas	0.3354	x	1,000	x	0.008		3	0.00
2021 Raw Digester Gas	26.4539	x	606.7621	x	0.0098		157	0.08

2020-2021 AE for NO_X for C-535-6-18								
Year and Fuel	Quantity of Fuel Used (MMscf)	x	Heating Value of Fuel (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)	AE (ton)
2021 Conditioned Digester Gas	0.00339	x	783.4961	x	0.0084		0	0.00
2021 Natural Gas	0.0790	x	1,000	x	0.008	=	1	0.00
Total 2020-2021 Actual Emissions for NO_X						=	804	0.40
2020-2021 AE for NO_X for C-535-6-18						=	**lb/yr**	**ton/yr**
							402	**0.20**

C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

As discussed above, as part of this project, this flare will be designated as an emergency flare with the exception of flaring 1,815 MMBtu/year (equivalent to 50 hour/year at maximum rated capacity) of non-emergency operation and the proposed low-emission flares will become the primary devices for disposal of the digester gas.

The AE from Unit C-535-9 are calculated below using the quantity of gas flared, as supplied by the applicant (MMscf), and the HHV (Btu/scf) and NO_X emission factor (lb-NO_X/MMBtu) from recent source test reports for the flare. The years of 2020 and 2021 will be used to calculate the AE from the flare.

The AE for NO_X from the flare during the years 2020-2021 are calculated in the table below.

2020-2021 AE for NO_X for C-535-9-19								
Dates	Quantity of Gas Flared (MMscf)	x	Heating Value of Gas Flared (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)	AE (ton)
1/1/2020 – 4/22/2020	87.2614	x	650.64	x	0.048	=	2,725	1.36
4/23/2020 – 4/13/2021	268.9847	x	588.08	x	0.049	=	7,751	3.88
4/14/2021 – 12/31/2021	203.6360	x	588.25	x	0.049	=	5,870	2.93
Total 2020-2021 Actual NO_X Emissions						=	16,346	8.17
2020-2021 AE for NO_X for C-535-9-19						=	**lb/yr**	**ton/yr**
							8,173	**4.09**

C-535-45-0 (58.5 MMBtu/hr Digester Flare)

As discussed above, this flare will be removed as part of this project as part of this project and the proposed low-emission flares will become the primary devices for disposal of the digester gas.

The AE from Unit C-535-45 are calculated below using the quantity of gas flared, as supplied by the applicant (MMscf), and the HHV (Btu/scf) and NO_X emission factor (lb-NO_X/MMBtu) from recent source test reports for the flare. The years of 2020 and 2021 will be used to calculate the AE from the flare.

The AE for NO_X from the flare during the years 2020-2021 are calculated in the table below.

2020-2021 AE for NO_X for C-535-45-0								
Dates	Quantity of Gas Flared (MMscf)	x	Heating Value of Gas Flared (MMBtu/MMscf)	x	Emission Factor (lb/MMBtu)	=	AE (lb)	AE (ton)
1/1/2020 – 4/22/2020	58.8860	x	650.64	x	0.0418	=	1,602	0.80
4/23/2020 – 4/13/2021	213.9668	x	588.08	x	0.040	=	5,033	2.52
4/14/2021 – 12/31/2021	227.0493	x	588.25	x	0.054	=	7,212	3.61
Total 2020-2021 Actual NO_X Emissions						=	13,847	6.92
2020-2021 AE for NO_X for C-535-45-0						=	**lb/yr**	**ton/yr**
							6,924	**3.46**

C-535-50-0 & -51-0 (Proposed 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

For Federal Major Modification purposes, each flare is considered to be a new unit; therefore, AE = 0.

Total AE for NO_X for Units Included in the Project

Total AE for NO_X for Units Included in the Project		
Permit Unit	**AE for NO_X (lb/yr)**	**AE for NO_X (ton/yr)**
C-535-6-18 (16.7 MMBtu/hr Boiler)	402	0.20
C-535-9-19 (36.3 MMBtu/hr Digester Flare)	8,173	4.09
C-535-45-0 (58.5 MMBtu/hr Digester Flare)	6,924	3.46
C-535-50-0 (75.1 MMBtu/hr Digester Flare)	0	0.00
C-535-51-0 (75.1 MMBtu/hr Digester Flare)	0	0.00
Total Project AE for NO_X	15,499	7.75

Federal Offset Ratio

According the CAA 182(e), the federal offset ratio for VOC and NOx is 1.5 to 1 (due to the District extreme non-attainment status for ozone).

Therefore,

FOQ = [$\sum$(PE2 – AE)$_{All\_Units\_in\_Project}$] x Federal offset ratio

As discussed above, the proposed low-emission flares will be subject to federally enforceable permit conditions that limit the total combined annual PE2 for NO_X from the new flares to 26,056 lb-NO_X/year.

NOx **Federal Offset Ratio** **1.5**

Permit No.	Post-Project Potential to Emit (PE2) (lb/year)	Actual Emissions (lb/year)	Emissions Change (lb/yr)
C-535-6-18	0	402	-402
C-535-9-19	109	8,173	-8,064
C-535-45-0	0	6,924	-6,924
C-535-50-0	26,056	0	26,056
C-535-51-0		0	
		∑(PE2 – AE) (lb/year):	**10,666**
		Federal Offset Quantity (lb/year): ∑(PE2 – AE) x 1.5	**15,999**
		Federal Offset Quantity (tons/year): ∑(PE2 – AE) x 1.5 ÷ 2,000	**8.00**

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are: (See 52.21 (b) (23) definition of significant)

- NO2 (as a primary pollutant)
- SO2 (as a primary pollutant)
- CO
- PM
- PM_{10}
- Hydrogen sulfide (H_2S)
- Total reduced sulfur (including H_2S)
- Reduced sulfur compounds

Additionally, when evaluating if a facility is a PSD major source all regulated NSR pollutants, including VOC, must be considered regardless of attainment status.

I. Project Emissions Increase - New Major Source Determination

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

Emissions from non-road IC engines are not included for PSD major source determination purposes; therefore, emissions from the transportable engines permitted at the facility (Permit Units C-535-11, -12, -24, and -44) are excluded from the PSD major source determination.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). The PSD Major Source threshold is 250 tons per year (tpy) for any regulated NSR pollutant.

Estimation of Maximum H_2S and Total Reduced Sulfur (TRS) for PSD Applicability

The digester gas that will be flared contains sulfur, primarily in the form of H_2S. However, any sulfur compounds in the digester gas are expected to be converted almost entirely to SO_X during combustion in the flares. A previous EPA study indicated very high destruction efficiencies of 99.7% to greater than 99.9% for H_2S that was flared when the heating values of the gas flared exceeded the flame stability limit.[5] Therefore, for purposes of the PSD applicability determination, the maximum amount of non-fugitive H_2S and total reduced sulfur compounds emitted from the equipment will be estimated by conservatively assuming that a maximum of 0.3% of the sulfur compounds in the digester gas flared will be emitted as H_2S rather than converted to SO_X. Therefore, for purposes of the PSD applicability the maximum non-fugitive H_2S and total reduced sulfur (TRS) emissions from the flares will be conservatively estimated as follows:

Maximum H_2S/TRS Emissions
(111 lb-SO_X/yr + 40,394 lb-SO_X/yr + 40,394 lb-SO_X/yr) x 1 mol-H_2S/mol-SO_X x (34 lb-H_2S/mol-H_2S)/(64 lb-SO_X/mol-SO_X) x 0.003 = 129 lb-H_2S/yr (0.1 ton-H_2S/yr)

PSD Major Source Determination: Potential to Emit (tons/year)							
	NO_2	**VOC**	**SO_2**	**CO**	**PM**	**PM_{10}**	**H_2S/TRS**
Total PE from New and Modified Units	13.1	1.8	40.4	39.7	9.9	9.9	0.1
PSD Major Source threshold	250	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No	No

[5] Pohl, J. H. and Soelberg, N. R. (September 1986) Evaluation of the Efficiency of Industrial Flares: H2S Gas Mixtures and Pilot Assisted Flares. Prepared for US EPA Office of Air Quality Planning and Standards. EPA/600/2-86/080.

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore, Rule 2410 is not applicable and no further analysis is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix E.

11. PM2.5 Federal Offset Sanctions

As of June 27, 2023, the District is in nonattainment new source review (NNSR) offset sanctions pursuant to CAA 179(a) for $PM_{2.5}$. Therefore, any New Major Source or Federal Major Modification for $PM_{2.5}$ (including increases of its precursors NO_X, VOC, and SO_X), must supply any required federal offsets at a 2:1 ratio.

For the purposes of determining major source status the following shall not be included:

- Any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months), pursuant to the Clean Air Act, Title 3, Section 302, US Codes 7602(j) and (z)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 70.2

PM2.5 Federal Major Source Determination (lb/year)				
	NO_X*	**SO_X***	**$PM_{2.5}$**	**VOC***
SSPE1	57,117	62,408	14,276	12,004
SSPE2	31,846	93,382	20,880	12,513
PM2.5 Federal Major Source Threshold**	140,000	140,000	140,000	140,000
Pre or Post-Project PM2.5 Federal Major Source?	No	No	No	No

* $PM_{2.5}$ Precursors
** Pursuant to 40 CFR 51.165(a)(1)(iv)(A)

As shown in the table above, this facility is not an existing or becoming a Major Source for $PM_{2.5}$, NO_X, SO_X, or VOC, as a result of this project; therefore, the 2:1 federal offset sanctions are not applicable.

VIII. Compliance Determination

Rule 1070 Inspections

The purpose of Rule 1070 is to explain the District's authority in determining compliance with the requirements of District rules and regulations. This rule applies to any source operation, which emits or may emit air contaminants. This rule allows the District to perform inspections for the purpose of obtaining information necessary to determine whether air pollution sources are in compliance with applicable rules and regulations. The rule also allows the District to require record keeping, to make inspections, and to conduct tests of air pollution sources.

The conditions below will be included on the ATC permits to ensure compliance.

ATCs C-525-9-19, -51-0, & -52-0 (Digester Gas Flares)

- The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311]

- Operational, non-resettable, totalizing mass or volumetric fuel flow meter(s) or other District-approved alternative method(s) shall be used to measure the amount of gas flared. [District Rules 1070, 2201, and 4311]

- The permittee shall maintain records of the higher heating value (HHV), in Btu per standard cubic foot (scf), of the gas flared each calendar quarter in which the unit operates. The records shall include the method(s) used to determine the HHV of the fuel and the dates the HHV was determined. [District Rules 1070 and 2201]

- All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311]

ATC C-525-9-19 (Emergency Digester Flare)

- Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur content of the gas flared each day in ppmv as H2S; and the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu. [District Rules 1070 and 2201]

- The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the amount of gas flared during each emergency, the nature of each emergency situation that required flaring, the

date and number of hours of all testing and maintenance operations, and the purpose of the operation. [District Rules 1070, 2201, and 4311]

ATC C-535-24-6 (Transportable IC Engine Powering an Air Compressor)

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

- The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rules 1070 and 4702]

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

ATC C-535-44-2 (Transportable IC Engine Powering a Pump)

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

- The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rules 1070 and 4702]

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

ATCs C-525-51-0 & -52-0 (Ultra-Low-Emission Digester Flares)

- On a monthly basis, the permittee shall calculate and record the NOx emissions in pounds from this unit for the prior calendar month. The NOx emissions from this unit in each month shall be calculated as follows: lb-NOx emitted = [total volume of gas flared, in scf] x 10E-06 x [average HHV of gas flared (Btu/scf)] x [NOx emission factor measured in most recent source test (lb-NOx/MMBtu)]. [District Rules 1070 and 2201]

- On a monthly basis, the permittee shall calculate and record the total combined NOx emissions, in pounds, from the flares permitted as Units C-535-50 and -51 for the previous 12 consecutive calendar month period. [District Rules 1070 and 2201]

- Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur

content of the gas flared each day in ppmv as H2S; the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu; and calculations to verify compliance with the total combined NOx emission limit for the flares permitted as Units C-535-50 and -51. [District Rules 1070 and 2201]

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As discussed in Section I above, the applicant is proposing to install two new low-emission flares. The proposed flares will become the primary methods of disposing of digester gas from the existing tanks. The flares are emission controls devices used to control VOC, H_2S, CH_4, and odors from the gas that is generated by the existing anaerobic digester tanks at the wastewater treatment facility. The District has determined that an emissions control device is not a source operation that is subject to BACT and that the existing digester tanks served by the flares are the emissions units. Therefore, there are no new emissions units associated with this project and BACT is not triggered for a new emissions unit with a PE > 2 lb/day.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore BACT is not triggered for the relocation of an emissions unit.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed above, Fresno/Clovis Regional WWTP has proposed to modify their existing wastewater treatment digester gas tanks by designating an existing flare for the tanks as an emergency flare (Permit Unit C-535-9), removing one existing flare (Permit Unit C-535-45), and installing two new ultra-low emission flares to serve as the primary means of disposal of the gas (Permit Units C-535-50 and -51). Fresno/Clovis Regional WWTP operates 13 complete mix mesophilic digesters.[6] Each of the digesters can be operated independently and therefore may be considered separate emission units. However, for purposes of this determination of BACT applicability, each group of digesters served by a flare will be treated as an emissions unit. For the Adjusted Increase in Permitted Emissions (AIPE) calculations below, the total daily increase in permitted emissions from the digester tanks will be divided evenly between the digester tanks that will be controlled by the proposed new flares.

As discussed above, the flares are emissions control devices used to control the gas from the digester system. The District has determined that an emissions control device is not a source operation that is subject to BACT. Because of this, only direct emissions from the digester tanks may trigger District BACT requirements, not secondary emissions from the flares (i.e. NO_X, SO_X, PM_{10}, and CO). Therefore, BACT for modification of the digester gas tanks served by the flares may only be triggered for VOC emissions. The AIPE for VOC emissions from the digester tanks served by the flares is calculated below.

In addition, Permit Units C-535-24 and -44 for two existing transportable IC engines will be modified to remove them from the total combined SLC NO_X limit of 19,272 lb-NO_X/year that was shared with the existing flare (Permit Unit C-535-9). As discussed in Section I above, since the majority of the potential emissions in the existing NO_X SLC limit for the these units were from the existing flare (Permit Unit C-535-9) and the maximum combined NO_X emissions for the two transportable IC engines (Permit Units C-535-24 and -44) are much lower than the current total combined SLC NO_X limit for the three units; both of the engines were allowed to operate at their full permitted capacity under the SLC and removal of the SLC limit will not result allow increases operation of the engines. Removing these SLC conditions limiting the total NO_X emissions from the transportable IC engines will not result in any changes in hours of operation, production rate, or method of operation of the existing engines, that which would necessitate a change in permit conditions; therefore, pursuant to Rule 2201 –, this change will not trigger any NSR requirements for the existing transportable IC engines.

[6] Anaerobic Digesters at Water Resource Recovery Facilities – City of Fresno Reclamation Facility (May 12, 2016) https://19january2017snapshot.epa.gov/sites/production/files/2016-05/documents/wrrf_fresno_v2_may_12.pdf

AIPE = PE2 – HAPE

Where,

AIPE = Adjusted Increase in Permitted Emissions, (lb/day)
PE2 = Post-Project Potential to Emit, (lb/day)
HAPE = Historically Adjusted Potential to Emit, (lb/day)

HAPE = PE1 x (EF2/EF1)

Where,

PE1 = The emissions unit's PE prior to modification or relocation, (lb/day)
EF2 = The emissions unit's permitted emission factor for the pollutant after modification or relocation. If EF2 is greater than EF1 then EF2/EF1 shall be set to 1
EF1 = The emissions unit's permitted emission factor for the pollutant before the modification or relocation

AIPE = PE2 – (PE1 x (EF2 / EF1))

Daily PE1 and PE2 for VOC for the digester gas tanks controlled by the flares are the total Daily PE1 and PE2 for each of the permitted flares that control the digester tanks.

$\text{Daily PE1}_{\text{Digester\_Tanks}} = \text{Daily PE1}_{\text{C-535-9}} + \text{Daily PE1}_{\text{C-535-45}}$

$\text{Daily PE1}_{\text{Digester\_Tanks}}$ = 2.4 lb-VOC/day + 3.8 lb-VOC/day = 6.2 lb=VOC/day

$\text{Daily PE2}_{\text{Digester\_Tanks}} = \text{Daily PE2}_{\text{C-535-9}} + \text{Daily PE2}_{\text{C-535-50}} + \text{Daily PE2}_{\text{C-535-51}}$

$\text{Daily PE2}_{\text{Digester\_Tanks}}$ = 2.4 lb-VOC/day + 4.9 lb-VOC/day + 4.9 lb-VOC/day = 12.2 lb=VOC/day

Total AIPE for Digester Tanks Controlled by Flares										
Pollutant	Daily PE2 (lb/day)	-	Daily PE1 (lb/day)	x (	EF2 (lb/MMBtu)	x	EF1 (lb/MMBtu)	) =	EF2/EF1	AIPE (lb/day)
VOC	12.2	-	6.2	x (	0.0027	x	0.0027	) =	1	**6.0**

As stated above, it will be assumed that the total AIPE will be divided evenly between the digester tanks that will be controlled by the proposed flares; therefore, the AIPE for each group of tanks that will be controlled by the flares permitted under ATCs C-535-50-0 and -51-0 is 3.0 lb-VOC/day.

As demonstrated above, the AIPE is not greater than 2.0 lb/day for PM_{10} emissions for any baghouse. Therefore BACT is triggered for VOC for each group of digester tanks that will be controlled by the proposed flares.

AIPE for ATC C-535-24-6: Transportable IC Engine Powering a Compressor

AIPE for ATC C-535-24-6 (Transportable IC Engine Powering an Air Compressor)										
Pollutant	Daily PE2 (lb/day)	-	Daily PE1 (lb/day)	x (	EF2 (g/bhp-hr)	÷	EF1 (g/bhp-hr)	) =	EF2/EF1	AIPE (lb/day)
NO_X	27.1	-	27.1	x (	4.10	÷	4.10	) =	1	**0.0**
SO_X	0.0	-	0.0	x (	0.0051	÷	0.0051	) =	1	**0.0**
PM_{10}	1.3	-	1.3	x (	0.19	÷	0.19	) =	1	**0.0**
CO	5.0	-	5.0	x (	0.75	÷	0.75	) =	1	**0.0**
VOC	2.0	-	2.0	x (	0.30	÷	0.30	) =	1	**0.0**

As shown above, the AIPE is not greater than 2.0 lb/day for emissions of any affected pollutants from the existing IC engine. Therefore, BACT is not triggered for the modification of the IC engine.

AIPE for ATC C-535-44-2: Transportable IC Engine Powering a Compressor

AIPE for ATC C-535-44-2 (Transportable IC Engine Powering A Pump)										
Pollutant	Daily PE2 (lb/day)	-	Daily PE1 (lb/day)	x (	EF2 (g/bhp-hr)	÷	EF1 (g/bhp-hr)	) =	EF2/EF1	AIPE (lb/day)
NO_X	12.2	-	12.2	x (	3.12	÷	3.12	) =	1	**0.0**
SO_X	0.0	-	0.0	x (	0.0051	÷	0.0051	) =	1	**0.0**
PM_{10}	0.0	-	0.0	x (	0.0007	÷	0.0007	) =	1	**0.0**
CO	0.3	-	0.3	x (	0.0746	÷	0.0746	) =	1	**0.0**
VOC	0.6	-	0.6	x (	0.16	÷	0.16	) =	1	**0.0**

As shown above, the AIPE is not greater than 2.0 lb/day for emissions of any affected pollutants from the existing IC engine. Therefore, BACT is not triggered for the modification of the IC engine.

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project constitutes a Federal Major Modification for NO_X emissions. Therefore, BACT is triggered for NO_X from the modification of the digester tanks to install the new flares since these units resulted in a Federal Major Modification for NO_X emissions.

2. BACT Guideline

The applicant is proposing to modify their existing wastewater treatment digester gas tanks by installing two new ultra-low emission flares to serve as the primary means of disposal of the gas.

The District does not currently have an approved BACT Guideline for this wastewater treatment plants controlled by flares. Therefore, a project-specific BACT analysis was performed for the proposed modification of the digester tanks based on the District's

review of information that was available when the application for this project was deemed complete. (See Appendix F)

3. Top-Down BACT Analysis

Pursuant to Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the Top-Down BACT Analysis (See Appendix F), BACT for the digester gas tanks controlled by the flares is satisfied with the following:

NO_X: 0.025 lb-NO_X/MMBtu
VOC: Enclosed flare with emissions ≤ 0.0027 lb-VOC/MMBtu

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO_X	**SO_X**	**PM_{10}**	**CO**	**VOC**
SSPE2	42,917	93,396	21,341	94,850	13,293
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets Triggered?	Yes	Yes	No	No	No

2. Quantity of District Offsets Required

As seen above, the SSPE2 is greater than the offset thresholds for NO_X, CO, and VOC. Therefore, offset calculations are required for this project.

The quantity of offsets in pounds per year is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = (Σ[PE2 – BE] + ICCE) x DOR, for all new or modified emissions units in the project,

Where,
PE2 = Post-Project Potential to Emit, (lb/year)
BE = Baseline Emissions, (lb/year)
ICCE = Increase in Cargo Carrier Emissions, (lb/year)
DOR = Distance Offset Ratio, determined pursuant to Section 4.8

As discussed above, as part of this project, Fresno/Clovis Regional WWTP has proposed to install two 75.1 MMBtu/hr ultra-low emission digester gas flares, to limit the operation of Permit Unit C-535-9 for an existing 36.3 MMBtu/hr flare to emergency use with the exception of 1,815 MMBtu per year for maintenance and testing, to permanently remove the existing 16.7 MMBtu/hr boiler authorized as Permit Unit C-535-6-18 and the existing 58.5 MMBtu/hr temporary flare authorized as Permit Unit C-535-45-0 from service, and cancel the permits for these units and use the emission reductions from the removal of the boiler and flare to partially offset the emission increases from the project.

Pursuant to Rule 2201, emergency equipment that is used exclusively as emergency standby equipment as approved by the APCO that does not operate more than 200 hours per year of non-emergency purposes and is not used pursuant to voluntary arrangements with a power supplier to curtail power, is exempt from providing emission offsets. Therefore, because Permit Unit C-535-9 will be designated as an emergency standby flare, the PE2 from the flare will be exempt from providing offsets PE2 from this unit will be removed prior to calculating actual offset amounts.

The changes in the emissions from these proposed changes will be calculated below and used to determine the quantity of District Offset Quantities (DOQ) for NO_X and SO_X.

2.1 NOx Offsets

The PE2 and BE for NO_X from the units as calculated in Sections VII.C.2 and VII.C.6 above, are shown in the tables below.

Total BE for NO_X for Units Included in the Project	
Permit Unit	**BE for NO_X (lb/yr)**
C-535-6-18 (16.7 MMBtu/hr Boiler)	402
C-535-9-19 (Digesters with 36.3 MMBtu/hr Flare)	8,423
C-535-24-5 (Transportable 125 bhp IC Engine Powering an Air Compressor)	
C-535-44-1 (Transportable 74 bhp Diesel IC Engine)	
C-535-45-0 (58.5 MMBtu/hr Digester Flare)	30,748
C-535-50-0 (75.1 MMBtu/hr Digester Flare)	0
C-535-51-0 (75.1 MMBtu/hr Digester Flare)	0
Total Project BE for NO_X	39,573

Total PE2 for NO_X for Units Included in the Project	
Permit Unit	**PE2 for NO_X (lb/yr)**
C-535-6-18 (16.7 MMBtu/hr Boiler)	0
C-535-9-19 (Digesters with 36.3 MMBtu/hr Flare)*	0
C-535-24-5 (Transportable 125 bhp IC Engine Powering an Air Compressor)	9,898
C-535-44-1 (Transportable 74 bhp Diesel IC Engine)	1,099
C-535-45-0 (58.5 MMBtu/hr Digester Flare)	0
C-535-50-0 (75.1 MMBtu/hr Digester Flare)	26,056
C-535-51-0 (75.1 MMBtu/hr Digester Flare)	
Total Project PE2 for NO_X	37,053

* Exempt from District offsets as emergency standby equipment

There are no increases in cargo carrier emissions. Therefore, offsets can be determined as follows:

Offsets Required (lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (NO_X) = 37,053 lb/year
BE (NO_X) = 39,573 lb/year
ICCE = 0 lb/year

Based on an offset ratio of 1.5:1, the amount of NO_X ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([37,053 – 39,573] + 0) x 1.5
= -2,520 → 0 lb-NO_X/year x 1.5
= 0 lb-NO_X/year

As shown above, District offsets are triggered but not required for NO_X under NSR. However, as demonstrated above, this project triggers Federal Major Modification requirements for NOx emissions, and federal offset quantities are required for this project for NOx. Pursuant to Section 7.4.2.1 of District Rule 2201, emission reduction credits (ERCs) used to satisfy federal offset quantities for NOx must be creditable and surplus at the time of use (ATC issuance).

Surplus at the Time of Use Emission Reduction Credits

As discussed above, 15,999 lb/year of NO_X offsets are required to satisfy the Federal offset quantity required for this project. The applicant has stated that the facility plans to use ERC certificates N-1595-2, N-1598-2, S-5313-2, and/or S-5317-2 to satisfy the federal offset quantities for NO_X required for this project. Pursuant to the ERC surplus analyses in Appendix G, the District has verified that the credits from the ERC certificate provided by the applicant are sufficient to satisfy the federal offset quantities for NO_X required for this project.

Required Federal Offset Quantities Summary

Calculating the appropriate quarterly emissions to be offset is as follows:

Quarterly offsets required (lb/qtr) = (15,999 lb-NO_X/year) ÷ (4 quarters/year)
= 3,999.75 lb-NO_X/qtr

As demonstrated in the calculation above, the quarterly amount of NO_X offsets required for this project, when evenly distributed to each quarter, results in fractional pounds of offsets being required each quarter. Since offsets are required to be withdrawn as whole pounds, the quarterly amounts of offsets need to be adjusted to ensure the quarterly values sum to the total annual amount of offsets required.

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets (where X is the annual amount of offsets, and X ÷ 4 = Y.z)				
Value of z	**Quarter 1**	**Quarter 2**	**Quarter 3**	**Quarter 4**
0.0	Y	Y	Y	Y
0.25	Y	Y	Y	Y+1
0.5	Y	Y	Y+1	Y+1
0.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset are as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	**Total Annual**
3,999	4,000	4,000	4,000	**15,999**

The applicant has proposed to use the following NO_X emission reduction certificates:

ERC #	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
N-1595-2 Face Value	525	525	525	525
N-1598-2 Face Value	311	287	335	311
S-5313-2 Face Value	3,220	3,221	3,221	3,220
S-5317-2 Face Value	1,077	304	1,854	1,077
Total Face Value of ERCs	5,133	4,337	5,935	5,133

ERC #	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
N-1595-2 Surplus Value	271	271	271	271
N-1598-2 Surplus Value	311	287	335	311
S-5313-2 Surplus Value	3,220	3,221	3,221	3,220
S-5317-2 Surplus Value	197	56	339	197
Total Surplus Value of ERCs	3,999	3,835	4,166	3,999

Pursuant to Rule 2201, Section 4.13.8, Actual Emission Reductions for NO_X that occurred from April through November (2nd qtr, 3rd qtr, and two of the three months in the 4th qtr) may be used to offset increases in NO_X during any period of the year.

As shown above, the facility has sufficient credits to fully offset the annual NO_X emissions increases associated with this project.

Proposed Rule 2201 Offset Permit Conditions

The following permit conditions will be included on Authority to Construct (ATC) permits C-535-50-0 and -51-0 for the proposed ultra-low-emission flares:

ATC C-535-50-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flare)

- Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender NOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter – 2,000 lb, 2nd quarter – 2,000 lb, 3rd quarter – 2,000 lb, and 4th quarter – 2,000 lb. These amounts include the applicable offset ratio specified in Rule 2201, Section 4.8 (as amended 8/15/19). NOx ERCs used to satisfy the offset quantity required under District Rule 2201 must be surplus at the time of issuance of this ATC and the total quantity of ERCs surrendered shall be calculated based on the ERC surplus value percent discount of each ERC certificate used. [District Rule 2201]

ATC C-535-51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flare)

- Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender NOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter – 1,999 lb, 2nd quarter – 2,000 lb, 3rd quarter – 2,000 lb, and 4th quarter – 2,000 lb. These amounts include the applicable offset ratio specified in Rule 2201, Section 4.8 (as amended 8/15/19). NOx ERCs used to satisfy the offset quantity required under District Rule 2201 must be surplus at the time of issuance of this ATC and the total quantity of ERCs surrendered shall be calculated based on the ERC surplus value percent discount of each ERC certificate used. [District Rule 2201]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

- ERC Certificate Numbers N-1595-2, N-1598-2, S-5313-2, and/or S-5317-2 (or certificates split from these certificates) shall be used to supply the required NOx offsets, unless a revised offsetting proposal is received and approved by the District, upon which this ATC shall be reissued, administratively specifying the new offsetting

proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this ATC. [District Rule 2201]

2.1 SOx Offsets

The PE2 and BE for SO_X from the units as calculated in Sections VII.C.2 and VII.C.6 above, are shown in the tables below.

Total BE for SO_X for Units Included in the Project	
Permit Unit	**BE for SO_X (lb/yr)**
C-535-6-18 (16.7 MMBtu/hr Boiler)	3,804
C-535-9-19 (Digesters with 36.3 MMBtu/hr Flare)	19,524
C-535-24-5 (Transportable 125 bhp IC Engine Powering an Air Compressor)	12
C-535-44-1 (Transportable 74 bhp Diesel IC Engine)	2
C-535-45-0 (58.5 MMBtu/hr Digester Flare)	26,597
C-535-50-0 (75.1 MMBtu/hr Digester Flare)	0
C-535-51-0 (75.1 MMBtu/hr Digester Flare)	0
Total Project BE for SO_X	49,939

Total PE2 for SO_X for Units Included in the Project	
Permit Unit	**PE2 for SO_X (lb/yr)**
C-535-6-18 (16.7 MMBtu/hr Boiler)	0
C-535-9-19 (Digesters with 36.3 MMBtu/hr Flare)*	0
C-535-24-5 (Transportable 125 bhp IC Engine Powering an Air Compressor)	12
C-535-44-1 (Transportable 74 bhp Diesel IC Engine)	2
C-535-45-0 (58.5 MMBtu/hr Digester Flare)	0
C-535-50-0 (75.1 MMBtu/hr Digester Flare)	40,394
C-535-51-0 (75.1 MMBtu/hr Digester Flare)	40,394
Total Project PE2 for SO_X	80,802

* Exempt from offsets as emergency standby equipment

There are no increases in cargo carrier emissions. Therefore, offsets can be determined as follows:

Offsets Required (lb/year) = ([PE2 – BE] + ICCE) x DOR

PE2 (SO_X) = 80,802 lb/year
BE (SO_X) = 49,939 lb/year
ICCE = 0 lb/year

Based on an offset ratio of 1.5:1, the amount of SO_X ERCs that need to be withdrawn is:

Offsets Required (lb/year) = ([80,802 – 49,939] + 0) x 1.5
= 31,363 lb-SO_X/year x 1.5
= 47,045 lb-SO_X/year

Calculating the appropriate quarterly emissions to be offset is as follows:

Quarterly offsets required (lb/qtr) = (47,045 lb-SO_X/year) ÷ (4 quarters/year)
= 11,761.25 lb-SO_X/qtr

As demonstrated in the calculation above, the quarterly amount of SO_X offsets required for this project, when evenly distributed to each quarter, results in fractional pounds of offsets being required each quarter. Since offsets are required to be withdrawn as whole pounds, the quarterly amounts of offsets need to be adjusted to ensure the quarterly values sum to the total annual amount of offsets required.

To adjust the quarterly amount of offsets required, the fractional amount of offsets required in each quarter will be summed and redistributed to each quarter based on the number of days in each quarter. The redistribution is based on the Quarter 1 having the fewest days and the Quarters 3 and 4 having the most days. The redistribution method is summarized in the following table:

Redistribution of Required Quarterly Offsets
(where X is the annual amount of offsets, and X ÷ 4 = Y.z)

Value of z	Quarter 1	Quarter 2	Quarter 3	Quarter 4
0.0	Y	Y	Y	Y
0.25	Y	Y	Y	Y+1
0.5	Y	Y	Y+1	Y+1
0.75	Y	Y+1	Y+1	Y+1

Therefore the appropriate quarterly emissions to be offset are as follows:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	**Total Annual**
11,761	11,761	11,761	11,762	**47,045**

As shown above, District offsets are triggered and required for SO_X under NSR. The applicant has stated that the facility plans to use ERC certificates -1489-5, N-1491-5, and/or N-1573-5 to offset the increases in SO_X emissions associated with this project.

Required District Offset Quantities Summary

The applicant has proposed to use the following SO_X emission reduction certificates:

ERC #	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
N-1489-5 Value	0	0	922	921
N-1491-5 Value	921	922	0	0
N-1573-5 Value	15,511	15,511	13,652	13,652
Total Face Value of ERCs	16,432	16,433	14,574	14,573

As shown above, the facility has sufficient credits to fully offset the quarterly SO_X emissions increases associated with this project.

Proposed Rule 2201 Offset Permit Conditions

The following permit conditions will be included on Authority to Construct (ATC) permits C-535-50-0 and -51-0 for the proposed low-emission flares:

ATC C-535-50-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flare)

- Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender SOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter – 5,881 lb, 2nd quarter – 5,881 lb, 3rd quarter – 5,881 lb, and 4th quarter - 5,881 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19). [District Rule 2201]

ATC C-535-51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flare)

- Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender SOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter – 5,880 lb, 2nd quarter – 5,880 lb, 3rd quarter – 5,880 lb, and 4th quarter - 5,881 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19). [District Rule 2201]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

- ERC Certificate Numbers N-1489-5, N-1491-5, and/or N-1573-5 (or certificates split from these certificates) shall be used to supply the required SOx offsets, unless a revised offsetting proposal is received and approved by the District, upon which this ATC shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this ATC. [District Rule 2201]

3. ERC Withdrawal Calculations

The applicant must identify the ERC Certificate(s) to be used to offset the increase of NO_X and SO_X emissions for the project. As indicated in previous section, the applicant is

proposing to use ERC certificate N-1595-2, N-1598-2, S-5313-2, and/or S-5317-2 to mitigate the increases of NO_X emissions associated with this project and proposing to use ERC certificates N-1489-5, N-1491-5, and/or N-1573-5 to mitigate the increases of SO_X emissions associated with this project. See Appendix H for detailed ERC Withdrawal Calculations.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed,
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
e. Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

As demonstrated in Section VII.C.7 of this evaluation, this project is a Federal Major Modification. Therefore, public noticing is required for this project for Federal Major Modification purposes.

b. PE > 100 lb/day

As discussed in Section I above, the applicant is proposing to install two new low-emission flares. The proposed flares will become the primary methods of disposing of digester gas from the existing tanks.

The flares are emission controls devices used to control VOC, H_2S, CH_4, and odors from the gas that is generated by the existing anaerobic digester tanks at the wastewater treatment facility. The District has determined that an emissions control device is not a source operation that is subject to BACT and that the existing digester tanks served by the flares are the emissions units. Therefore, there are no new emissions units associated with this project and public noticing is not required for this project for a new emissions unit with PE > 100 lb/day.

c. Offset Threshold

Public notification is required if the pre-project Stationary Source Potential to Emit (SSPE1) is increased to a level exceeding the offset threshold levels. The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Thresholds				
Pollutant	**SSPE1 (lb/year)**	**SSPE2 (lb/year)**	**Offset Threshold**	**Public Notice Required?**
NO_X	57,384	42,917	20,000 lb/year	No
SO_X	62,422	93,382	54,750 lb/year	No
PM_{10}	14,737	21,341	29,200 lb/year	No
CO	219,011	94,850	200,000 lb/year	No
VOC	12,784	13,293	20,000 lb/year	No

As demonstrated above, there were no thresholds surpassed with this project; therefore public noticing is not required for surpassing an offset threshold.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	**SSPE2 (lb/year)**	**SSPE1 (lb/year)**	**SSIPE (lb/year)**	**SSIPE Public Notice Threshold**	**Public Notice Required?**
NO_x	42,917	57,384	-14,467	20,000 lb/year	No
SO_x	93,382	62,422	30,960	20,000 lb/year	**Yes**
PM_{10}	21,341	14,737	6,604	20,000 lb/year	No
CO	94,850	219,011	-124,161	20,000 lb/year	No
VOC	13,293	12,784	509	20,000 lb/year	No

As demonstrated above, the SSIPE for SO_X is greater than 20,000 lb/year; therefore, public noticing is required for an SSIPE exceeding 20,000 lb/year.

e. Title V Significant Permit Modification

As shown in the Discussion of Rule 2520 below, this project constitutes a Title V significant modification. Therefore, public noticing for Title V significant modification purposes is required for this project.

2. Public Notice Action

As discussed above, public noticing is required for this project for a Federal Major Modification, an SSIPE exceeding 20,000 lb/year, and a Title V significant modification. Therefore, public notice documents will be submitted to the California Air Resources

Board (CARB) and a public notice will be electronically published on the District's website prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Digester Tanks Controlled by Flares (ATCs C-535-9-19, -50-0, & -51-0)

For the digester tanks controlled by flares, the DELs are stated in the form of emission factors (lb/MMBtu) and the maximum heating value of the gas allowed to be flared each day. The DEL for SO_X is based on the maximum sulfur content of the digester gas flared. The following conditions will be included on the ATC permits:

ATC C-535-9-19

- All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]

- The flare shall be designed with a minimum residence time of 0.6 seconds and shall operate with a minimum chamber temperature of at least 1,400 degrees F. [District Rule 2201]

- Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.06 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.29 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801]

- The maximum sulfur content of the gas combusted in the flare shall not exceed 200 ppmv as H2S on any day. Multiple sulfur content measurements in a day may be averaged to demonstrate compliance with this limit. [District Rule 2201]

- The total heat input of the gas combusted in the flare shall not exceed 871.2 MMBtu/day based on the higher heating value (HHV) of the gas flared. [District Rule 2201]

In addition, the following condition will be included on the ATC permit to enforce the limits on the maximum annual heating value of the gas flared and maximum annual hours of operation allowed.

- This flare shall be operated only for testing and maintenance of the flare, required regulatory purposes, and during emergency situations. Operation of the flare for maintenance, testing, and required regulatory purposes shall not exceed either of the following limits: 200 hours per calendar year and 1,815 MMBtu per calendar year based on the HHV of the gas flared. [District Rules 2201 and 4311]

ATCs C-535-50-0 & -51-0

- All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]

- Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.025 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.06 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801]

- The maximum sulfur content of the gas combusted in the flare shall not exceed 200 ppmv as H2S on any day. Multiple sulfur content measurements in a day may be averaged to demonstrate compliance with this limit. [District Rule 2201]

- The total heat input of the gas combusted in the flare shall not exceed 1,802.4 MMBtu/day based on the higher heating value (HHV) of the gas flared. [District Rule 2201]

In addition, the following conditions will be included on the ATC permits to enforce the limits on the total combined annual emission limit for NO_X.

- The total combined NOx emissions from the flares permitted as Units C-535-50 and -51 shall not exceed 26,056 lb-NOx in any 12 consecutive calendar month period. [District Rule 2201]

Transportable Diesel-Fired IC Engines (ATCs C-535-24-6 & -44-2)

For the transportable diesel-fired IC engines, the DELs for NO_X, PM_{10}, CO, and VOC are stated in the form of emission factors (g/bhp-hr), the maximum horsepower rating of the engines, and the maximum operational time of 24 hours per day. The DEL for SO_X is based on the maximum sulfur content of the diesel fuel used.

The following conditions will be included on the ATC permits.

ATC C-535-24-6 (125 bhp Transportable IC Engine Powering an Air Compressor)

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116]

- Emissions from this IC engine shall not exceed any of the following limits: 4.10 g-NOx/bhp-hr, 0.75 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116]

- Emissions from this IC engine shall not exceed 0.19 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116]

ATC C-535-44-2 (74 bhp Transportable IC Engine Powering a Pump)

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116]

- Emissions from this IC engine shall not exceed any of the following limits: 3.12 g-NOx/bhp-hr, 0.0746 g-CO/bhp-hr, or 0.16 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116]

- Emissions from this IC engine shall not exceed 0.0007 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116]

In addition, the following condition will be included on the ATC permit to enforce the annual emission limits.

- Operation of this engine shall not exceed 2,160 hours per year. [District Rule 2201]

ATC C-535-24-6 and 44-2

The following conditions will also be included on the ATC permit that require the engines to be transportable and prohibit operation of the engines as part of a different stationary source without modifying the permits.

- The only approved location for operation of this engine shall be District Facility C-535 at 5607 W Jensen Avenue, Fresno, CA. [District Rule 2201]

- This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rules 2201 and 4701 and 17 CCR 93116]

E. Compliance Assurance

1. Source Testing

Digester Tanks Controlled by Flares (ATCs C-535-9-19, -50-0, & -51-0)

These flares are subject to District Rule 4311 - *Flares*. Source testing requirements, in accordance with District Rules 2201 and 4311 are summarized below and will be discussed further in the section of this evaluation about District Rule 4311.

The following conditions will be included on the ATC permits:

ATC C-535-9-19

- Source testing to measure NOx and VOC emissions shall be conducted within 60 days of operation of the flare unless a source test has been conducted within the last 12 months of the date of the operation of the flare. [District Rules 2201 and 4311]

ATCs C-535-50-0 & -51-0

- Source testing to measure NOx and VOC emissions from the flare shall be conducted within 60 days of initial startup. [District Rules 2201 and 4311]

- Source testing to measure NOx and VOC emissions from the flare shall be conducted at least once every twelve (12) months, unless the flare has not operated within the last 12-month period in which case source testing will be required within 60 days of recommencing operation of the flare. [District Rules 2201 and 4311]

- Total hydrocarbon content and methane (CH4) content of vent gas shall be determined using ASTM Method D1945, ASTM Method UOP 539, EPA Method 18, or EPA Method 25A or 25B. [District Rule 4311]

ATCs C-535-9-19, -50-0, & -51-0

- Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311]

- The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311]

- NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311]

- VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used in conjunction with EPA Method 18 or ARB Method 422 "Determination of Volatile Organic Compounds in Emission from Stationary Sources" for the measurement and subtraction of exempt compounds (e.g. methane, ethane, and exempt halogenated compounds). [District Rules 2201 and 4311]

- Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311]

- Hydrogen sulfide (H2S) content of vent gas shall be determined using ASTM Method D1945-96, ASTM Method UOP 539-97, ASTM Method D4084-94, ASTM Method

D4468, ASTM Method D4810-88, or ASTM-D5504-20, or other methods approved by the District, ARB, and EPA. [District Rule 4311]

- The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rules 2201 and 4311]

- For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081]

Transportable Diesel-Fired IC Engines (ATCs C-535-24-6 & -44-2)

Pursuant to District Policy APR 1705 - Source Testing Frequency, source testing of these units is not required to demonstrate compliance with Rule 2201.

2. Monitoring

Digester Tanks Controlled by Flares (ATCs C-535-9-19, -50-0, & -51-0)

As stated above, the flares are subject to District Rule 4311. Monitoring required by District Rule 4311 is discussed in the section on District Rule 4311 below. In addition, the conditions listed below will be placed on the ATC permits for compliance with the monitoring requirements of District Rule 2201.

ATC C-535-9-19

- The flare system shall have continuous readout and recording of flare gas flow rate and flare combustion chamber temperature [District Rule 2201]

- The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311]

- Operational, non-resettable, totalizing mass or volumetric fuel flow meter(s) or other District-approved alternative method(s) shall be used to measure the amount of gas flared. [District Rules 1070, 2201, and 4311]

ATCs C-535-50-0 & -51-0

- The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311]

- Operational, non-resettable, totalizing mass or volumetric fuel flow meter(s) or other District-approved alternative method(s) shall be used to measure the amount of gas flared. [District Rules 1070, 2201, and 4311]

Transportable Diesel-Fired IC Engines (ATCs C-535-24-6 & -44-2)

No monitoring is required to demonstrate compliance with District Rule 2201. Monitoring required by District Rule 4702 is discussed in the section on Rule 4702 below.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The conditions listed below will be listed on the ATC permits for compliance with the recordkeeping requirements of Rule 2201:

ATC C-535-9-19

- The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311]

- The permittee shall maintain records of the higher heating value (HHV), in Btu per standard cubic foot (scf), of the gas flared each calendar quarter in which the unit operates. The records shall include the method(s) used to determine the HHV of the fuel and the dates the HHV was determined. [District Rules 1070 and 2201]

- The SOx emission factor in lb-SOx/MMBtu shall be calculated at least once every quarter the flare operates based on the average sulfur content of the gas flared in ppmv as H2S and the HHV value of the gas flared using the following equation: SOx Emission Factor (lb-SOx/MMBtu) = [average sulfur content of gas flared (ppmv as H2S)] x [0.1688 lb-SOx/MMscf]/[HHV of Gas Flared (Btu/scf)]. [District Rule 2201]

- Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur content of the gas flared each day in ppmv as H2S; and the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu. [District Rules 1070 and 2201]

- The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the amount of gas flared during each emergency, the nature of each emergency situation that required flaring, the date and number of hours of all testing and maintenance operations, and the purpose of the operation. [District Rules 1070, 2201, and 4311]

- All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311]

ATC C-535-24-6

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

ATC C-535-44-2

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

ATCs C-535-50-0 & -51-0

- On a monthly basis, the permittee shall calculate and record the NOx emissions in pounds from this unit for the prior calendar month. The NOx emissions from this unit in each month shall be calculated as follows: lb-NOx emitted = [total volume of gas flared, in scf] x 10E-06 x [average HHV of gas flared (Btu/scf)] x [NOx emission factor measured in most recent source test (lb-NOx/MMBtu)]. [District Rules 1070 and 2201]

- On a monthly basis, the permittee shall calculate and record the total combined NOx emissions, in pounds, from the flares permitted as Units C-535-50 and -51 for the previous 12 consecutive calendar month period. [District Rules 1070 and 2201]

- The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311]

- The permittee shall maintain records of the higher heating value (HHV), in Btu per standard cubic foot (scf), of the gas flared each calendar quarter in which the unit operates. The records shall include the method(s) used to determine the HHV of the fuel and the dates the HHV was determined. [District Rules 1070 and 2201]

- The SOx emission factor in lb-SOx/MMBtu shall be calculated at least once every quarter the flare operates based on the average sulfur content of the gas flared in ppmv as H2S and the HHV value of the gas flared using the following equation: SOx Emission Factor (lb-SOx/MMBtu) = [average sulfur content of gas flared (ppmv as H2S)] x [0.1688 lb-SOx/MMscf]/[HHV of Gas Flared (Btu/scf)]. [District Rule 2201]

- Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur content of the gas flared each day in ppmv as H2S; the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu; and calculations to verify compliance with the total combined NOx emission limit for the flares permitted as Units C-535-50 and -51. [District Rules 1070 and 2201]

- All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311]

4. Reporting

Digester Tanks Controlled by Flares (ATCs C-535-9-19, -50-0, & -51-0)

As stated above, the flares are subject to District Rule 4311. Reporting required by District Rule 4311 is discussed in the section on District Rule 4311, below.

Transportable Diesel-Fired IC Engines (ATCs C-535-24-6 & -44-2)

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an AAQA be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a

violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix I of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_X, CO, and SO_X. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_X, CO, or SO_X.

The proposed location is in a non-attainment area for the state's PM_{10} as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM_{10} and $PM_{2.5}$.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a New Major Source or a source undergoing a Federal Major Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this facility is not a New Major Source, but this project does constitute a Federal Major Modification, therefore this requirement is applicable. Fresno/Clovis Regional Wastewater Reclamation Facility's compliance certification is included in Appendix J.

H. Alternate Siting Analysis

The current project occurs at an existing facility. Fresno/Clovis Regional WWTP has proposed to install two 75.1 MMBtu/hr ultra-low emission digester gas flares and to limit the operation of Permit Unit C-535-9 for an existing 36.3 MMBtu/hr flare to emergency use with the exception of flaring up to 1,815 MMBtu/year (equivalent to 50 hours per year at the maximum rated capacity) for maintenance and testing.

Since the project will provide a means to dispose of the digester gas generated by the wastewater digester tanks to be used at the same location, the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. A significant permit modification is defined as a "permit amendment that does not qualify as a minor permit modification or administrative amendment."

Minor permit modifications are permit modifications that are not Title I modifications as defined in Rule 2520, are not modifications as defined in section 111 or 112 of the Federal Clean Air Act, and are not major modifications under the prevention of significant deterioration (PSD) provisions of Title I of the CAA or under EPA PSD regulations. Since this project is a Federal Major Modification (i.e. Title I modification), the proposed project constitutes a Significant Modification to the Title V Permit.

As discussed above, the facility has applied for a Certificate of Conformity (COC); therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility shall not implement the changes requested until EPA has reviewed the project and the final ATC permit is issued.

The following conditions will be included on the ATC permits:

- {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201]

- {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4]

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60.

Digester Tanks Controlled by Flares (ATCs C-535-9-19, -50-0, & -51-0)

No subparts of 40 CFR Part 60 apply to wastewater treatment plant digesters controlled by flares.

Transportable Diesel-Fired IC Engines (ATCs C-535-24-6 & -44-2)

The requirements of 40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines are potentially applicable to stationary diesel-fired IC engines.

The IC engines evaluated in this project are transportable non-road IC engines; therefore, this subpart does not apply to these engines.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63.

Digester Tanks Controlled by Flares (ATCs C-535-9-19, -50-0, & -51-0)

However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to wastewater treatment plant digesters controlled by flares.

Transportable Diesel-Fired IC Engines (ATCs C-535-24-6 & -44-2)

The requirements of 40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines apply to stationary IC engines.

The IC engines evaluated in this project are transportable non-road IC engines; therefore, this subpart does not apply to these engines.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). As the steam generators will only be fueled with natural gas and oilfield waste gas, visible emissions are not expected to exceed Ringelmann 1 or 20% opacity.

The following condition will be included the proposed ATC permits:

- {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected.

The following condition will be included on all of the proposed ATC permits to ensure compliance:

- {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification of an existing source shall not result in an increase in cancer risk greater than the District's significance level (20 in a million) and shall not result in acute and/or chronic risk indices greater than 1.

According to the Technical Services Memo for this project, the total facility prioritization score including this project was greater than one. Therefore, a Health Risk Assessment (HRA) was required to determine the short-term acute and long-term chronic exposure from this project. Because there is no increase in emissions from Permit Unit C-535-9 for the existing enclosed flare controlling the digester tanks, only the health risk from the proposed ATCs C-535-50-0 and -51-0 for the ultra-low emission flares that will control the digester tanks was evaluated.

The results of the Risk Management Review (RMR) are summarized in the table below.

RMR Summary						
Units	**Prioritization Score**	**Acute Hazard Index**	**Chronic Hazard Index**	**Maximum Individual Cancer Risk**	**T-BACT Required?**	**Special Permit Requirements?**
ATC C-535-50-0 (75.1 MMBtu/hr Digester Flare)	3.71	0.00	0.00	3.69E-07	No	Yes
ATC C-535-50-0 (75.1 MMBtu/hr Digester Flare)	3.71	0.00	0.00	3.73E-07	No	Yes
Project Totals	7.43	0.00	0.00	7.42E-07		
Facility Totals	> 1	0.02	0.01	5.30E-06		

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is not required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements; therefore, compliance with the District's Risk Management Policy is expected.

In accordance with District policy APR 1905, no further analysis is required, and compliance with District Rule 4102 requirements is expected.

See Appendix K: Risk Management Review Summary

The following conditions will be included on the ATC permits for the existing IC engines and digester gas tanks served by the proposed flares to ensure that the operation of the engines and flares is consistent with the RMRs performed for this project and previous projects for permitting the engines:

ATC C-535-24-6 (Transportable Diesel-Fired IC Engine Powering an Air Compressor)

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

- Emissions from this IC engine shall not exceed 0.19 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116]

ATC C-535-44-2 (Transportable Diesel-Fired IC Engine Powering a Pump)

- {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

- Emissions from this IC engine shall not exceed 0.0007 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116]

ATCs C-535-50-0 & -51-0 (New 75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

- The exhaust from the flare shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot.
District Rule 1020 – Definitions defines Source Operation as follows:

Source Operation: the last operation preceding the emission of any air contaminant, which:
1) Results in the separation of the air contaminant from the process materials or in the conversion of the process materials into air contaminants, as in the case of combustion of fuels; and
2) Is not an air pollution abatement operation; and
3) Is any operation, article, machine, equipment or other contrivance.

ATCs C-535-9-19, -50-0, & -51-0 (Digester Tanks Controlled by Flares)

The digester flares are air pollution abatement operations; therefore, Rule 4201 does not apply.

ATC C-535-24-6 (Transportable Diesel-Fired IC Engine Powering an Air Compressor)

The maximum PM concentration emitted from the existing transportable diesel-fired IC engine powering an air compressor is calculated below.

$$0.19\ \frac{\text{g PM}_{10}}{\text{bhp}-\text{hr}} \times \frac{1\ \text{bhp}-\text{hr}}{2{,}545\ \text{Btu}} \times \frac{10^6\ \text{Btu}}{9{,}051\ \text{dscf}} \times \frac{0.35\ \text{Btu}_{\text{out}}}{1\ \text{Btu}_{\text{in}}} \times \frac{15.43\ \text{grain}}{\text{g}} = 0.045\ \frac{\text{grain}}{\text{dscf}}$$

Because 0.045 grain/dscf does not exceed 0.1 grain/dscf, compliance with this rule is expected.

ATC C-535-44-2 (Transportable Diesel-Fired IC Engine Powering a Pump)

The maximum PM concentration emitted from the existing transportable diesel-fired IC engine powering a pump is calculated below.

$$0.0007\ \frac{\text{g PM}_{10}}{\text{bhp}-\text{hr}} \times \frac{1\ \text{bhp}-\text{hr}}{2{,}545\ \text{Btu}} \times \frac{10^6\ \text{Btu}}{9{,}051\ \text{dscf}} \times \frac{0.35\ \text{Btu}_{\text{out}}}{1\ \text{Btu}_{\text{in}}} \times \frac{15.43\ \text{grain}}{\text{g}} = 0.0002\ \frac{\text{grain}}{\text{dscf}}$$

Because 0.0002 grain/dscf does not exceed 0.1 grain/dscf, compliance with this rule is expected. The following condition will be included on the permits for the existing transportable IC engines:

- Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]

Rule 4301 Fuel Burning Equipment

The purpose of this rule is to limit the emission of air contaminants from fuel burning equipment. This rule limits the concentration of combustion contaminants and specifies maximum emission rates for sulfur dioxide, nitrogen oxide, and combustion contaminant emissions.
The provisions of District Rule 4301 apply to any fuel burning equipment except air pollution control equipment which is exempted according to Section 4.0.

Section 3.1 provides the following definition of fuel burning equipment:

> *Fuel Burning Equipment: any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer.*

ATCs C-535-9-19, -50-0, & -51-0 (Digester Tanks Controlled by Flares)

The digester gas flares are control devices used to control emissions from the digester tanks. The primary purpose of the flares is not the production of heat or power by indirect heat transfer. Therefore, they are not fuel burning equipment and Rule 4301 does not apply to the flares.

ATCs C-535-24-6 & -44-2 (Transportable Diesel-Fired IC Engines)

IC engines produce power mechanically, not by indirect heat transfer. Therefore, the IC engines do not meet the definition of fuel burning equipment and Rule 4301 does not apply to IC engines.

District Rule 4311 Flares

The purpose of this rule to limit the emissions of volatile organic compounds (VOC), oxides of nitrogen (NO_X), and sulfur oxides (SO_X) from the operation of flares.

The existing flare (ATC C-535-9-19) and proposed low-emission flares (ATCs C-535-50-0 and -51-0) are subject to Rule 4311. The requirements of Rule 4311 that apply to the flares are discussed below.

Section 5.0 - Requirements

Pursuant to Section 5.1, flares that are permitted to operate only during an emergency are not subject to the requirements of Sections 5.6 and 5.7.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing flare will be designated as an emergency flare; however, it will be permitted limited non-emergency operation for maintenance and testing. Therefore, this section does not apply to the flare.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed ultra-low emission digester gas flares will not be permitted to operate for non-emergency purposes. Therefore, this section does not apply to the flare.

Pursuant to Section 5.2, flares that are operated 200 hours or less per calendar year as specified in the Permit to Operate, or with an annual throughput limit equivalent to 200 hours per year at flare rating (MMBtu/hr) as specified in the Permit to Operate, are exempt from the requirements of Sections 5.9 and 5.10.

To qualify for the exemption in Section 5.2 one of the following two conditions must be satisfied:

5.2.1 For the 200 hours per year validation, the operator shall use a calibrated non-resettable totalizing time meter or equivalent method approved in writing by the APCO; or

5.2.2 For the annual throughput limit equivalent to 200 hours per year validation, the operator shall use a calibrated fuel meter or equivalent method approved in writing by the APCO.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing flare will be limited by permit conditions to operating no more than 200 hours per year or an equivalent annual heat input throughput limit. Therefore, the flare is exempt from Sections 5.9 and 5.10. The following condition will be included on the ATC permit for the flare:

- This flare shall be operated only for testing and maintenance of the flare, required regulatory purposes, and during emergency situations. Operation of the flare for maintenance, testing,

and required regulatory purposes shall not exceed either of the following limits: 200 hours per calendar year and 1,815 MMBtu per calendar year based on the HHV of the gas flared. [District Rules 2201 and 4311]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed ultra-low emission digester gas flares will not be permitted to operate for non-emergency purposes. Therefore, this section does not apply to the flare.

The proposed ultra-low emission digester gas flares will not be limited by permit conditions to operating no more than 200 hours per year or an equivalent annual heat input throughput limit. Therefore, the this section does not apply

Section 5.3 requires that a flame always be present in the flare whenever combustible gases are present. The following condition will be included on the ATC permits for the flares:

- A flame shall be present at all times in the flare whenever combustible gases are vented through the flare. [District Rule 4311]

Section 5.4 requires that the flare be equipped with either an automatic ignition system or operated with a continuous pilot.

The following condition will be included on the ATC permit for the flares:

- The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 4311]

Section 5.5 requires that, except for flares equipped with a flow-sensing ignition system, flares must be equipped with a device to monitor and confirm operation of the pilot flame. The following condition will be included on the ATC permits:

- Unless the flare is equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. The flame detection device shall be kept operational at all times except during flare maintenance when the flare is isolated from gas flow. All pilot monitor downtime shall be reported annually pursuant to Rule 4311, Section 6.2.3.6. [District Rule 4311]

Section 5.6 requires that flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot must use purge gas for purging. The following condition will be included on the ATC permits:

- Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 4311]

Section 5.7 requires open flares (air-assisted, steam-assisted, or non-assisted) in which the flare gas pressure is less than 5 psig to be operated in such a manner that meets the provisions of 40 CFR 60.18.

The existing flare and proposed flares are not open flares; therefore, the requirements of Section 5.7 do not apply to the existing flare or proposed flares.

Section 5.8 requires that ground-level enclosed flares must comply with the VOC and NO_X emission limits in Table 1 of Rule 4702 listed below, except as specified in Section 5.9 and 5.10.

Rule 4311, Table 1 – Ground Level Enclosed Flare Emissions Limits		
Type of Flare and Heat Release Rate in MMBtu/hr	**VOC (lb/MMBtu)**	**NOx (lb/MMBtu)**
Without Steam-assist		
<10 MMBtu	0.0051	0.0952
10-100 MMBtu	0.0027	0.1330
>100 MMBtu	0.0013	0.5240
With Steam-assist		
All	0.14 as TOG	0.068

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing 36.3 MMBtu/hr flare is a ground-level enclosed flare and is therefore subject to the emission limits of Section 5.8, Table 1.

The following condition will be included on the ATC permit for the flare:

- Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.06 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.29 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201 and 4311]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed ultra-low emission digester gas flares are subject to the emission limits in Section 5.9, Table 3. Therefore, this section does not apply to the flares.

Section 5.9 requires that, except for flares that meet the emission limits specified in Table 3, operators of flares located at operations specified in Table 2 shall complete one of the following options:

5.9.1 Submit an ATC application to limit flaring annual throughput through an enforceable Permit to Operate limit, to levels not to exceed those specified in Table 2 for two consecutive calendar years, per the compliance schedule in Section 7.2; or

5.9.2 Replace or modify the existing flare to meet Table 3 emission limits per the compliance schedule in Section 7.3.

Rule 4311, Table 2 – Flare Annual Throughput Thresholds (MMBtu/calendar year)	
Flare Category	**MMBtu/yr**
A. Flares used at Oil and Gas Operations, and Chemical Operations	25,000
B. Flares used at Landfill Operations	90,000
C. Flares used at Digester Operations	100,000
D. Flares used at Organic Liquid Loading Operations	25,000

Rule 4311, Table 3 – VOC and NOx Emissions Requirements for Flares		
Flare Category	**VOC (lb/MMBtu)**	**NOx (lb/MMBtu)**
A. Flares at Oil and Gas Operations or Chemical Operations	0.008	0.018
B. Flares at Landfill Operations	0.038	0.025
C. Flares at Digester Operations (Located at a Major Source)	0.038	0.025
D. Flares at Digester Operations (Not located at a Major Source)	N/A	0.060
E. Flares at Organic Liquid Loading Operations	**Pounds/1,000 gallons loaded**	
	N/A	0.034

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

As discussed above, the existing 36.3 MMBtu/hr flare is exempt from the requirements of Section 5.9.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed ultra-low emission digester gas flares are subject to the emission limits in Section 5.9, Table 3. The following condition will be included on the ATC permits for the flares:

- Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.025 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.06 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201 and 4311]

Section 5.10 requires that for operators of flares that opt to comply with Section 5.9.1, any operator with a flare that exceeds the annual throughput thresholds specified in Table 2 for two consecutive calendar years shall notify the APCO in writing of the exceedance within 30 days following the end of the second calendar year and shall replace or modify the flare to meet Table 3 emission limits per the compliance schedule in Section 7.4.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

As discussed above, the existing 36.3 MMBtu/hr flare is exempt from the requirements of Section 5.10.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The applicant has proposed to install ultra-low emission digester gas flares that comply with the emission limits in Section 5.9, Table 3. Therefore, this section does not apply to the flares.

Section 5.11 - Flare Minimization Plan prohibits flaring at petroleum refineries and major sources, except landfill operations, unless it is consistent with an approved flare minimization plan (FMP), pursuant to Section 6.5 or is caused by an emergency and is necessary to prevent an accident, hazard, or release of vent gas directly to the atmosphere. The existing flare and proposed flares will be located at a major source. Therefore, a flare minimization plan is required. The following condition will be included on the ATC permits for the flares:

- Flaring is prohibited unless it is consistent with an approved flare minimization plan (FMP), pursuant to District Rule 4311, Section 6.5, and all commitments listed in that plan have been met. This standard does not apply if the APCO determines that the flaring is caused by an emergency as defined by District Rule 4311, Section 3.7 and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere. [District Rule 4311]

Section 5.12 - Petroleum Refinery SO_2 Performance Targets establishes SO_2 emission reduction standards for petroleum refinery flares. The existing flare will not be located at a petroleum refinery. Therefore, this section does not apply.

Section 5.13 requires the operator of a flare at a petroleum refinery or major source, except landfill operations, subject to flare minimization requirements pursuant to Section 5.11 to monitor the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate and to maintain records pursuant to Section 6.1.7. Flares that the operator can verify, based on permit conditions, are not capable of producing reportable flare events pursuant to Section 6.2.2 shall not be required to monitor vent gas flow to the flare. Pursuant to Section 3.40, a Reportable Flaring Event is any flaring where more than 500,000 standard cubic feet (scf) of vent gas is flared per calendar day, or where sulfur oxide emissions are greater than 500 pounds per calendar day.

The existing flare and proposed flares are located at a major source, are subject to flare minimization requirements pursuant to Section 5.11, and are each capable of flaring more than 500,000 (scf) of vent gas is flared per calendar day. Therefore, the flares are subject to the requirements of Section 5.13. The following condition will be included on the ATC permits:

- The operator shall monitor and record the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. [District Rule 4311]

Section 5.14 requires that on and after January 1, 2024, the operator of a flare subject to the annual throughput thresholds in Table 2 shall monitor the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. The operator shall determine the heating value (Btu per cubic foot) of the vent gas annually in accordance with Section 6.3.6. The operator shall maintain records pursuant to Section 6.1.7. Flares that the operator can verify, based on permit conditions, are not capable of exceeding the annual throughput thresholds in Table 2 shall not be required to monitor vent gas flow to the flare.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

Table 2 is included in Section 5.9. As discussed above, the existing 36.3 MMBtu/hr flare is exempt from the requirements of Section 5.9. Therefore, this section does not apply

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The applicant has proposed to install ultra-low emission digester gas flares that comply with the emission limits in Section 5.9. Therefore, the flares are not subject to the throughput thresholds in Table 2 and this section does not apply to the flares.

Section 5.15 requires the operator of a petroleum refinery or a flare at a major source, except landfill operations, with a flaring capacity equal to or greater than 50 MMBtu/hr to monitor the flare pursuant to Sections 6.6, 6.7, 6.8, 6.9, and 6.10 and requires that effective on and after January 1, 2024, the operator of any flare with a flaring capacity equal to or greater than 50 MMBtu per hour shall monitor the flare pursuant to Sections 6.6, 6.7, 6.8, 6.9, and 6.10.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing 36.3 MMBtu/hr flare is rated less than 50 MMBtu/hr. Therefore, this section does not apply.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed 75.1 MMBtu/hr ultra-low emission digester gas flares have a flaring capacity equal to or greater than 50 MMBtu/hr. Therefore, the flares are subject to the throughput thresholds in Table 2 and this section does not apply to the applicable monitoring requirements of Sections 6.6, 6.7, 6.8, 6.9, and 6.10.

Section 6.0 - Administrative Requirements

Section 6.1 – Recordkeeping requires that the following records shall be maintained, retained on-site for a minimum of five years, and made available to the APCO, ARB, and EPA upon request:

- 6.1.1 Copy of the compliance determination conducted pursuant to Section 6.4.1
- 6.1.2 Copy of the source testing result conducted pursuant to Section 6.4.2
- 6.1.3 For flares used during an emergency, record of the duration of flare operation, amount of gas burned, and the nature of the emergency situation
- 6.1.4 Operators claiming an exemption pursuant to Section 5.2 shall record annual hours of operation or annual throughput necessary to demonstrate an exemption under that section
- 6.1.5 A copy of the approved flare minimization plan pursuant to Section 6.5
- 6.1.6 A copy of annual reports submitted to the APCO pursuant to Section 6.2
- 6.1.7 Monitoring data collected pursuant to Sections 5.13, 5.14, 6.6, 6.7, 6.8, 6.9, and 6.10

The following conditions will be included on the ATC permits for the flares:

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

- The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311]

- The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the amount of gas flared during each emergency, the nature of each emergency situation that required flaring, the date and number of hours of all testing and maintenance operations, and the purpose of the operation. [District Rules 1070, 2201, and 4311]

- All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

- The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311]

- All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311]

Section 6.2.1 – Unplanned Flaring Event requires the operator of a flare subject to flare minimization plans pursuant to Section 5.11 to notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The following condition will be included on the permits:

- The operator of a flare subject to flare minimization plans (FMPs) pursuant to District Rule 4311, Section 5.11 shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311]

Section 6.2.2 – Reportable Flaring Event requires that effective on and after July 1, 2012, and annually thereafter, except for flares meeting the emission limits in Table 3, the operator of a flare subject to flare minimization plans pursuant to Section 5.11 shall submit an annual report to the APCO that summarizes all Reportable Flaring Events as defined Section 3.0 that occurred during the previous 12 month period. Beginning January 1, 2024, the report shall be submitted within 30 days following the end of the previous calendar year.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The following condition will be included on the ATC permit for the flare:

- The operator of a flare subject to flare minimization plans pursuant to District Rule 4311, Section 5.11 shall submit an annual report to the APCO that summarizes all Reportable Flaring Events as defined in Section 3.0 that occurred during the previous 12 month period. The report shall be submitted within 30 days following the end of the previous calendar year. The report shall include, but is not limited to all of the following: 1) The results of an investigation to determine the primary cause and contributing factors of the flaring event; 2) Any prevention measures considered or implemented to prevent recurrence together with a justification for rejecting any measures that were considered but not implemented; 3) If appropriate, an explanation of why the flaring was an emergency and necessary to prevent accident, hazard or release of vent gas to the atmosphere, or where, due to a regulatory mandate to vent a flare, it cannot be recovered, treated and used as a fuel gas at the facility; and 4) The date, time, and duration of the flaring event. [District Rule 4311]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The applicant has proposed to install ultra-low emission digester gas flares that comply with the emission limits in Section 5.9, Table 3. Therefore, this section does not apply to the flares.

Section 6.2.3 requires that effective until January 1, 2024, the operator of a flare at a petroleum refinery or major source, except landfill operations, subject to flare monitoring requirements pursuant to Sections 5.13, 5.14, 6.6, 6.7, 6.8, 6.9, and 6.10, as appropriate, shall submit an annual report to the APCO within 30 days following the end of each 12 month period. Effective on and after January 1, 2024, and annually thereafter, the operator of any flare subject to flare monitoring requirements pursuant to Sections 5.13, 5.14, 6.6, 6.7, 6.8, 6.9, and 6.10, as appropriate, shall submit an annual report in an electronic format approved by the District to the APCO within 30 days following the end of each calendar year for all required monitoring under those sections.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The following condition will be included on the ATC permit for the flare:

- The operator shall submit an annual report, in an electronic report approved by the District, to the APCO within 30 days following the end of each 12-month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet (scf) for each day for the previous calendar year; 2) If the flow monitor used pursuant to Rule 4311, Section 5.13 measures molecular weight, the average molecular weight for each hour of each month; 3) For each day and for each month provide calculated SOx emissions (as SO2); and 4) A flow verification report for each flare subject to Rule 4311. The flow verification report shall include flow verification testing pursuant to Rule 4311, Section 6.3.5. [District Rule 4311]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The following condition will be included on the ATC permits for the flares:

- The operator shall submit an annual report, in an electronic report approved by the District, to the APCO within 30 days following the end of each 12-month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet (scf) for each day for the previous calendar year; 2) Hydrogen sulfide (H2S) content, methane (CH4) content, and hydrocarbon content of vent gas composition, where applicable; 3) The total reduced sulfur content by volume or hydrogen sulfide content by volume of vent gas flared for each hour of the month; 4) If the flow monitor used pursuant to Rule 4311, Section 5.13 measures molecular weight, the average molecular weight for each hour of each month; 5) For any pilot and purge gas used, the type of gas used, the volumetric flow for each day and for each month, and the means used to determine flow, as applicable; 6) Flare monitoring system downtime periods, including dates and times; 7) For each day and for each month provide calculated SOx emissions (as SO2); and 8) A flow verification report for each flare subject to Rule 4311. The flow verification report shall include flow verification testing pursuant to Rule 4311, Section 6.3.5. [District Rule 4311]

Section 6.3 specifies that the test methods listed in the following tables must be used to demonstrate compliance with Rule 4311, unless alternate equivalent test methods have been approved by the APCO and EPA.

Rule 4311 Test Methods for NO_X, VOC, O_2, and Halogenated Compounds	
Compound or Parameter Measured	**Approved Test Methods**
VOC, measured and calculated as carbon	EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used
Halogenated exempt compounds	EPA Method 18 or ARB Method 422 “Determination of Volatile organic Compounds in Emission from Stationary Sources”
NO_X emissions in pounds per million BTU	EPA Method 19
NO_X and O_2 concentrations (ppmv)	EPA Method 3A, EPA Method 7E, or ARB 100

Rule 4311 Testing and Sampling Methods for Monitoring Flare Vent Gas Composition	
Compound or Parameter Measured	**Approved Test Methods**
Total hydrocarbon content and methane content of vent gas	ASTM Method D 1945-96, ASTM Method UOP 539-97, EPA Method 18, or EPA Method 25A or 25B
Hydrogen sulfide content of vent gas	ASTM Method D 1945-96, ASTM Method UOP 539-97, ASTM Method D 4084-94, or ASTM Method D 4810-88
Minimum sampling frequency for continuous analyzer employing gas chromatography	At least one sample every 30 minutes

Rule 4311 Testing and Sampling Methods for Monitoring Flare Vent Gas Composition	
Compound or Parameter Measured	**Approved Test Methods**
Total reduced sulfur content of vent gas monitored using continuous analyzers not employing gas chromatography	EPA Method D4468-85

Rule 4311 Flare Vent Gas Flow Verification Test Methods	
Parameter Measured	**Approved Test Methods**
Flare vent gas flow rate	EPA Methods 1 and 2; verification method recommended by the manufacturer of the flow monitoring equipment; tracer gas dilution or velocity; or other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter

Rule 4311 Flare Gas Heating Value Test Methods	
Parameter Measured	**Approved Test Methods**
Heating value of flare gas	ASTM D 1826-88 or ASTM D 1945-81 in conjunction with ASTM D 3588-89; alternately, an operator may elect to use a default heating value from Rule 4311, Table 4

Rule 4311, Table 4 – Default Flare Gas Heating Values	
Flare Category	**Heating Value (Btu/scf)**
Flares at Oil and Gas Operations or Chemical Operations	1,000
Flares at Landfill Operations	500
Flares at Digester Operations	600

The following conditions will be included on the ATC permits to require that any source testing of the flares will use the approved test methods from Section 6.3 of District Rule 4311.

ATCs C-535-9-19, -50-0, & -51-0

- NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311]

- VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used in conjunction with EPA Method 18 or ARB Method 422 "Determination of Volatile Organic Compounds in Emission from Stationary Sources" for the measurement and subtraction of exempt compounds (e.g. methane, ethane, and exempt halogenated compounds). [District Rules 2201 and 4311]

- Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311]

- Hydrogen sulfide (H2S) content of vent gas shall be determined using ASTM Method D1945-96, ASTM Method UOP 539-97, ASTM Method D4084-94, ASTM Method D4468, ASTM Method D4810-88, or ASTM-D5504-20, or other methods approved by the District, ARB, and EPA. [District Rule 4311]

- If vent gas composition is monitored with a continuous analyzer employing gas chromatography the minimum sampling frequency shall be one sample every 30 minutes. [District Rule 4311]

- If vent gas composition is monitored using continuous analyzers not employing gas chromatography, the total reduced sulfur content of vent gas shall be determined by using EPA Method D4468-85. [District Rule 4311]

- For purposes of the flow verification report required by Rule 4311, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: 1) EPA Methods 1 and 2; 2) A verification method recommended by the manufacturer of the flow monitoring equipment installed; 3) Tracer gas dilution or velocity; or 4) Other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311]

- The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rule4311]

<u>ATCs C-535-50-0 & -51-0</u>

- Total hydrocarbon content and methane (CH4) content of vent gas shall be determined using ASTM Method D 1945, ASTM Method UOP 539, EPA Method 18, or EPA Method 25A or 25B. [District Rule 4311]

Section 6.4.1 requires the operator of flares that are subject to Section 5.7 to make available to the APCO upon request the compliance determination records that demonstrate compliance with the provisions of 40 CFR 60.18, (c)(3) through (c)(5).

As discussed above, the enclosed flares addressed in this project are not open flares; therefore, they are not subject to Section 5.7 and this section does not apply.

Section 6.4.2 requires the operator of flares subject to emission limits in Table 1 and Table 3, Categories A, B, and C shall conduct source testing at least once every 12 months to demonstrate compliance with Section 5.8. The operator shall submit a copy of the testing protocol to the APCO at least 30 days in advance of the scheduled testing. The operator shall submit the source test results not later than 60 days after completion of the source testing

The following conditions will be included on the ATC permits for the flares:

ATCs C-535-9-19

- Source testing to measure NOx and VOC emissions shall be conducted within 60 days of operation of the flare unless a source test has been conducted within the last 12 months of the date of the operation of the flare. [District Rules 2201 and 4311]

ATCs C-535-50-0 & -51-0

- Source testing to measure NOx and VOC emissions from the flare shall be conducted within 60 days of initial startup. [District Rules 2201 and 4311]

- Source testing to measure NOx and VOC emissions from the flare shall be conducted at least once every twelve (12) months, unless the flare has not operated within the last 12-month period in which case source testing will be required within 60 days of recommencing operation of the flare. [District Rules 2201 and 4311]

ATCs C-535-9-19, -50-0, & -51-0

- Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311]

- The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311]

Section 6.5 - Flare Minimization Plan requires the operator of a petroleum refinery flare or any flare at a major source, except landfill operations, that has a flaring capacity of greater than or equal to 5.0 MMBtu per hour shall submit a flare minimization plan (FMP) to the APCO for approval and specifies requirements for operators of flares that are subject to the flare minimization plan provisions of District Rule 4311.

The following conditions will be included on the ATC permits for the flares:

- Every five years after the initial FMP submittal, the operator shall submit an updated FMP for each flare to the APCO for approval. The current FMP shall remain in effect until the updated FMP is approved by the APCO. If the operator fails to submit an updated FMP as required by Rule 4311 the existing FMP shall no longer be considered an approved plan. [District Rule 4311]

- An updated FMP shall be submitted by the operator pursuant to Rule 4311, Section 6.5 addressing new or modified equipment, prior to installing the equipment. Updated FMP submittals are only required if: 1) The equipment change would require an authority to construct (ATC) and would impact the emissions from the flare, and 2) The modification is

not solely the removal or decommissioning of equipment that is listed in the FMP, and has no associated increase in flare emissions. [District Rule 4311]

Section 6.6 - Vent Gas Composition Monitoring requires that, effective on and after July 1, 2011, the operator of a petroleum refinery flare or any flare at a major source, except landfill operations, that has a flaring capacity equal to or greater than 50 MMBtu per hour shall monitor vent gas composition using one of the five methods pursuant to Section 6.6.1 through Section 6.6.5, as appropriate, and requires that, effective on and after January 1, 2024, the operator of any flare with a flaring capacity equal to or greater than 50 MMBtu per hour, except landfill operations, shall monitor vent gas composition using one of the five methods pursuant to Section 6.6.1 through Section 6.6.5, as appropriate.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing 36.3 MMBtu/hr flare is rated less than 50 MMBtu/hr. Therefore, this section does not apply.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed 75.1 MMBtu/hr ultra-low emission digester gas flares have a flaring capacity equal to or greater than 50 MMBtu/hr. Therefore, the flares are subject to the vent gas composition monitoring requirements of Section 6.6. The following conditions will be included on the ATC permits.

- The operator shall monitor vent gas composition using one of the five methods included in Rule 4311, Section 6.6.1 through Section 6.6.5, as appropriate. [District Rule 4311]

- The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311]

Section 6.7 - Pilot and Purge Gas Monitoring requires that, effective on and after July 1, 2011, the operator of a petroleum refinery flare or any flare at a major source, except landfill operations, that has a flaring capacity equal to or greater than 50 MMBtu per hour shall monitor the volumetric flows of purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored, and requires that, effective on and after January 1, 2024, the operator of any flare that has a flaring capacity equal to or greater than 50 MMBtu per hour shall monitor the volumetric flows of purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric

flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing 36.3 MMBtu/hr flare is rated less than 50 MMBtu/hr. Therefore, this section does not apply.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed 75.1 MMBtu/hr ultra-low emission digester gas flares have a flaring capacity equal to or greater than 50 MMBtu/hr. Therefore, the flares are subject to the pilot and purge gas monitoring requirements of Section 6.7. The following condition will be included on the ATC permits.

- The operator shall monitor the volumetric flows of purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored. [District Rule 4311]

Section 6.8 - Water Seal Monitoring requires that, effective on and after July 1, 2011, the operator of a petroleum refinery flare or any flare at a major source, except landfill operations, that has a flaring capacity equal to or greater than 50 MMBtu per hour with a water seal shall monitor and record the water level and pressure of the water seal that services each flare daily or as specified on the Permit to Operate, and requires that, effective on and after January 1, 2024, the operator of any flare that has a flaring capacity equal to or greater than 50 MMBtu per hour with a water seal shall monitor and record the water level and pressure of the water seal that services each flare daily or as specified on the Permit to Operate.

The existing flare and the proposed ultra-low-emission flares included in this project do not have water seals. Therefore, this section does not apply.

Section 6.9 - General Monitoring specifies additional monitoring for petroleum refinery flares or any flares at major sources, except landfill operations, that have a flaring capacity equal to or greater than 50 MMBtu per hour, effective on and after July 1, 2011, and additional monitoring for any flares at major sources, except landfill operations, that have a flaring capacity equal to or greater than 50 MMBtu per hour, effective on and after January 1, 2024.

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

The existing 36.3 MMBtu/hr flare is rated less than 50 MMBtu/hr. Therefore, this section does not apply.

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

The proposed 75.1 MMBtu/hr ultra-low emission digester gas flares have a flaring capacity equal to or greater than 50 MMBtu/hr. Therefore, the flares are subject to the monitoring requirements of Section 6.9. The following condition will be included on the ATC permits.

- The operator shall comply with the following requirements as applicable: 1) Periods of flare monitoring system inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Periods of inoperation of monitoring equipment shall not exceed 14 days per any 18-consecutive-month period. Periods of flare monitoring system inoperation do not include the periods when the system feeding the flare is not operating 2: During periods of inoperation of continuous analyzers or auto-samplers installed pursuant to Rule 4311, operators responsible for monitoring shall take one sample within 30 minutes of the commencement of flaring, from the flare header or from an alternate location at which samples are representative of vent gas composition and have samples analyzed pursuant to Rule 4311. During periods of inoperation of required flow monitors, flow shall be calculated using good engineering practices; 3) Maintain and calibrate all required monitors and recording devices in accordance with the applicable manufacturer's specifications. In order to claim that a manufacturer's specification is not applicable, the person responsible for emissions must have, and follow, a written maintenance policy that was developed for the device in question. The written policy must explain and justify the difference between the written procedure and the manufacturer's procedure; and 4) All in-line continuous analyzer and flow monitoring data must be continuously recorded by an electronic data acquisition system capable of one-minute averages. Flow monitoring data shall be recorded as one-minute averages. [District Rule 4311]

Section 6.10 - Video Monitoring requires the operator of a petroleum refinery flare to install and maintain equipment that records a real-time digital image of the flare and flame at a frame rate of no less than one frame per minute. The recorded image of the flare shall be of sufficient size, contrast, and resolution to be readily apparent in the overall image or frame. The image shall include an embedded date and time stamp. The equipment shall archive the images for each 24-hour period. In lieu of video monitoring the operator may use an alternative monitoring method that provides data to verify date, time, vent gas flow, and duration of flaring events.

The existing flare and the proposed low-emission flares included in this project are not petroleum refinery flares. Therefore, this section does not apply.

Section 7.0 - Compliance Schedule specifies the timeframes and dates for compliance with Rule 4311 after loss of exemption, submittal of ATC applications to limit flaring throughput, submittal of ATC applications to modify or replace flares to comply with the emission limits of Rule 4311, and demonstration of compliance with emission limits.

The requirements of this rule will be incorporated into the conditions of the ATC permits for the flares. Therefore, compliance with the requirements of District Rule 4311 is expected.

Rule 4701 Internal Combustion Engines – Phase I

The purpose of this rule is to limit the emissions of nitrogen oxides (NO_X), carbon monoxide (CO), and volatile organic compounds (VOC) from internal combustion (IC) engines.

Pursuant to Section 4.2.7, the provisions of this rule do not apply to transportable IC engines. Therefore, Rule 4701 does not apply to the engines evaluated in this project. The following condition will be included on the permits for the engines:

- This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rules 2201 and 4701 and 17 CCR 93116]

Rule 4702 Internal Combustion Engines

The purpose of this rule is to limit the emissions of nitrogen oxides (NO_X), carbon monoxide (CO), volatile organic compounds (VOC), and sulfur oxides (SO_X) from IC engines.

This rule applies to any internal combustion engine with a rated brake horsepower of 25 brake horsepower (bhp) or greater.

Rule 4702 applies to the existing transportable diesel-fired IC engine (Permit Units C-535-24 and -44) that are being modified in this project to remove the total combined NO_X limit shared with the existing flare (Permit Unit C-535-9).

Section 5.0 - Requirements:

Section 5.2.4 requires an operator to repower, replace, or control the engine's emissions to comply with the applicable limits/standards in Table 6 on an engine-by-engine basis by the compliance dates specified in Table 6, shown below:

Rule 4702, Table 6: Emission Standards and Compliance Schedule for Compression-Ignited Internal Combustion Engine

Engine Type	Emission Limit/ Standard	Compliance Date
2. Certified Compression-Ignited Engine		
a. EPA Certified Tier 1 or Tier 2 Engine	EPA Tier 4	1/1/2015 or 12 years after installation date, but not later than 6/1/18
b. EPA Certified Tier 3 or Tier 4 Engine	Meet Certified Compression-Ignited Engine Standard in effect at time of installation	At time of installation

The existing transportable IC engine powering an air compressor (Permit Unit C-535-24) is a Tier 3 certified IC engine and existing transportable IC engine powering a pump (Permit Unit C-535-44) is a Tier 4F certified IC engine, which is the latest available tier certification. Each of the engines met the latest available tier at the time that they were installed. Therefore, the engines satisfy the requirements of Table 6, Row 2b above and compliance with the current emission requirements of Rule 4702 is expected.

Section 5.2.4.2 also requires the operator of a certified compression-ignited engine rated >50 bhp to determine the annual hours of operation on a calendar year basis.

The following condition will be listed on the ATC permits for the IC engines:

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

Section 5.2.4.5 requires that compression-ignited engines shall be operated in such a manner to comply with the SO_X control requirements of Section 5.7 and the SO_X monitoring requirements of Section 5.11.

The IC engines are required to use only California Reformulated Diesel (CARB diesel) fuel; therefore, these requirements will be satisfied.

Section 5.7 - Sulfur Oxides (SO_X) Emission Control Requirements

Section 5.7 requires that on and after the compliance schedule specified in Section 7.5, operators of non-agricultural spark-ignited engines and non-agricultural compression-ignited engines shall comply shall comply with Sections 5.7.1, 5.7.2, 5.7.3, 5.7.4, 5.7.5, or 5.7.6:

5.7.1 Operate the engine exclusively on PUC-quality natural gas, commercial propane, butane, or liquefied petroleum gas, or a combination of such gases; or
5.7.2 Limit gaseous fuel sulfur content to no more than five (5) grains of total sulfur per one hundred (100) standard cubic feet; or
5.7.3 Use California Reformulated Gasoline for gasoline-fired spark-ignited engines; or
5.7.4 Use California Reformulated Diesel for compression-ignited engines; or
5.7.5 Operate the engine on liquid fuel that contains no more than 15 ppm sulfur, as determined by the test method specified in Section 6.4.6; or
5.7.6 Install and properly operate an emission control system that reduces SO_2 emissions by at least 95% by weight as determined by the test method specified in Section 6.4.6.

The IC engines will be fueled with only California Reformulated Diesel (CARB diesel) fuel; therefore, these requirements will be satisfied. The following condition will be included on the ATC permit for the IC engines:

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116]

Section 5.8 - Particulate Matter (PM) Emission Control Requirements

Section 5.8 requires that on and after the compliance schedule specified in Section 5.2.4 and 7.0, operators of engines subject to this rule shall limit emissions of particulate matter through compliance with the following applicable requirements of Sections 5.8.1 – 5.8.2:

5.8.1 Spark-ignited engines shall comply with the requirements of Section 5.7.

5.8.2 Compression-ignited engines shall comply with the applicable CARB/EPA Tier certification standard per Table 6.

The engines evaluated in this project are Tier 3 and Tier 4F certified compression-ignition IC engines that comply with the applicable CARB/EPA certification standards required in Table 6. Therefore, the engines will comply with the applicable CARB/EPA Tier certification standards per Table 6 of Rule 4702.

Section 5.10 - Monitoring:

Section 5.10.1 requires that the owner of a compression-ignited engine subject to the requirements of Section 5.2 to comply with the requirements specified in Sections 5.10.2 through 5.10.5.

Section 5.10.2 requires the owner to properly operate and maintain each engine as recommended by the engine manufacturer or emission control system supplier.

Section 5.10.3 requires the owner to monitor the operational characteristics of each engine as recommended by the engine manufacturer or emission control system supplier.

Section 5.10.4 requires each engine to install and operate a nonresettable elapsed operating time meter. In lieu of installing a nonresettable time meter, the owner of an engine may use an alternative device, method, or technique, in determining operating time provided that the alternative is approved by the APCO and is allowed by Permit-to-Operate or Stationary Equipment Registration condition. The owner of the engine shall properly maintain and operate the time meter or alternative device in accordance with the manufacturer's instructions.

Section 5.10.5 is applicable to engines retrofitted with a NO_X exhaust control device. The engines in this project do not have add-on NO_X controls. Therefore, the requirements of Section 5.10.5 are not applicable.

The following conditions will be included on the ATC permits for the engines:

- This engine shall be equipped with an operational non-resettable hour meter. [District Rule 4702 and 17 CCR 93116]

- This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702]

- During periods of operation, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and

filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702]

Section 5.11 - SO_X Emissions Monitoring Requirements:

Section 5.11 specifies SO_X Emissions Monitoring Requirements for IC engines that comply with the requirements of Section 5.7.2, 5.7.5, 5.7.6, or 5.7.7.

The IC engines evaluated complies with Section 5.7.4 by exclusively using CARB diesel fuel; therefore, this section is not applicable.

Section 6.1 - Emission Control Plan:

Section 6.1 requires that the operator of an engine subject to the requirements of Section 5.2, Table 3 Categories, 1a, 1b, 1c, 2a, 2b, and 2c and Table 5 of this rule, shall submit to the APCO an emission control plan (ECP) of all actions to be taken to satisfy the emission requirements of Section 5.1 and the compliance schedules of Section 7.0.

The engines in this project are Tier 3 and Tier 4F certified compression-ignited engines that are not retrofitted with exhaust control and are not subject to the requirements of Table 3 categories or Table 5. Therefore, these engines comply with the applicable emission standards of the rule and an ECP is not required.

Section 6.2 - Recordkeeping:

Section 6.2 requires that except for engines subject to Section 4.0, the owner of an engine subject to the requirements of Section 5.2 shall maintain an engine operating log to demonstrate compliance with this rule. This information shall be retained for a period of at least five years, shall be readily available, and be made available to the APCO upon request. The engine-operating log shall include, on a monthly basis, the following information:

- Total hours of operation,
- Type of fuel used,
- Maintenance or modifications performed,
- Monitoring data,
- Compliance source test results, and
- Any other information necessary to demonstrate compliance with this rule.
- For engines subject to Section 8.0, the quantity (cubic feet of gas or gallons of liquids) of fuel used on a daily basis

Section 6.2.2 requires that the data collected pursuant to the requirements of Section 5.9 and 5.10 shall be maintained for at least five years, shall be readily available, and made available to the APCO upon request.

The following condition will be listed on the ATC permits for the engines:

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

- The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rules 1070 and 4702]

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and 4702, and 17 CCR 93116]

Section 6.3 - Compliance Testing:

Section 6.3 specifies testing requirements for IC engines that are subject to the requirements of Section 5.2 or the requirements of Section 8.0, have been retrofitted with a NO_X control device, and have not been certified by EPA, CARB, or the District.

The engines evaluated in this project are certified compression-ignited engines that have not been retrofitted with NO_X exhaust controls and are not subject to Section 8.0. Therefore, source testing is not required.

Section 6.5 - Inspection and Monitoring (I&M) Plan:

Section 6.5 requires that the owner of an engine subject to the requirements of Section 5.2 or the requirements of Section 8.0, except for an engine specified in Section 6.5.1, to submit to the APCO for approval an I&M plan that specified all actions to be taken to satisfy the requirements of Section 6.5 and 5.7.

Section 6.5.1 states Sections 6.5.2 through Section 6.5.9 shall apply to all engines, except certified spark-ignited engines, those certified per Section 9.0, and certified compression-ignited engines.

The engines in this project are certified compression-ignited engines. Therefore, Section 6.5 is not applicable and an I&M plan is not required.

Conclusion

As shown above, the existing transportable IC engines are expected to continue to comply with the applicable requirements of Rule 4702.

Rule 4801 Sulfur Compounds

The purpose of District Rule 4801 is to limit the emissions of sulfur compounds. A maximum concentration and test method are specified. The provisions of this rule shall apply to any discharge to the atmosphere of sulfur compounds, which would exist as a liquid or a gas at standard conditions.

Section 3.1 states that a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO_2), on a dry basis averaged over 15 consecutive minutes.

Using the ideal gas equation, the sulfur compound emissions are calculated as follows:

$$\text{Volume } SO_2 = \frac{n\,RT}{P}$$

Where:

N = moles SO_2
T (Standard Temperature) = 60°F = 520°R
P (Standard Pressure) = 14.7 psi

$$\text{R (Universal Gas Constant)} = \frac{10.73\,\text{psi}\cdot\text{ft}^3}{\text{lb}\cdot\text{mol}\cdot{}^\circ\text{R}}$$

ATCs C-535-9-19, -50-0, & -51-0 (Digester Tanks Controlled by Flares)

To demonstrate compliance with the sulfur compound emission limit of Rule 4801, the maximum sulfur compound emissions from the flares will be calculated based on the maximum sulfur content allowed for the digester gas combusted in the flare: 0.00614 lb-SO_X/MMBtu (based on a maximum digester gas sulfur content of 200 ppmv as H_2S. Based on the April 2022 source tests of the flares, the F Factor (ratio of combustion exhaust volume to higher heating value of fuel) for the Digester Gas is estimated to be: 8,957 dscf/MMBtu at 60 ˚F.

$$\frac{0.0614\ lb-SOx}{MMBtu}\times\frac{1\ MMBtu}{8{,}957\ dscf}\times\frac{1\ lb\cdot mol}{64\ lb-SOx}\times\frac{10.73\ psi\cdot ft^3}{lb\cdot mol\cdot{}^\circ R}\times\frac{520\ {}^\circ R}{14.7\ psi}\times\frac{1{,}000{,}000\ parts}{million}=40.7\frac{parts}{million}$$

Because 40.7 ppmv is ≤ 2000 ppmv, the flares are expected to comply with Rule 4801. The following conditions will be placed on the ATC permits:

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

- Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.06 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.29 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801]

ATCs C-535-50-0 & -51-0 (75.1 MMBtu/hr Ultra-Low Emission Digester Flares)

- Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.025 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.06 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801]

ATCs C-535-24-6 & -44-2 (Transportable Diesel-Fired IC Engines)

To demonstrate compliance with the sulfur compound emission limit of Rule 4801, the maximum sulfur compound emissions from the IC engines will be calculated based on the maximum sulfur content of the diesel fuel that IC engines are allowed to use (0.0015% by weight).

$$\frac{0.0015\ \text{lb} - \text{S}}{100\ \text{lb} - \text{Diesel}} \times \frac{7.1\ lb - diesel}{gal - diesel} \times \frac{1\ gal - diesel}{0.137\ MMBtu} \times \frac{1\ MMBtu}{9{,}051\ dscf} \times \frac{64\ \text{lb} - \text{SO}_x}{32\ \text{lb} - \text{S}} \times \frac{1\ lb \cdot mol}{64\ lb - SOx} \times \frac{10.73\ psi \cdot ft^3}{lb \cdot mol \cdot {}^\circ R} \times \frac{520\ {}^\circ R}{14.7\ psi} \times \frac{10^6\ parts}{million} = 1.0\ ppmv$$

Because 1.0 ppmv is ≤ 2000 ppmv, the IC engines are expected to comply with Rule 4801. The following condition will be included on the permits:

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116]

California Code of Regulations (CCR), Title 17, Division 3, Chapter 1 (Air Resources Board), Subchapter 7.5 (Air Toxic Control Measures), Section 93115 (Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engines)

Section 93115.1 Purpose

The purpose of this airborne toxic control measure (ATCM) is to reduce diesel particulate matter (PM) and criteria pollutant emissions from stationary diesel-fueled compression ignition (CI) engines.
Section 93115.2 Applicability

(a) Except as provided in section 93115.3, this ATCM applies to any person who either sells a stationary CI engine, offers a stationary CI engine for sale, leases a stationary CI engine, or purchases a stationary CI engine for use in California, unless such engine is:

(1) a portable CI engine,

(2) a CI engine used to provide motive power,
(3) an auxiliary CI engine used on a marine vessel, or

(4) an agricultural wind machine as defined in section 93115.4.

The transportable diesel IC engines evaluated in this project are portable CI engines; therefore, the Stationary Diesel ATCM does not apply.

California Code of Regulations (CCR), Title 17 (Public Health), Division 3 (Air Resources), Chapter 1 (Air Resources Board), Subchapter 7.5 (Air Toxic Control Measures), Measure 93116 (Portable Diesel Engines)

The purpose of this airborne toxic control measure (ATCM) is to reduce diesel particulate matter (PM) emissions from portable diesel-fueled engines having a rated brake horsepower of 50 and greater (> 50 bhp).

Section 93116.1 - Applicability:

(a) Except for certain exemptions listed in Section 93116.1(b) (not applicable to the engines in this project), all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel are subject to this ATCM.

Section 93116.2 - Definitions:

(bb) Portable means designed and capable of being carried or moved from one location to another. Indicia of portability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform. The engine is not portable if:

(1) the engine or its replacement is attached to a foundation, or if not so attached, will reside at the same location for more than 12 consecutive months. The period during which the engine is maintained at a storage facility shall be excluded from the residency time determination. Any engine, such as a back-up or stand-by engine, that replace engine(s) at a location, and is intended to perform the same or similar function as the engine(s) being replaced, will be included in calculating the consecutive time period. In that case, the cumulative time of all engine(s), including the time between the removal of the original engine(s) and installation of the replacement engine(s), will be counted toward the consecutive time period; or

(2) the engine remains or will reside at a location for less than 12 consecutive months if the engine is located at a seasonal source and operates during the full annual operating period of the seasonal source, where a seasonal source is a stationary source that remains in a single location on a permanent basis (at least two years) and that operates at that single location at least three months each year; or

(3) the engine is moved from one location to another in an attempt to circumvent the portable residence time requirements.

The following ATC condition will ensure the IC engines qualify as “portable” under this ATCM:

- This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rules 2201 and 4701 and 17 CCR 93116]

Section 93116.3 - Requirements:

(a) Fuel

Section 93116.3(a) requires diesel-fueled portable engines to use one of the following fuels:
1. CARB Diesel Fuel, or
2. An alternative diesel fuel that has been verified through the Verification Procedures for In-Use Strategies to Control Emissions from Diesel Engines; or
3. CARB Diesel Fuel utilizing fuel additives that verified through the Verification Procedures for In-Use Strategies to Control Emissions from Diesel Engines

The IC engines will only use CARB ultra-low sulfur diesel fuel. The following condition will be listed on the ATC permits to enforce compliance with the fuel requirements of this ATCM:

- Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116]

(b) Diesel PM Emissions Standards

1) Starting January 1, 2010, all portable diesel-fueled engines must be certified to meet a federal or California standard for newly manufactured engines pursuant to 40 CFR Part 89, Part 86, or the equivalent categories in Title 13 of the California Code of Regulations.

2) Portable diesel-fueled engines that have not been permitted or registered prior to November 30, 2018, shall not be permitted or registered unless they are certified to the most stringent standard contained in the Federal or California emission standards for nonroad engines, or fall under one of the exceptions in Section (b)(2)(A) through (b)(2)(E)

The existing transportable IC engine powering an air compressor (Permit Unit C-535-24) is a Tier 3 certified IC engine and existing transportable IC engine powering a pump (Permit Unit C-535-44) is a Tier 4F certified IC engine, which is the latest available tier certification. Each of the engines was permitted prior to November 30, 2018; therefore, they comply with this section.

The following conditions will be included on the ATC permits:

ATC C-535-24-6 (125 bhp Transportable IC Engine Powering an Air Compressor)

- Emissions from this IC engine shall not exceed any of the following limits: 4.10 g-NOx/bhp-hr, 0.75 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116]

- Emissions from this IC engine shall not exceed 0.19 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116]

ATC C-535-44-2 (74 bhp Transportable IC Engine Powering a Pump)

- Emissions from this IC engine shall not exceed any of the following limits: 3.12 g-NOx/bhp-hr, 0.0746 g-CO/bhp-hr, or 0.16 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116]

- Emissions from this IC engine shall not exceed 0.0007 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116]

(c) Fleet Requirements

This section requires that except as provided in section 93116.3(c)(2), Tier 1, Tier 2, and Tier 3 engines may not operate in California on or after the dates listed in the specified schedule.

ATC C-535-24-6 (125 bhp Transportable IC Engine Powering an Air Compressor)

The following condition will be included on the ATC permit:

- This transportable IC engine shall not be operated on or after January 1, 2027, unless it is designated a low-use engine permitted to operate no more than 200 hours in any calendar year, designated an emergency-use engine prior to this date, or otherwise demonstrates compliance with the applicable requirements of the California Airborne Toxic Control Measure (ATCM) for Diesel particulate Matter from Portable Engines Rated at 50 hp and Greater (California Code of Regulations (CCR) Title 17, Section 93116). [17 CCR 93116]

ATC C-535-44-2 (74 bhp Transportable IC Engine Powering a Pump)

This diesel engine is a Tier 4F certified IC engine. Tier 4F certified IC engines meet the most stringent standard contained in the federal or California emission standards for non-road engines are not subject to the fleet requirements of the ATCM. Therefore, the engine will comply with the applicable requirements of this regulation.

Section 93116.4 Fleet Recordkeeping and Reporting Requirements

Section 93116.4(b)(2) requires that the Responsible Official, for all portable engines subject to section 93116.4(b)(1), must install or cause to be installed and properly maintained on each portable engine subject to recordkeeping a non-resettable hour-meter and maintain on a calendar year basis a record of the total hours of operation for each portable engine. If the portable engine is used out-of-state, then the records may account for operation within California only, excluding operation within the Outer Continental Shelf.

Section 93116.4(b)(2)(D) requires that the Responsible Official must maintain all required records at a central place of business for five years. The records must clearly identify each portable engine subject to the recordkeeping requirement as well as the annual hours of operation. These records are to be made available, upon request for inspection, to local air pollution control district or CARB personnel. The requested records must be provided to the appropriate personnel within ten business days of the request.

The following conditions will be included on the ATC permits for the engines:

- This engine shall be equipped with an operational non-resettable elapsed time meter. [District Rule 4702 and 17 CCR 93116]

- The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116]

- All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and 4702, and 17 CCR 93116]

Section 93116.5 Enforcement of Fleet Requirements

(a) Both the Executive Officer and the APCO have the authority to review or seek enforcement action for violation of the fleet emission standard.

(b) The CARB will make available to the districts the information the Responsible Official has provided to CARB to demonstrate compliance with the fleet standard.

Conditions requiring compliance with the requirements of this ATCM for portable diesel-fired IC engines will be incorporated into the permits for the transportable diesel-fired IC engines and compliance is expected.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

District is a Responsible Agency

It is determined that another agency has prepared an environmental review document for the project. The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency, the District is limited to mitigating or avoiding impacts for which it has statutory authority. The District does not have statutory authority for regulating greenhouse gas emissions. The District has determined that the applicant is responsible for implementing greenhouse gas mitigation measures, if any, imposed by the Lead Agency.

District CEQA Findings

The City of Fresno (City) is the public agency having principal responsibility for approving the project. As such, the City served as the Lead Agency (CCR §15367). In approving the project, the Lead Agency prepared and adopted a Mitigated Negative Declaration. The Lead agency filed a Notice of Determination, stating that the environmental document was adopted pursuant to the provisions of CEQA and concluding that the project would not have a significant effect on the environment.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CCR §15381). As a Responsible Agency the District complies with CEQA by considering the environmental document prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CCR §15096).

The District has considered the Lead Agency's environmental document. Furthermore, the District has conducted an engineering evaluation of the project, this document, which demonstrates that Stationary Source emissions from the project would be below the District's thresholds of significance for criteria pollutants. Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions will have a less than significant impact on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

Indemnification Agreement/Letter of Credit Determination

The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATCs C-535-9-19, -24-6, -44-2, -50-0, and -51-0 subject to the permit conditions on the attached draft ATC in Appendix B.

X. Billing Information

Annual Permit Fees			
Permit Number	**Fee Schedule**	**Fee Description**	**Annual Fee**
C-535-9-19	3020-02-H	36.3 MMBtu/hr Flare	$1,238
C-535-24-6	3020-10-B	125 bhp IC engine	$143
C-535-24-6	3020-10-A	74 bhp IC engine	$98
C-535-50-0	3020-02-H	75.1 MMBtu/hr Flare	$1,238
C-535-51-0	3020-02-H	75.1 MMBtu/hr Flare	$1,238

Appendixes

A: Current PTOs C-535-6-18, -9-18, -24-5, -44-1, and -45-0
B: Draft ATCs C-535-9-19, -24-6, -44-2, -50-0, and -51-0
C: SSPE Calculations
D: Major Source SSPE1 and SSPE2 Calculations
E: Quarterly Net Emissions Change
F: BACT Analysis for Wastewater Digester Tanks Controlled by Flares
G: ERC Surplus Analyses
H: ERC Withdrawal Calculations
I: Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) Memo
J: Fresno/Clovis Regional Wastewater Reclamation Facility Compliance Certification

APPENDIX A

Current PTOs C-535-6-18, -9-18, -24-5, -44-1, and -45-0

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: C-535-6-18 **EXPIRATION DATE:** 01/31/2026

EQUIPMENT DESCRIPTION:
16.7 MMBTU/HR CLEAVER-BROOKS MODEL CBI-700-400 DIGESTER GAS/NATURAL GAS-FIRED BOILER WITH AN ALZETA MODEL CSB167R ULTRA-LOW NOX BURNER AND SULFATREAT DIGESTER GAS TREATMENT SYSTEM

PERMIT UNIT REQUIREMENTS

1. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
2. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO2. [District Rules 4201 and 4301] Federally Enforceable Through Title V Permit
3. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
4. The boiler shall only be fired on the following fuels: 1) raw digester gas treated in the SulfaTreat system listed on this permit; 2) conditioned digester gas from the digester gas conditioning system under permit C-535-26; or 3) PUC-quality natural gas. [District Rules 2201 and 4320] Federally Enforceable Through Title V Permit
5. The boiler shall be equipped with an operational non-resettable, totalizing mass or volumetric flow meter on each fuel supply line. [District Rules 2201 and 4001, and 40 CFR 60.48(c)(g)] Federally Enforceable Through Title V Permit
6. Emissions from the boiler shall not exceed any of the following limits: 9 ppmvd NOx @ 3% O2 or 0.011 lb-NOx/MMBtu, 0.026 lb-SOx/MMBtu, 0.0048 lb-PM10/MMBtu, 100 ppmvd CO @ 3% O2 or 0.061 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
7. The sulfur content of any fuel used by the boiler shall not exceed 5 grains/100 dscf of total sulfur (equivalent to 79.6 ppm as H2S). [District Rules 2201, 4320, and 4801] Federally Enforceable Through Title V Permit
8. When the unit is fired on digester gas fuel, daily testing of the digester gas is required so as to not exceed an average of 79.6 ppm as hydrogen sulfide (H2S). Corrections shall be made, and re-tested within three (3) hours in order to maintain average below 79.6 ppm. [District Rules 2201 and 2520] Federally Enforceable Through Title V Permit
9. For daily testing of the sulfur content of the digester gas fuel used as fuel in this unit, one of the following methods shall be used: ASTM D1072, ASTM D3246, ASTM D4084, ASTM D4810, ASTM D5504, ASTM D6228, EPA Method 11 or EPA Method 15, as appropriate, or grab sample analysis by GC-FPD/TCD performed in the laboratory. [District Rule 2520] Federally Enforceable Through Title V Permit
10. The permittee shall monitor and record the stack concentration of NOx, CO, and O2 at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

11. If either the NOx or CO concentrations corrected to 3% O2, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

12. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

13. The permittee shall maintain records of: (1) the date and time of NOx, CO, and O2 measurements, (2) the O2 concentration in percent and the measured NOx and CO concentrations corrected to 3% O2, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

14. For each fuel type used, source testing to measure NOx and CO emissions from this unit shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. For each fuel type used, if the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency for that fuel type shall revert to at least once every twelve (12) months. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

15. Source testing shall not be required for a fuel not exceeding the following limits in any rolling 12-month period: 2,899,306 scf of raw digester gas; 1,741,397 scf of conditioned digester gas; or 1,670,000 scf of PUC-quality natural gas (calculated based on 100 hours of operation at full load and higher heating values of 576 Btu/scf, 959 Btu/scf, and 1,000 Btu/scf, respectively). Upon exceeding these fuel usage limits in any rolling 12-month period for a given fuel type, a source test shall be completed within 60 days, unless source testing for that fuel type has been completed within the last 12 or 36 months, as normally would be required. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

16. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

17. Sampling facilities for source testing shall be provided in accordance with the provisions of Rule 1081 (Source Sampling). [District Rule 1081] Federally Enforceable Through Title V Permit

18. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit

19. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081] Federally Enforceable Through Title V Permit

20. The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rule 1081] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

21. NOx emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
22. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
23. Stack gas oxygen (O2) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
24. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306, and 4320] Federally Enforceable Through Title V Permit
25. Records shall be maintained documenting that the natural gas used as fuel in this unit is provided from a PUC regulated or FERC regulated source, or the sulfur content of the natural gas used shall be determined at least annually using using EPA Method 11 or EPA Method 15, as appropriate, ASTM D5504, ASTM D6228, or an alternative method approved by EPA and the District. Valid purchase contracts, supplier certifications, tariff sheets, or transportation contacts may be used to document that the natural gas used in this unit is provided from a PUC regulated or FERC regulated source. [District Rules 1081 and 4320] Federally Enforceable Through Title V Permit
26. Fuel sulfur content analysis of digester gas used as fuel in this unit shall be performed at least annually using EPA Method 11 or EPA Method 15, as appropriate, ASTM D5504, ASTM D6228, or an alternative method approved by EPA and the District. Records of the fuel sulfur analysis shall be maintained and provided it to the District upon request. [District Rule 1070 and 4320] Federally Enforceable Through Title V Permit
27. Records of daily sulfur testing results of digester gas fuel shall be maintained. [District Rules 1070 and 2520] Federally Enforceable Through Title V Permit
28. Records of the amount of each fuel used in this unit, in standard cubic feet (scf) shall be maintained for each month in which the unit is operated. [District Rules 1070, 2520, and 4001, and 40 CFR 60.48(c)(g)] Federally Enforceable Through Title V Permit
29. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4001, 4305, 4306, and 4320; and 40 CFR 60.48(c)(i)] Federally Enforceable Through Title V Permit
30. An Emission Control Plan and any required Authority to Construct (ATC) application shall be submitted for this unit for compliance with the applicable Tier 2 emission limits of District Rule 4306 by May 1, 2028 and District Rule 4320 by May 1, 2022 and the unit shall be in full compliance with the applicable Tier 2 emissions limits of District Rule 4306 on and after December 31, 2029 and District Rule 4320 on and after December 31, 2023. [District Rules 4306 and 4320] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: C-535-9-18 **EXPIRATION DATE:** 01/31/2026

EQUIPMENT DESCRIPTION:
36.3 MMBTU/HR JOHN ZINK COMPANY WASTE GAS FLARE

PERMIT UNIT REQUIREMENTS

1. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 4102]
2. The flare shall be operated in a manner preventing the emission of noxious odors or other nuisances. [District Rule 4102]
3. Particulate matter emissions shall not exceed 0.1 gr/dscf in concentration at the point of discharge. [District Rule 4201] Federally Enforceable Through Title V Permit
4. The waste gas flare system shall be specifically designed for burning wastewater treatment plant digester gas, and alternate fuel may be used as pilot fuel. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The flare system shall have continuous readout and recording of gas flow rate and stack temperature. [District Rule 2201] Federally Enforceable Through Title V Permit
6. Flare flue gas temperature shall be maintained to at least 1,400 degrees F and 0.6 seconds minimum residence time. [District Rule 2201] Federally Enforceable Through Title V Permit
7. Total volume of gaseous fuel flared shall not exceed 1,584,000 standard cubic feet (scf) per day. [District Rule 2201] Federally Enforceable Through Title V Permit
8. A flame shall be present at all times in the flare whenever combustible gases are vented through the flare. [District Rule 4311] Federally Enforceable Through Title V Permit
9. The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 4311] Federally Enforceable Through Title V Permit
10. The flare shall be equipped with a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device capable of continuously detecting at least one pilot flame is present. The flame detection device shall be kept operational at all times except during flare maintenance when the flare is isolated from gas flow. All pilot monitor downtime shall be reported annually pursuant to Rule 4311, Section 6.2.3.6. [District Rule 4311] Federally Enforceable Through Title V Permit
11. Daily testing of digester gas is required so as to not exceed an average of 200 ppm sulfur as hydrogen sulfide (H2S). Corrections shall be made, and re-tested within 3 hours in order to maintain average below 200 ppm. [District Rule 2201] Federally Enforceable Through Title V Permit
12. Emissions shall not exceed any of the following limits: 2.2 lb NOx/hr, 1.8 lb SOx/hr, 0.18 lb PM10/hr, or 10.5 lb CO/hr. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit
13. The NOx emissions measured from the flare shall not exceed 0.1330 lb-NOx/MMBtu. [District Rule 4311] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

14. VOC emissions shall not exceed 0.0027 lb-VOC/MMBtu. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit
15. Flaring is prohibited unless it is consistent with an approved flare minimization plan (FMP), pursuant to District Rule 4311, Section 6.5, and all commitments listed in that plan have been met. This standard does not apply if the APCO determines that the flaring is caused by an emergency as defined by District Rule 4311, Section 3.7 and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere. [District Rule 4311] Federally Enforceable Through Title V Permit
16. The operator shall monitor and record the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. [District Rule 4311] Federally Enforceable Through Title V Permit
17. Source testing to measure NOx and VOC emissions from the flare shall be conducted at least once every twelve (12) months. [District Rule 4311] Federally Enforceable Through Title V Permit
18. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit
19. The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit
20. NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311] Federally Enforceable Through Title V Permit
21. VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit
22. Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311] Federally Enforceable Through Title V Permit
23. The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rule4311] Federally Enforceable Through Title V Permit
24. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit
25. The operator of a flare subject to flare minimization plans (FMPs) pursuant to District Rule 4311, Section 5.11 shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311] Federally Enforceable Through Title V Permit
26. The operator of a flare subject to flare minimization plans pursuant to District Rule 4311, Section 5.11 shall submit an annual report to the APCO that summarizes all Reportable Flaring Events as defined in Section 3.0 that occurred during the previous 12 month period. The report shall be submitted within 30 days following the end of the previous calendar year. The report shall include, but is not limited to all of the following: 1) The results of an investigation to determine the primary cause and contributing factors of the flaring event; 2) Any prevention measures considered or implemented to prevent recurrence together with a justification for rejecting any measures that were considered but not implemented; 3) If appropriate, an explanation of why the flaring was an emergency and necessary to prevent accident, hazard or release of vent gas to the atmosphere, or where, due to a regulatory mandate to vent a flare, it cannot be recovered, treated and used as a fuel gas at the facility; and 4) The date, time, and duration of the flaring event. [District Rule 4311] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

27. The operator of a flare subject to flare monitoring requirements pursuant to District Rule 4311 shall submit an annual report to the APCO within 30 days following the end of each 12 month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet for each day for the previous calendar year; 2) Flare monitoring system downtime periods, including dates and times, as applicable pursuant to Section 6.9; 3) A flow verification report for each flare subject to Rule 4311, and 4) For flares subject to the annual throughput thresholds specified in Table 2, the annual throughput in MMBtu for the previous calendar year shall be included. Effective on and after January 1, 2024, the annual report submitted by an operator for a flare subject to flare monitoring requirements pursuant to District Rule 4311 shall be submitted in an electronic format approved by the District within 30 days following the end of each calendar year for all required monitoring under those sections. [District Rule 4311] Federally Enforceable Through Title V Permit

28. Every five years after the initial FMP submittal, the operator shall submit an updated FMP for each flare to the APCO for approval. The current FMP shall remain in effect until the updated FMP is approved by the APCO. If the operator fails to submit an updated FMP as required by this section, the existing FMP shall no longer be considered an approved plan. [District Rule 4311] Federally Enforceable Through Title V Permit

29. An updated FMP shall be submitted by the operator pursuant to Rule 4311, Section 6.5 addressing new or modified equipment, prior to installing the equipment. Updated FMP submittals are only required if: 1) The equipment change would require an authority to construct (ATC) and would impact the emissions from the flare, and 2) The modification is not solely the removal or decommissioning of equipment that is listed in the FMP, and has no associated increase in flare emissions. [District Rule 4311] Federally Enforceable Through Title V Permit

30. For purposes of the flow verification report required by Rule 4311, Section 6.2.3.8, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: EPA Methods 1 and 2; a verification method recommended by the manufacturer of the flow monitoring equipment installed pursuant to Section 5.10; tracer gas dilution or velocity; other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

31. For daily testing of the sulfur content of the gas flared, one of the following methods shall be used: ASTM D1072, ASTM D3246, ASTM D4084, ASTM D4810, ASTM D5504, ASTM D6228, EPA Method 11 or EPA Method 15, as appropriate, grab sample analysis by GC-FPD/TCD performed in the laboratory, or an alternative method approved by EPA and the District. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

32. The flare shall be operated according to the manufacturer's specifications, a copy of which shall be maintained on site. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

33. This flare shall be inspected annually while in operation for visible emissions. If visible emissions are observed, corrective action shall be taken. If excess emissions continue, a EPA Method 9 test shall be conducted within 72 hours. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

34. Daily records of total gas flared shall be maintained. [District Rules 2201 and 2520, 9.3.2] Federally Enforceable Through Title V Permit

35. Records of flare maintenance, inspections and repair shall be maintained. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

36. Records of daily sulfur testing results shall be maintained. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

37. Permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311] Federally Enforceable Through Title V Permit

38. Permittee shall maintain records of the following when the flare is used during an emergency: duration of flare operation, amount of gas burned, and the nature of the emergency situation. [District Rule 4311] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

39. Total combined annual NOx emissions from the waste gas flare (C-535-9), the transportable diesel-fired IC engine powering an air compressor (C-535-24), and the transportable diesel-fired IC engine powering a pump (C-535-44) shall not exceed 19,272 pounds in any calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit

40. Total combined annual NOx emissions from the waste gas flare (C-535-9), the transportable diesel-fired IC engine powering an air compressor (C-535-24), and the transportable diesel-fired IC engine powering a pump (C-535-44) shall be calculated as follows: Annual NOx Emissions (lbs/year) = [(33.0 lb/MMscf x Waste Gas Flare's Annual Fuel Combusted (MMscf/year)) + (1.13 lbs/hr x IC Engine Powering an Air Compressor Annual Hours of Operation (hrs/year)) + (0.51 lbs/hr x IC Engine Powering a Pump Annual Hours of Operation (hrs/year))]. [District Rule 2201] Federally Enforceable Through Title V Permit

41. Records of the total annual NOx emissions from units C-535-9, -24, and -44 shall be maintained and updated monthly. [District Rules 1070 and 2520, 9.4] Federally Enforceable Through Title V Permit

42. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and 4311] Federally Enforceable Through Title V Permit

43. An Authority to Construct (ATC) application shall be submitted for this unit for compliance with the applicable throughput and/or emission limits of District Rule 4311 (Amended December 17, 2020), Section 5.9 by July 1, 2022 and the unit shall be in full compliance with the applicable throughput and/or emission limits of District Rule 4311, Section 5.9 by the dates specified in District Rule 4311, Section 7. [District Rule 4311] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: C-535-24-5 **EXPIRATION DATE:** 01/31/2026

EQUIPMENT DESCRIPTION:
TRANSPORTABLE 125 BHP JOHN DEERE MODEL 4045HF275 TIER 3 CERTIFIED DIESEL-FIRED IC ENGINE POWERING AN AIR COMPRESSOR

PERMIT UNIT REQUIREMENTS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
3. This engine shall be equipped with an operational non-resettable hour meter. [District Rule 4702 and 17 CCR 93116] Federally Enforceable Through Title V Permit
4. The only approved storage and operational location for this IC engine shall be Facility C-535 at 5607 W Jensen Avenue, Fresno, CA. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rule 4701 and 17 CCR 93116] Federally Enforceable Through Title V Permit
6. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116] Federally Enforceable Through Title V Permit
7. Emissions from this IC engine shall not exceed any of the following limits: 4.10 g-NOx/bhp-hr, 0.75 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116] Federally Enforceable Through Title V Permit
8. Emissions from this IC engine shall not exceed 0.19 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116] Federally Enforceable Through Title V Permit
9. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702] Federally Enforceable Through Title V Permit
10. During periods of operation, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702] Federally Enforceable Through Title V Permit
11. The permittee shall maintain an engine-operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit
12. The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rule 4702] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

13. Total combined annual NOx emissions from the waste gas flare (C-535-9), the transportable diesel-fired IC engine powering an air compressor (C-535-24), and the transportable diesel-fired IC engine powering a pump (C-535-44) shall not exceed 19,272 pounds in any calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit

14. Total combined annual NOx emissions from the waste gas flare (C-535-9), the transportable diesel-fired IC engine powering an air compressor (C-535-24), and the transportable diesel-fired IC engine powering a pump (C-535-44) shall be calculated as follows: Annual NOx Emissions (lbs/year) = [(33.0 lb/MMscf x Waste Gas Flare's Annual Fuel Combusted (MMscf/year)) + (1.13 lbs/hr x IC Engine Powering an Air Compressor Annual Hours of Operation (hrs/year)) + (0.51 lbs/hr x IC Engine Powering a Pump Annual Hours of Operation (hrs/year))]. [District Rule 2201] Federally Enforceable Through Title V Permit

15. Records of the total annual NOx emissions from units C-535-9, -24, and -44 shall be maintained and updated monthly. [District Rules 1070 and 2520, 9.4] Federally Enforceable Through Title V Permit

16. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93116] Federally Enforceable Through Title V Permit

17. This transportable IC engine shall not be operated on or after January 1, 2027, unless it is designated a low-use engine permitted to operate no more than 200 hours in any calendar year, designated an emergency-use engine prior to this date, or otherwise demonstrates compliance with the applicable requirements of the California Airborne Toxic Control Measure (ATCM) for Diesel particulate Matter from Portable Engines Rated at 50 hp and Greater (California Code of Regulations (CCR) Title 17, Section 93116). [17 CCR 93116]

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: C-535-44-1 **EXPIRATION DATE:** 01/31/2026

EQUIPMENT DESCRIPTION:
TRANSPORTABLE 74 BHP JOHN DEERE MODEL 4045TFC03 TIER 4 FINAL CERTIFIED DIESEL-FIRED IC ENGINE POWERING A PUMP

PERMIT UNIT REQUIREMENTS

1. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
2. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102]
3. This engine shall be equipped with an operational non-resettable hour meter. [District Rule 4702 and 17 CCR 93116] Federally Enforceable Through Title V Permit
4. The only approved storage and operational location for this IC engine shall be Facility C-535 at 5607 W Jensen Avenue, Fresno. [District Rule 2201] Federally Enforceable Through Title V Permit
5. This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rule 4701 and 17 CCR 93116] Federally Enforceable Through Title V Permit
6. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801 and 17 CCR 93116] Federally Enforceable Through Title V Permit
7. Emissions from this IC engine shall not exceed any of the following limits: 3.12 g-NOx/bhp-hr, 0.0746 g-CO/bhp-hr, or 0.16 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116] Federally Enforceable Through Title V Permit
8. Emissions from this IC engine shall not exceed 0.0007 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116] Federally Enforceable Through Title V Permit
9. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702] Federally Enforceable Through Title V Permit
10. Operation of this engine shall not exceed 2,160 hours per year. [District Rule 2201] Federally Enforceable Through Title V Permit
11. During periods of operation, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702] Federally Enforceable Through Title V Permit
12. The permittee shall maintain an engine-operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 2201 and 4702] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

13. The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rule 4702] Federally Enforceable Through Title V Permit

14. Total combined annual NOx emissions from the waste gas flare (C-535-9), the transportable diesel-fired IC engine powering an air compressor (C-535-24), and the transportable diesel-fired IC engine powering a pump (C-535-44) shall not exceed 19,272 pounds in any calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit

15. Total combined annual NOx emissions from the waste gas flare (C-535-9), the transportable diesel-fired IC engine powering an air compressor (C-535-24), and the transportable diesel-fired IC engine powering a pump (C-535-44) shall be calculated as follows: Annual NOx Emissions (lbs/year) = [(33.0 lb/MMscf x Waste Gas Flare's Annual Fuel Combusted (MMscf/year)) + (1.13 lbs/hr x IC Engine Powering an Air Compressor Annual Hours of Operation (hrs/year)) + (0.51 lbs/hr x IC Engine Powering a Pump Annual Hours of Operation (hrs/year))]. [District Rule 2201] Federally Enforceable Through Title V Permit

16. Records of the total annual NOx emissions from units C-535-9, -24, and -44 shall be maintained and updated monthly. [District Rules 1070 and 2520, 9.4] Federally Enforceable Through Title V Permit

17. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rule 4702 and 17 CCR 93116] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

PERMIT UNIT: C-535-45-0 **EXPIRATION DATE:** 01/31/2026

EQUIPMENT DESCRIPTION:
WASTE WATER TREATMENT PLANT OPERATION SERVED BY A TEMPORARY 58.5 MMBTU/HR JOHN ZINK COMPANY WASTE GAS FLARE

PERMIT UNIT REQUIREMENTS

1. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 4102]
2. The exhaust from the flare shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
3. The flare shall be operated in a manner preventing the emission of noxious odors or other nuisances. [District Rule 4102]
4. The waste gas flare system shall be specifically designed for burning on digester gas except for the pilot light. [District Rule 2201] Federally Enforceable Through Title V Permit
5. The flare system shall have continuous readout and recording of gas flow rate and stack temperature. [District Rule 2201] Federally Enforceable Through Title V Permit
6. NOx emissions shall not exceed 0.06 lb-NOx/MMBtu. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit
7. VOC emissions shall not exceed 0.0027 lb-VOC/MMBtu. [District Rules 2201 and 4311, 5.7] Federally Enforceable Through Title V Permit
8. Daily testing of digester gas is required so as to not exceed an average of 200 ppm as hydrogen sulfide (H2S). Corrections shall be made, and re-tested within 3 hours in order to maintain average below 200 ppm. [District Rules 2201 and 4801] Federally Enforceable Through Title V Permit
9. Total volume of gaseous fuel flared shall not exceed 2,160,000 scf per day. [District Rule 2201] Federally Enforceable Through Title V Permit
10. A flame shall be present at all times in the flare whenever combustible gases are vented through the flare. [District Rule 4311] Federally Enforceable Through Title V Permit
11. The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 4311] Federally Enforceable Through Title V Permit
12. Unless the flare is equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. The flame detection device shall be kept operational at all times except during flare maintenance when the flare is isolated from gas flow. All pilot monitor downtime shall be reported annually pursuant to Rule 4311, Section 6.2.3.6. [District Rule 4311] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

13. Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 4311] Federally Enforceable Through Title V Permit
14. Flaring is prohibited unless it is consistent with an approved flare minimization plan (FMP), pursuant to District Rule 4311, Section 6.5, and all commitments listed in that plan have been met. This standard does not apply if the APCO determines that the flaring is caused by an emergency as defined by District Rule 4311, Section 3.7 and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere. [District Rule 4311] Federally Enforceable Through Title V Permit
15. The operator shall monitor and record the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. [District Rule 4311] Federally Enforceable Through Title V Permit
16. Source testing to measure NOx and VOC emissions from the flare shall be conducted at least once every twelve (12) months. [District Rule 4311] Federally Enforceable Through Title V Permit
17. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit
18. The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit
19. NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311] Federally Enforceable Through Title V Permit
20. VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used in conjunction with EPA Method 18 or ARB Method 422 "Determination of Volatile Organic Compounds in Emission from Stationary Sources" for the measurement and subtraction of exempt compounds (e.g. methane, ethane, and exempt halogenated compounds). [District Rule 4311] Federally Enforceable Through Title V Permit
21. Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311] Federally Enforceable Through Title V Permit
22. Total hydrocarbon content and methane (CH4) content of vent gas shall be determined using ASTM Method D1945, ASTM Method UOP 539, EPA Method 18, or EPA Method 25A or 25B. [District Rule 4311] Federally Enforceable Through Title V Permit
23. The hydrogen sulfide (H2S) content of vent gas and sulfur content (as H2S) of gas flared shall be determined using ASTM Method D1945-96, ASTM Method UOP 539-97, ASTM Method D4084-94, ASTM Method D4468, ASTM Method D4810-88, or ASTM-D5504-20, or other methods approved by the District, ARB, and EPA. [District Rules 4311 and 2520] Federally Enforceable Through Title V Permit
24. If vent gas composition is monitored with a continuous analyzer employing gas chromatography the minimum sampling frequency shall be one sample every 30 minutes. [District Rule 4311] Federally Enforceable Through Title V Permit
25. If vent gas composition is monitored using continuous analyzers not employing gas chromatography, the total reduced sulfur content of vent gas shall be determined by using EPA Method D4468-85. [District Rule 4311] Federally Enforceable Through Title V Permit
26. For purposes of the flow verification report required by Rule 4311, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: 1) EPA Methods 1 and 2; 2) A verification method recommended by the manufacturer of the flow monitoring equipment installed; 3) Tracer gas dilution or velocity; or 4) Other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

27. The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rule 4311] Federally Enforceable Through Title V Permit

28. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit

29. The operator shall monitor vent gas composition using one of the five methods included in Rule 4311, Section 6.6.1 through Section 6.6.5, as appropriate. [District Rule 4311] Federally Enforceable Through Title V Permit

30. The operator shall monitor the volumetric flows of purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored. [District Rule 4311] Federally Enforceable Through Title V Permit

31. The operator shall comply with the following requirements as applicable: 1) Periods of flare monitoring system inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Periods of inoperation of monitoring equipment shall not exceed 14 days per any 18-consecutive-month period. Periods of flare monitoring system inoperation do not include the periods when the system feeding the flare is not operating 2: During periods of inoperation of continuous analyzers or auto-samplers installed pursuant to Rule 4311, operators responsible for monitoring shall take one sample within 30 minutes of the commencement of flaring, from the flare header or from an alternate location at which samples are representative of vent gas composition and have samples analyzed pursuant to Rule 4311. During periods of inoperation of required flow monitors, flow shall be calculated using good engineering practices; 3) Maintain and calibrate all required monitors and recording devices in accordance with the applicable manufacturer's specifications. In order to claim that a manufacturer's specification is not applicable, the person responsible for emissions must have, and follow, a written maintenance policy that was developed for the device in question. The written policy must explain and justify the difference between the written procedure and the manufacturer's procedure; and 4) All in-line continuous analyzer and flow monitoring data must be continuously recorded by an electronic data acquisition system capable of one-minute averages. Flow monitoring data shall be recorded as one-minute averages. [District Rule 4311] Federally Enforceable Through Title V Permit

32. The operator of a flare subject to flare minimization plans (FMPs) pursuant to District Rule 4311, Section 5.11 shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311] Federally Enforceable Through Title V Permit

33. The operator shall submit an annual report, in an electronic report approved by the District, to the APCO within 30 days following the end of each 12-month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet (scf) for each day for the previous calendar year; 2) Hydrogen sulfide (H2S) content, methane (CH4) content, and hydrocarbon content of vent gas composition, where applicable; 3) The total reduced sulfur content by volume or hydrogen sulfide content by volume of vent gas flared for each hour of the month; 4) If the flow monitor used pursuant to Rule 4311, Section 5.13 measures molecular weight, the average molecular weight for each hour of each month; 5) For any pilot and purge gas used, the type of gas used, the volumetric flow for each day and for each month, and the means used to determine flow, as applicable; 6) Flare monitoring system downtime periods, including dates and times; 7) For each day and for each month provide calculated SOx emissions (as SO2); and 8) A flow verification report for each flare subject to Rule 4311. The flow verification report shall include flow verification testing pursuant to Rule 4311, Section 6.3.5. [District Rule 4311] Federally Enforceable Through Title V Permit

34. Every five years after the initial FMP submittal, the operator shall submit an updated FMP for each flare to the APCO for approval. The current FMP shall remain in effect until the updated FMP is approved by the APCO. If the operator fails to submit an updated FMP as required by Rule 4311, the existing FMP shall no longer be considered an approved plan. [District Rule 4311] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

35. An updated FMP shall be submitted by the operator pursuant to Rule 4311, Section 6.5 addressing new or modified equipment, prior to installing the equipment. Updated FMP submittals are only required if: 1) The equipment change would require an authority to construct (ATC) and would impact the emissions from the flare, and 2) The modification is not solely the removal or decommissioning of equipment that is listed in the FMP, and has no associated increase in flare emissions. [District Rule 4311] Federally Enforceable Through Title V Permit

36. For purposes of the flow verification report required by Rule 4311, Section 6.2.3.8, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: EPA Methods 1 and 2; a verification method recommended by the manufacturer of the flow monitoring equipment installed pursuant to Section 5.10; tracer gas dilution or velocity; other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

37. The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311] Federally Enforceable Through Title V Permit

38. The flare shall be operated according to the manufacturer's specifications, a copy of which shall be maintained on site. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit

39. This flare shall be inspected annually while in operation for visible emissions. If visible emissions are observed, corrective action shall be taken. If excess emissions continue, a EPA Method 9 test shall be conducted within 72 hours of the observation of visible emissions. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit

40. Daily records of total gas flared shall be maintained. [District Rules 1070, 2201, and 2520, 9.4.2] Federally Enforceable Through Title V Permit

41. Records of flare maintenance, inspections and repair shall be maintained. [District Rules 1070 and 2520, 9.4.2] Federally Enforceable Through Title V Permit

42. Records of daily sulfur testing results shall be maintained. [District Rules 1070 and 2520, 9.4.2] Federally Enforceable Through Title V Permit

43. Records of all source tests shall be maintained. [District Rule 4311] Federally Enforceable Through Title V Permit

44. All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070 and 4311] Federally Enforceable Through Title V Permit

APPENDIX B

Draft ATCs C-535-9-19, -24-6, -44-2, -50-0, and -51-0

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-535-9-19 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: FRESNO/CLOVIS REGIONAL WWTP
MAILING ADDRESS: 5607 W JENSEN AVE
FRESNO, CA 93706-9458

LOCATION: 5607 W JENSEN AVE
FRESNO, CA 93706

EQUIPMENT DESCRIPTION:
MODIFICATION OF WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 36.3 MMBTU/HR JOHN ZINK COMPANY ENCLOSED DIGESTER GAS FLARE: DESIGNATE AS EMERGENCY FLARE AND LIMIT NON-EMERGENCY USAGE TO 1,815 MMBTU/YEAR AND REMOVE TOTAL COMBINED NOX EMISSION LIMIT FOR UNITS C-535-9, -24, AND -44

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit
5. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
6. The flare shall be designed with a minimum residence time of 0.6 seconds and shall operate with a minimum chamber temperature of at least 1,400 degrees F. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services
C-535-9-19 : Jun 26 2023 10:08AM -- NORMANR : Joint Inspection NOT Required

7. The flare system shall have continuous readout and recording of flare gas flow rate and flare combustion chamber temperature [District Rule 2201] Federally Enforceable Through Title V Permit

8. Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.06 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.29 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801] Federally Enforceable Through Title V Permit

9. The maximum sulfur content of the gas combusted in the flare shall not exceed 200 ppmv as H2S on any day. Multiple sulfur content measurements in a day may be averaged to demonstrate compliance with this limit. [District Rule 2201] Federally Enforceable Through Title V Permit

10. The total heat input of the gas combusted in the flare shall not exceed 871.2 MMBtu/day based on the higher heating value (HHV) of the gas flared. [District Rule 2201] Federally Enforceable Through Title V Permit

11. This flare shall be operated only for testing and maintenance of the flare, required regulatory purposes, and during emergency situations. Operation of the flare for maintenance, testing, and required regulatory purposes shall not exceed either of the following limits: 200 hours per calendar year and 1,815 MMBtu per calendar year based on the HHV of the gas flared. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

12. A flame shall be present at all times in the flare whenever combustible gases are vented through the flare. [District Rule 4311] Federally Enforceable Through Title V Permit

13. The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 4311] Federally Enforceable Through Title V Permit

14. Unless the flare is equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. The flame detection device shall be kept operational at all times except during flare maintenance when the flare is isolated from gas flow. All pilot monitor downtime shall be reported annually pursuant to Rule 4311, Section 6.2.3.6. [District Rule 4311] Federally Enforceable Through Title V Permit

15. Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 4311] Federally Enforceable Through Title V Permit

16. Flaring is prohibited unless it is consistent with an approved flare minimization plan (FMP), pursuant to District Rule 4311, Section 6.5, and all commitments listed in that plan have been met. This standard does not apply if the APCO determines that the flaring is caused by an emergency as defined by District Rule 4311, Section 3.7 and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere. [District Rule 4311] Federally Enforceable Through Title V Permit

17. The operator shall monitor and record the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. [District Rule 4311] Federally Enforceable Through Title V Permit

18. Source testing to measure NOx and VOC emissions shall be conducted within 60 days of operation of the flare unless a source test has been conducted within the last 12 months of the date of the operation of the flare. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

19. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit

20. The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit

21. NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

22. VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used in conjunction with EPA Method 18 or ARB Method 422 "Determination of Volatile Organic Compounds in Emission from Stationary Sources" for the measurement and subtraction of exempt compounds (e.g. methane, ethane, and exempt halogenated compounds). [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

23. Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311] Federally Enforceable Through Title V Permit

24. Hydrogen sulfide (H2S) content of vent gas shall be determined using ASTM Method D1945-96, ASTM Method UOP 539-97, ASTM Method D4084-94, ASTM Method D4468, ASTM Method D4810-88, or ASTM-D5504-20, or other methods approved by the District, ARB, and EPA. [District Rule 4311] Federally Enforceable Through Title V Permit

25. If vent gas composition is monitored with a continuous analyzer employing gas chromatography the minimum sampling frequency shall be one sample every 30 minutes. [District Rule 4311] Federally Enforceable Through Title V Permit

26. If vent gas composition is monitored using continuous analyzers not employing gas chromatography, the total reduced sulfur content of vent gas shall be determined by using EPA Method D4468-85. [District Rule 4311] Federally Enforceable Through Title V Permit

27. For purposes of the flow verification report required by Rule 4311, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: 1) EPA Methods 1 and 2; 2) A verification method recommended by the manufacturer of the flow monitoring equipment installed; 3) Tracer gas dilution or velocity; or 4) Other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

28. The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rule 4311] Federally Enforceable Through Title V Permit

29. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit

30. The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

31. The operator of a flare subject to flare minimization plans (FMPs) pursuant to District Rule 4311, Section 5.11 shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311] Federally Enforceable Through Title V Permit

32. The operator of a flare subject to flare minimization plans pursuant to District Rule 4311, Section 5.11 shall submit an annual report to the APCO that summarizes all Reportable Flaring Events as defined in Section 3.0 that occurred during the previous 12 month period. The report shall be submitted within 30 days following the end of the previous calendar year. The report shall include, but is not limited to all of the following: 1) The results of an investigation to determine the primary cause and contributing factors of the flaring event; 2) Any prevention measures considered or implemented to prevent recurrence together with a justification for rejecting any measures that were considered but not implemented; 3) If appropriate, an explanation of why the flaring was an emergency and necessary to prevent accident, hazard or release of vent gas to the atmosphere, or where, due to a regulatory mandate to vent a flare, it cannot be recovered, treated and used as a fuel gas at the facility; and 4) The date, time, and duration of the flaring event. [District Rule 4311] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

33. The operator shall submit an annual report, in an electronic report approved by the District, to the APCO within 30 days following the end of each 12-month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet (scf) for each day for the previous calendar year; 2) If the flow monitor used pursuant to Rule 4311, Section 5.13 measures molecular weight, the average molecular weight for each hour of each month; 3) For each day and for each month provide calculated SOx emissions (as SO2); and 4) A flow verification report for each flare subject to Rule 4311. The flow verification report shall include flow verification testing pursuant to Rule 4311, Section 6.3.5. [District Rule 4311] Federally Enforceable Through Title V Permit

34. Every five years after the initial FMP submittal, the operator shall submit an updated FMP for each flare to the APCO for approval. The current FMP shall remain in effect until the updated FMP is approved by the APCO. If the operator fails to submit an updated FMP as required by Rule 4311 the existing FMP shall no longer be considered an approved plan. [District Rule 4311] Federally Enforceable Through Title V Permit

35. An updated FMP shall be submitted by the operator pursuant to Rule 4311, Section 6.5 addressing new or modified equipment, prior to installing the equipment. Updated FMP submittals are only required if: 1) The equipment change would require an authority to construct (ATC) and would impact the emissions from the flare, and 2) The modification is not solely the removal or decommissioning of equipment that is listed in the FMP, and has no associated increase in flare emissions. [District Rule 4311] Federally Enforceable Through Title V Permit

36. For purposes of the flow verification report required by Rule 4311, Section 6.2.3.8, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: EPA Methods 1 and 2; a verification method recommended by the manufacturer of the flow monitoring equipment installed pursuant to Section 5.10; tracer gas dilution or velocity; other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

37. The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311] Federally Enforceable Through Title V Permit

38. Operational, non-resettable, totalizing mass or volumetric fuel flow meter(s) or other District-approved alternative method(s) shall be used to measure the amount of gas flared. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

39. The permittee shall maintain records of the higher heating value (HHV), in Btu per standard cubic foot (scf), of the gas flared each calendar quarter in which the unit operates. The records shall include the method(s) used to determine the HHV of the fuel and the dates the HHV was determined. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

40. The SOx emission factor in lb-SOx/MMBtu shall be calculated at least once every quarter the flare operates based on the average sulfur content of the gas flared in ppmv as H2S and the HHV value of the gas flared using the following equation: SOx Emission Factor (lb-SOx/MMBtu) = [average sulfur content of gas flared (ppmv as H2S)] x [0.1688 lb-SOx/MMscf]/[HHV of Gas Flared (Btu/scf)]. [District Rule 2201] Federally Enforceable Through Title V Permit

41. Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur content of the gas flared each day in ppmv as H2S; and the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

42. The permittee shall maintain monthly records of emergency and non-emergency operation. Records shall include the number of hours of emergency operation, the amount of gas flared during each emergency, the nature of each emergency situation that required flaring, the date and number of hours of all testing and maintenance operations, and the purpose of the operation. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

43. All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-535-24-6 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: FRESNO/CLOVIS REGIONAL WWTP
MAILING ADDRESS: 5607 W JENSEN AVE
FRESNO, CA 93706-9458

LOCATION: 5607 W JENSEN AVE
FRESNO, CA 93706

EQUIPMENT DESCRIPTION:
MODIFICATION OF TRANSPORTABLE 125 BHP JOHN DEERE MODEL 4045HF275 TIER 3 CERTIFIED DIESEL-FIRED IC ENGINE POWERING AN AIR COMPRESSOR: REMOVE TOTAL COMBINED NOX EMISSION LIMIT FOR UNITS C-535-9, -24, AND -44

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
5. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
6. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit
7. This engine shall be equipped with an operational non-resettable hour meter. [District Rule 4702 and 17 CCR 93116] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

Central Regional Office • 1990 E. Gettysburg Ave. • Fresno, CA 93726 • (559) 230-5900 • Fax (559) 230-6061

8. The only approved location for operation of this engine shall be District Facility C-535 at 5607 W Jensen Avenue, Fresno, CA. [District Rule 2201] Federally Enforceable Through Title V Permit

9. This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rules 2201 and 4701 and 17 CCR 93116] Federally Enforceable Through Title V Permit

10. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116] Federally Enforceable Through Title V Permit

11. Emissions from this IC engine shall not exceed any of the following limits: 4.10 g-NOx/bhp-hr, 0.75 g-CO/bhp-hr, or 0.30 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116] Federally Enforceable Through Title V Permit

12. Emissions from this IC engine shall not exceed 0.19 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116] Federally Enforceable Through Title V Permit

13. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702] Federally Enforceable Through Title V Permit

14. During periods of operation, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702] Federally Enforceable Through Title V Permit

15. The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116] Federally Enforceable Through Title V Permit

16. The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rules 1070 and 4702] Federally Enforceable Through Title V Permit

17. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and 4702, and 17 CCR 93116] Federally Enforceable Through Title V Permit

18. This transportable IC engine shall not be operated on or after January 1, 2027, unless it is designated a low-use engine permitted to operate no more than 200 hours in any calendar year, designated an emergency-use engine prior to this date, or otherwise demonstrates compliance with the applicable requirements of the California Airborne Toxic Control Measure (ATCM) for Diesel particulate Matter from Portable Engines Rated at 50 hp and Greater (California Code of Regulations (CCR) Title 17, Section 93116). [17 CCR 93116]

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-535-44-2 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: FRESNO/CLOVIS REGIONAL WWTP
MAILING ADDRESS: 5607 W JENSEN AVE
FRESNO, CA 93706-9458

LOCATION: 5607 W JENSEN AVE
FRESNO, CA 93706

EQUIPMENT DESCRIPTION:
MODIFICATION OF TRANSPORTABLE 74 BHP JOHN DEERE MODEL 4045TFC03 TIER 4F CERTIFIED DIESEL-FIRED IC ENGINE POWERING A PUMP: REMOVE TOTAL COMBINED NOX EMISSION LIMIT FOR UNITS C-535-9, -24, AND -44

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
4. {1898} The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]
5. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
6. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit
7. This engine shall be equipped with an operational non-resettable hour meter. [District Rule 4702 and 17 CCR 93116] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

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8. This only approved location for operation of this engine shall be District Facility C-535 at 5607 W Jensen Avenue, Fresno, CA. [District Rule 2201] Federally Enforceable Through Title V Permit
9. This transportable IC engine shall not be attached to a foundation or operated at any location at this facility for more than 12 consecutive months. The period during which the engine is maintained at a storage location shall be excluded from the residency time determination. [District Rules 2201 and 4701 and 17 CCR 93116] Federally Enforceable Through Title V Permit
10. Only CARB certified diesel fuel containing not more than 0.0015% sulfur by weight shall be used. [District Rules 2201, 4702, and 4801, Fresno County Rule 406, and 17 CCR 93116] Federally Enforceable Through Title V Permit
11. Emissions from this IC engine shall not exceed any of the following limits: 3.12 g-NOx/bhp-hr, 0.0746 g-CO/bhp-hr, or 0.16 g-VOC/bhp-hr. [District Rule 2201 and 17 CCR 93116] Federally Enforceable Through Title V Permit
12. Emissions from this IC engine shall not exceed 0.0007 g-PM10/bhp-hr based on USEPA certification using ISO 8178 test procedure. [District Rules 2201 and 4102, and 17 CCR 93116] Federally Enforceable Through Title V Permit
13. This engine shall be operated and maintained in proper operating condition as recommended by the engine manufacturer or emissions control system supplier. [District Rule 4702] Federally Enforceable Through Title V Permit
14. Operation of this engine shall not exceed 2,160 hours per year. [District Rule 2201] Federally Enforceable Through Title V Permit
15. During periods of operation, the permittee shall monitor the operational characteristics of the engine as recommended by the manufacturer or emission control system supplier (for example: check engine fluid levels, battery, cables and connections; change engine oil and filters; replace engine coolant; and/or other operational characteristics as recommended by the manufacturer or supplier). [District Rule 4702] Federally Enforceable Through Title V Permit
16. The permittee shall maintain an engine operating log that shall include the following: daily records of the date, location at the facility, operational time; a record of the total annual hours of operation of the engine; and records of operational characteristics monitoring. [District Rules 1070, 2201, and 4702, and 17 CCR 93116] Federally Enforceable Through Title V Permit
17. The permittee shall maintain monthly records of the type of fuel purchased and shall retain fuel purchase records that demonstrate that the only CARB certified diesel fuel was purchased to supply this engine. [District Rules 1070 and 4702] Federally Enforceable Through Title V Permit
18. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070 and 4702, and 17 CCR 93116] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-535-50-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: FRESNO/CLOVIS REGIONAL WWTP
MAILING ADDRESS: 5607 W JENSEN AVE
FRESNO, CA 93706-9458

LOCATION: 5607 W JENSEN AVE
FRESNO, CA 93706

EQUIPMENT DESCRIPTION:
WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 75.1 MMBTU/HR JOHN ZINK ZULE ULTRA-LOW EMISSION ENCLOSED DIGESTER GAS FLARE

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender NOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter - 2,000 lb, 2nd quarter - 2,000 lb, 3rd quarter - 2,000 lb, and 4th quarter - 2,000 lb. These amounts include the applicable offset ratio specified in Rule 2201, Section 4.8 (as amended 8/15/19). NOx ERCs used to satisfy the offset quantity required under District Rule 2201 must be surplus at the time of issuance of this ATC and the total quantity of ERCs surrendered shall be calculated based on the ERC surplus value percent discount of each ERC certificate used. [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers N-1595-2, N-1598-2, S-5313-2, and/or S-5317-2 (or certificates split from these certificates) shall be used to supply the required NOx offsets, unless a revised offsetting proposal is received and approved by the District, upon which this ATC shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

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5. Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender SOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter - 5,881 lb, 2nd quarter - 5,881 lb, 3rd quarter - 5,881 lb, and 4th quarter - 5,881 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19). [District Rule 2201] Federally Enforceable Through Title V Permit

6. ERC Certificate Numbers N-1489-5, N-1491-5, and/or N-1573-5 (or certificates split from these certificates) shall be used to supply the required SOx offsets, unless a revised offsetting proposal is received and approved by the District, upon which this ATC shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

7. Within 90 days of startup of the equipment authorized by this Authority to Construct (ATC), Permits to Operate (PTOs) C-535-6-18 and -45-0 shall each be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201] Federally Enforceable Through Title V Permit

8. Authority to Construct (ATC) C-535-9-19 shall be implemented concurrently or prior to implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

9. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

10. The exhaust from the flare shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

11. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

12. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit

13. Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.025 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.06 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801] Federally Enforceable Through Title V Permit

14. The maximum sulfur content of the gas combusted in the flare shall not exceed 200 ppmv as H2S on any day. Multiple sulfur content measurements in a day may be averaged to demonstrate compliance with this limit. [District Rule 2201] Federally Enforceable Through Title V Permit

15. The total heat input of the gas combusted in the flare shall not exceed 1,802.4 MMBtu/day based on the higher heating value (HHV) of the gas flared. [District Rule 2201] Federally Enforceable Through Title V Permit

16. A flame shall be present at all times in the flare whenever combustible gases are vented through the flare. [District Rule 4311] Federally Enforceable Through Title V Permit

17. The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 4311] Federally Enforceable Through Title V Permit

18. Unless the flare is equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. The flame detection device shall be kept operational at all times except during flare maintenance when the flare is isolated from gas flow. All pilot monitor downtime shall be reported annually pursuant to Rule 4311, Section 6.2.3.6. [District Rule 4311] Federally Enforceable Through Title V Permit

19. Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 4311] Federally Enforceable Through Title V Permit

20. Flaring is prohibited unless it is consistent with an approved flare minimization plan (FMP), pursuant to District Rule 4311, Section 6.5, and all commitments listed in that plan have been met. This standard does not apply if the APCO determines that the flaring is caused by an emergency as defined by District Rule 4311, Section 3.7 and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere. [District Rule 4311] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. The operator shall monitor and record the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. [District Rule 4311] Federally Enforceable Through Title V Permit

22. Source testing to measure NOx and VOC emissions from the flare shall be conducted within 60 days of initial startup. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

23. Source testing to measure NOx and VOC emissions from the flare shall be conducted at least once every twelve (12) months, unless the flare has not operated within the last 12-month period in which case source testing will be required within 60 days of recommencing operation of the flare. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

24. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit

25. The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit

26. NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311] Federally Enforceable Through Title V Permit

27. VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used in conjunction with EPA Method 18 or ARB Method 422 "Determination of Volatile Organic Compounds in Emission from Stationary Sources" for the measurement and subtraction of exempt compounds (e.g. methane, ethane, and exempt halogenated compounds). [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

28. Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311] Federally Enforceable Through Title V Permit

29. Total hydrocarbon content and methane (CH4) content of vent gas shall be determined using ASTM Method D1945, ASTM Method UOP 539, EPA Method 18, or EPA Method 25A or 25B. [District Rule 4311] Federally Enforceable Through Title V Permit

30. Hydrogen sulfide (H2S) content of vent gas shall be determined using ASTM Method D1945-96, ASTM Method UOP 539-97, ASTM Method D4084-94, ASTM Method D4468, ASTM Method D4810-88, or ASTM-D5504-20, or other methods approved by the District, ARB, and EPA. [District Rule 4311] Federally Enforceable Through Title V Permit

31. If vent gas composition is monitored with a continuous analyzer employing gas chromatography the minimum sampling frequency shall be one sample every 30 minutes. [District Rule 4311] Federally Enforceable Through Title V Permit

32. If vent gas composition is monitored using continuous analyzers not employing gas chromatography, the total reduced sulfur content of vent gas shall be determined by using EPA Method D4468-85. [District Rule 4311] Federally Enforceable Through Title V Permit

33. For purposes of the flow verification report required by Rule 4311, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: 1) EPA Methods 1 and 2; 2) A verification method recommended by the manufacturer of the flow monitoring equipment installed; 3) Tracer gas dilution or velocity; or 4) Other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

34. The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rule 4311] Federally Enforceable Through Title V Permit

35. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

36. The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

37. The operator shall monitor vent gas composition using one of the five methods included in Rule 4311, Section 6.6.1 through Section 6.6.5, as appropriate. [District Rule 4311] Federally Enforceable Through Title V Permit

38. The operator shall monitor the volumetric flows of purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored. [District Rule 4311] Federally Enforceable Through Title V Permit

39. The operator shall comply with the following requirements as applicable: 1) Periods of flare monitoring system inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Periods of inoperation of monitoring equipment shall not exceed 14 days per any 18-consecutive-month period. Periods of flare monitoring system inoperation do not include the periods when the system feeding the flare is not operating 2: During periods of inoperation of continuous analyzers or auto-samplers installed pursuant to Rule 4311, operators responsible for monitoring shall take one sample within 30 minutes of the commencement of flaring, from the flare header or from an alternate location at which samples are representative of vent gas composition and have samples analyzed pursuant to Rule 4311. During periods of inoperation of required flow monitors, flow shall be calculated using good engineering practices; 3) Maintain and calibrate all required monitors and recording devices in accordance with the applicable manufacturer's specifications. In order to claim that a manufacturer's specification is not applicable, the person responsible for emissions must have, and follow, a written maintenance policy that was developed for the device in question. The written policy must explain and justify the difference between the written procedure and the manufacturer's procedure; and 4) All in-line continuous analyzer and flow monitoring data must be continuously recorded by an electronic data acquisition system capable of one-minute averages. Flow monitoring data shall be recorded as one-minute averages. [District Rule 4311] Federally Enforceable Through Title V Permit

40. The total combined NOx emissions from the flares permitted as Units C-535-50 and -51 shall not exceed 26,056 lb-NOx in any 12 consecutive calendar month period. [District Rule 2201] Federally Enforceable Through Title V Permit

41. On a monthly basis, the permittee shall calculate and record the NOx emissions in pounds from this unit for the prior calendar month. The NOx emissions from this unit in each month shall be calculated as follows: lb-NOx emitted = [total volume of gas flared, in scf] x 10E-06 x [average HHV of gas flared (Btu/scf)] x [NOx emission factor measured in most recent source test (lb-NOx/MMBtu)]. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

42. On a monthly basis, the permittee shall calculate and record the total combined NOx emissions, in pounds, from the flares permitted as Units C-535-50 and -51 for the previous 12 consecutive calendar month period. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

43. The operator of a flare subject to flare minimization plans (FMPs) pursuant to District Rule 4311, Section 5.11 shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

44. The operator shall submit an annual report, in an electronic report approved by the District, to the APCO within 30 days following the end of each 12-month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet (scf) for each day for the previous calendar year; 2) Hydrogen sulfide (H2S) content, methane (CH4) content, and hydrocarbon content of vent gas composition, where applicable; 3) The total reduced sulfur content by volume or hydrogen sulfide content by volume of vent gas flared for each hour of the month; 4) If the flow monitor used pursuant to Rule 4311, Section 5.13 measures molecular weight, the average molecular weight for each hour of each month; 5) For any pilot and purge gas used, the type of gas used, the volumetric flow for each day and for each month, and the means used to determine flow, as applicable; 6) Flare monitoring system downtime periods, including dates and times; 7) For each day and for each month provide calculated SOx emissions (as SO2); and 8) A flow verification report for each flare subject to Rule 4311. The flow verification report shall include flow verification testing pursuant to Rule 4311, Section 6.3.5. [District Rule 4311] Federally Enforceable Through Title V Permit

45. Every five years after the initial FMP submittal, the operator shall submit an updated FMP for each flare to the APCO for approval. The current FMP shall remain in effect until the updated FMP is approved by the APCO. If the operator fails to submit an updated FMP as required by Rule 4311, the existing FMP shall no longer be considered an approved plan. [District Rule 4311] Federally Enforceable Through Title V Permit

46. An updated FMP shall be submitted by the operator pursuant to Rule 4311, Section 6.5 addressing new or modified equipment, prior to installing the equipment. Updated FMP submittals are only required if: 1) The equipment change would require an authority to construct (ATC) and would impact the emissions from the flare, and 2) The modification is not solely the removal or decommissioning of equipment that is listed in the FMP, and has no associated increase in flare emissions. [District Rule 4311] Federally Enforceable Through Title V Permit

47. For purposes of the flow verification report required by Rule 4311, Section 6.2.3.8, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: EPA Methods 1 and 2; a verification method recommended by the manufacturer of the flow monitoring equipment installed pursuant to Section 5.10; tracer gas dilution or velocity; other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

48. The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311] Federally Enforceable Through Title V Permit

49. Operational, non-resettable, totalizing mass or volumetric fuel flow meter(s) or other District-approved alternative method(s) shall be used to measure the amount of gas flared. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

50. The permittee shall maintain records of the higher heating value (HHV), in Btu per standard cubic foot (scf), of the gas flared each calendar quarter in which the unit operates. The records shall include the method(s) used to determine the HHV of the fuel and the dates the HHV was determined. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

51. The SOx emission factor in lb-SOx/MMBtu shall be calculated at least once every quarter the flare operates based on the average sulfur content of the gas flared in ppmv as H2S and the HHV value of the gas flared using the following equation: SOx Emission Factor (lb-SOx/MMBtu) = [average sulfur content of gas flared (ppmv as H2S)] x [0.1688 lb-SOx/MMscf]/[HHV of Gas Flared (Btu/scf)]. [District Rule 2201] Federally Enforceable Through Title V Permit

52. Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur content of the gas flared each day in ppmv as H2S; the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu; and calculations to verify compliance with the total combined NOx emission limit for the flares permitted as Units C-535-50 and -51. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: C-535-51-0 **ISSUANCE DATE:** DRAFT

LEGAL OWNER OR OPERATOR: FRESNO/CLOVIS REGIONAL WWTP
MAILING ADDRESS: 5607 W JENSEN AVE
FRESNO, CA 93706-9458

LOCATION: 5607 W JENSEN AVE
FRESNO, CA 93706

EQUIPMENT DESCRIPTION:
WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 75.1 MMBTU/HR JOHN ZINK ZULE ULTRA-LOW EMISSION ENCLOSED DIGESTER GAS FLARE

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit
3. Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender NOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter - 1,999 lb, 2nd quarter - 2,000 lb, 3rd quarter - 2,000 lb, and 4th quarter - 2,000 lb. These amounts include the applicable offset ratio specified in Rule 2201, Section 4.8 (as amended 8/15/19). NOx ERCs used to satisfy the offset quantity required under District Rule 2201 must be surplus at the time of issuance of this ATC and the total quantity of ERCs surrendered shall be calculated based on the ERC surplus value percent discount of each ERC certificate used. [District Rule 2201] Federally Enforceable Through Title V Permit
4. ERC Certificate Numbers N-1595-2, N-1598-2, S-5313-2, and/or S-5317-2 (or certificates split from these certificates) shall be used to supply the required NOx offsets, unless a revised offsetting proposal is received and approved by the District, upon which this ATC shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (559) 230-5950 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements, Director of Permit Services

Central Regional Office • 1990 E. Gettysburg Ave. • Fresno, CA 93726 • (559) 230-5900 • Fax (559) 230-6061

5. Prior to operating equipment under this Authority to Construct (ATC), permittee shall surrender SOx emission reduction credits (ERCs) for the following quantity of emissions: 1st quarter - 5,880 lb, 2nd quarter - 5,880 lb, 3rd quarter - 5,880 lb, and 4th quarter - 5,881 lb. These amounts include the applicable offset ratio specified in Rule 2201 Section 4.8 (as amended 8/15/19). [District Rule 2201] Federally Enforceable Through Title V Permit

6. ERC Certificate Numbers N-1489-5, N-1491-5, and/or N-1573-5 (or certificates split from these certificates) shall be used to supply the required SOx offsets, unless a revised offsetting proposal is received and approved by the District, upon which this ATC shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

7. Within 90 days of startup of the equipment authorized by this Authority to Construct (ATC), Permits to Operate (PTOs) C-535-6-18 and -45-0 shall each be surrendered to the District and the associated equipment shall be removed or rendered inoperable. [District Rule 2201] Federally Enforceable Through Title V Permit

8. Authority to Construct (ATC) C-535-9-19 shall be implemented concurrently or prior to implementation of this ATC. [District Rule 2201] Federally Enforceable Through Title V Permit

9. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]

10. The exhaust from the flare shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction. [District Rule 4102]

11. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101] Federally Enforceable Through Title V Permit

12. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit

13. Emissions from the flare shall not exceed any of the following limits: NOx (as NO2) - 0.025 lb/MMBtu; SOx (as SO2) - 0.0614 lb/MMBtu, PM10 - 0.015 lb/MMBtu, CO - 0.06 lb/MMBtu; or VOC (as methane) - 0.0027 lb/MMBtu. [District Rules 2201, 4311, and 4801] Federally Enforceable Through Title V Permit

14. The maximum sulfur content of the gas combusted in the flare shall not exceed 200 ppmv as H2S on any day. Multiple sulfur content measurements in a day may be averaged to demonstrate compliance with this limit. [District Rule 2201] Federally Enforceable Through Title V Permit

15. The total heat input of the gas combusted in the flare shall not exceed 1,802.4 MMBtu/day based on the higher heating value (HHV) of the gas flared. [District Rule 2201] Federally Enforceable Through Title V Permit

16. A flame shall be present at all times in the flare whenever combustible gases are vented through the flare. [District Rule 4311] Federally Enforceable Through Title V Permit

17. The flare outlet shall be equipped with an automatic ignition system, or shall operate with a pilot flame present at all times when combustible gases are vented through the flare, except during purge periods for automatic-ignition equipped flares. [District Rule 4311] Federally Enforceable Through Title V Permit

18. Unless the flare is equipped with a flow-sensing ignition system, a heat sensing device such as a thermocouple, ultraviolet beam sensor, infrared sensor, or an equivalent device capable of continuously detecting at least one pilot flame or the flare flame is present shall be installed and operated. The flame detection device shall be kept operational at all times except during flare maintenance when the flare is isolated from gas flow. All pilot monitor downtime shall be reported annually pursuant to Rule 4311, Section 6.2.3.6. [District Rule 4311] Federally Enforceable Through Title V Permit

19. Flares that use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use purge gas for purging. [District Rule 4311] Federally Enforceable Through Title V Permit

20. Flaring is prohibited unless it is consistent with an approved flare minimization plan (FMP), pursuant to District Rule 4311, Section 6.5, and all commitments listed in that plan have been met. This standard does not apply if the APCO determines that the flaring is caused by an emergency as defined by District Rule 4311, Section 3.7 and is necessary to prevent an accident, hazard or release of vent gas directly to the atmosphere. [District Rule 4311] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

21. The operator shall monitor and record the vent gas flow to the flare with a flow measuring device or other parameters as specified in the Permit to Operate. [District Rule 4311] Federally Enforceable Through Title V Permit

22. Source testing to measure NOx and VOC emissions from the flare shall be conducted within 60 days of initial startup. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

23. Source testing to measure NOx and VOC emissions from the flare shall be conducted at least once every twelve (12) months, unless the flare has not operated within the last 12-month period in which case source testing will be required within 60 days of recommencing operation of the flare. [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

24. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test and a source test plan must be submitted for approval at least 30 days prior to testing. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit

25. The results of each source test shall be submitted to the District within 60 days after completion of the source test. [District Rules 1081 and 4311] Federally Enforceable Through Title V Permit

26. NOx emissions for source test purposes shall be determined using EPA Method 19 on a heat input basis, or EPA Method 3A, EPA Method 7E, or ARB 100 on a ppmv basis. [District Rule 4311] Federally Enforceable Through Title V Permit

27. VOC emissions for source test purposes shall be determined using EPA Method 25, except when the outlet concentration must be below 50 ppm in order to meet the standard, in which case Method 25a may be used in conjunction with EPA Method 18 or ARB Method 422 "Determination of Volatile Organic Compounds in Emission from Stationary Sources" for the measurement and subtraction of exempt compounds (e.g. methane, ethane, and exempt halogenated compounds). [District Rules 2201 and 4311] Federally Enforceable Through Title V Permit

28. Oxygen (O2) concentration of flared gas shall be determined using EPA Method 3A, EPA Method 7E, or ARB 100. [District Rule 4311] Federally Enforceable Through Title V Permit

29. Total hydrocarbon content and methane (CH4) content of vent gas shall be determined using ASTM Method D1945, ASTM Method UOP 539, EPA Method 18, or EPA Method 25A or 25B. [District Rule 4311] Federally Enforceable Through Title V Permit

30. Hydrogen sulfide (H2S) content of vent gas shall be determined using ASTM Method D1945-96, ASTM Method UOP 539-97, ASTM Method D4084-94, ASTM Method D4468, ASTM Method D4810-88, or ASTM-D5504-20, or other methods approved by the District, ARB, and EPA. [District Rule 4311] Federally Enforceable Through Title V Permit

31. If vent gas composition is monitored with a continuous analyzer employing gas chromatography the minimum sampling frequency shall be one sample every 30 minutes. [District Rule 4311] Federally Enforceable Through Title V Permit

32. If vent gas composition is monitored using continuous analyzers not employing gas chromatography, the total reduced sulfur content of vent gas shall be determined by using EPA Method D4468-85. [District Rule 4311] Federally Enforceable Through Title V Permit

33. For purposes of the flow verification report required by Rule 4311, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: 1) EPA Methods 1 and 2; 2) A verification method recommended by the manufacturer of the flow monitoring equipment installed; 3) Tracer gas dilution or velocity; or 4) Other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

34. The higher heating value (HHV) of the gas flared shall be determined using ASTM D1826-88, ASTM 1945-81 in conjunction with ASTM D3588-89, or an alternative method approved by the EPA and the District. [District Rule 4311] Federally Enforceable Through Title V Permit

35. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

36. The sulfur content (as H2S) of the digester gas flared shall be monitored at least once every day the flare operates using methods included in this permit, a colorimetric tube system, or other methods approved by the District and EPA. If the average sulfur content of the digester gas is found to exceed the digester gas sulfur content limit of this permit, corrective actions shall be taken to reduce the sulfur content of the digester gas and the sulfur content of the digester gas shall be monitored again within three hours of completion of the corrective action. Records of the dates and results of monitoring of the sulfur content of the digester gas flared and any corrective action required to reduce the sulfur content of the digester gas shall be maintained. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

37. The operator shall monitor vent gas composition using one of the five methods included in Rule 4311, Section 6.6.1 through Section 6.6.5, as appropriate. [District Rule 4311] Federally Enforceable Through Title V Permit

38. The operator shall monitor the volumetric flows of purge and pilot gases with flow measuring devices or other parameters as specified on the Permit to Operate so that volumetric flows of pilot and purge gas may be calculated based on pilot design and the parameters monitored. [District Rule 4311] Federally Enforceable Through Title V Permit

39. The operator shall comply with the following requirements as applicable: 1) Periods of flare monitoring system inoperation greater than 24 continuous hours shall be reported by the following working day, followed by notification of resumption of monitoring. Periods of inoperation of monitoring equipment shall not exceed 14 days per any 18-consecutive-month period. Periods of flare monitoring system inoperation do not include the periods when the system feeding the flare is not operating 2: During periods of inoperation of continuous analyzers or auto-samplers installed pursuant to Rule 4311, operators responsible for monitoring shall take one sample within 30 minutes of the commencement of flaring, from the flare header or from an alternate location at which samples are representative of vent gas composition and have samples analyzed pursuant to Rule 4311. During periods of inoperation of required flow monitors, flow shall be calculated using good engineering practices; 3) Maintain and calibrate all required monitors and recording devices in accordance with the applicable manufacturer's specifications. In order to claim that a manufacturer's specification is not applicable, the person responsible for emissions must have, and follow, a written maintenance policy that was developed for the device in question. The written policy must explain and justify the difference between the written procedure and the manufacturer's procedure; and 4) All in-line continuous analyzer and flow monitoring data must be continuously recorded by an electronic data acquisition system capable of one-minute averages. Flow monitoring data shall be recorded as one-minute averages. [District Rule 4311] Federally Enforceable Through Title V Permit

40. The total combined NOx emissions from the flares permitted as Units C-535-50 and -51 shall not exceed 26,056 lb-NOx in any 12 consecutive calendar month period. [District Rule 2201] Federally Enforceable Through Title V Permit

41. On a monthly basis, the permittee shall calculate and record the NOx emissions in pounds from this unit for the prior calendar month. The NOx emissions from this unit in each month shall be calculated as follows: lb-NOx emitted = [total volume of gas flared, in scf] x 10E-06 x [average HHV of gas flared (Btu/scf)] x [NOx emission factor measured in most recent source test (lb-NOx/MMBtu)]. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

42. On a monthly basis, the permittee shall calculate and record the total combined NOx emissions, in pounds, from the flares permitted as Units C-535-50 and -51 for the previous 12 consecutive calendar month period. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

43. The operator of a flare subject to flare minimization plans (FMPs) pursuant to District Rule 4311, Section 5.11 shall notify the APCO of an unplanned flaring event within 24 hours after the start of the next business day or within 24 hours of their discovery, whichever occurs first. The notification shall include the flare source identification, the start date and time, and the end date and time. [District Rule 4311] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

44. The operator shall submit an annual report, in an electronic report approved by the District, to the APCO within 30 days following the end of each 12-month period. The report shall include the following: 1) The total volumetric flow of vent gas in standard cubic feet (scf) for each day for the previous calendar year; 2) Hydrogen sulfide (H2S) content, methane (CH4) content, and hydrocarbon content of vent gas composition, where applicable; 3) The total reduced sulfur content by volume or hydrogen sulfide content by volume of vent gas flared for each hour of the month; 4) If the flow monitor used pursuant to Rule 4311, Section 5.13 measures molecular weight, the average molecular weight for each hour of each month; 5) For any pilot and purge gas used, the type of gas used, the volumetric flow for each day and for each month, and the means used to determine flow, as applicable; 6) Flare monitoring system downtime periods, including dates and times; 7) For each day and for each month provide calculated SOx emissions (as SO2); and 8) A flow verification report for each flare subject to Rule 4311. The flow verification report shall include flow verification testing pursuant to Rule 4311, Section 6.3.5. [District Rule 4311] Federally Enforceable Through Title V Permit

45. Every five years after the initial FMP submittal, the operator shall submit an updated FMP for each flare to the APCO for approval. The current FMP shall remain in effect until the updated FMP is approved by the APCO. If the operator fails to submit an updated FMP as required by Rule 4311, the existing FMP shall no longer be considered an approved plan. [District Rule 4311] Federally Enforceable Through Title V Permit

46. An updated FMP shall be submitted by the operator pursuant to Rule 4311, Section 6.5 addressing new or modified equipment, prior to installing the equipment. Updated FMP submittals are only required if: 1) The equipment change would require an authority to construct (ATC) and would impact the emissions from the flare, and 2) The modification is not solely the removal or decommissioning of equipment that is listed in the FMP, and has no associated increase in flare emissions. [District Rule 4311] Federally Enforceable Through Title V Permit

47. For purposes of the flow verification report required by Rule 4311, Section 6.2.3.8, vent gas flow shall be determined using one or more of the following methods, or by any alternative method approved by the APCO, ARB, and EPA: EPA Methods 1 and 2; a verification method recommended by the manufacturer of the flow monitoring equipment installed pursuant to Section 5.10; tracer gas dilution or velocity; other flow monitors or process monitors that can provide comparison data on a vent stream that is being directed past the ultrasonic flow meter. [District Rule 4311] Federally Enforceable Through Title V Permit

48. The permittee shall maintain the following records: a copy of the source testing result conducted pursuant to Rule 4311, Section 6.4.2; a copy of the approved flare minimization plan pursuant to Section 6.5; and copies of annual reports submitted to the APCO pursuant to Section 6.2. [District Rule 4311] Federally Enforceable Through Title V Permit

49. Operational, non-resettable, totalizing mass or volumetric fuel flow meter(s) or other District-approved alternative method(s) shall be used to measure the amount of gas flared. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

50. The permittee shall maintain records of the higher heating value (HHV), in Btu per standard cubic foot (scf), of the gas flared each calendar quarter in which the unit operates. The records shall include the method(s) used to determine the HHV of the fuel and the dates the HHV was determined. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

51. The SOx emission factor in lb-SOx/MMBtu shall be calculated at least once every quarter the flare operates based on the average sulfur content of the gas flared in ppmv as H2S and the HHV value of the gas flared using the following equation: SOx Emission Factor (lb-SOx/MMBtu) = [average sulfur content of gas flared (ppmv as H2S)] x [0.1688 lb-SOx/MMscf]/[HHV of Gas Flared (Btu/scf)]. [District Rule 2201] Federally Enforceable Through Title V Permit

52. Records shall be maintained and made available for District inspection of the amount of gas flared, in standard cubic feet (scf) and MMBtu, each day the flare operates; the average sulfur content of the gas flared each day in ppmv as H2S; the calculated SOx emission factor of the gas flared in lb-SOx/MMBtu; and calculations to verify compliance with the total combined NOx emission limit for the flares permitted as Units C-535-50 and -51. [District Rules 1070 and 2201] Federally Enforceable Through Title V Permit

53. All records shall be maintained and retained on-site for a minimum of five years, and shall be made available for District inspection upon request. [District Rules 1070, 2201, and 4311] Federally Enforceable Through Title V Permit

APPENDIX C

SSPE Calculations

C-535-10-4 – 2,307 bhp Diesel-Fired Emergency IC Engine Powering an Electrical Generator

Assumptions

Maximum Engine Rating:	2,307 bhp (Current Permit)
Non-emergency operating schedule:	20 hours/year (Current Permit)
Fuel Used:	CARB certified diesel fuel with a maximum sulfur content of 0.0015% (Current permit and ATCM)
Density of diesel fuel:	7.1 lb/gal
Fuel heating value:	137,381 Btu/gal (US Energy Information Administration)
bhp to Btu/hr conversion:	2,545 Btu/bhp-hr
Thermal efficiency of engine:	commonly ≈ 35%
Conversion factor:	453.59 g/lb

Emission Factors

Emission Factors for C-535-10-4		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	10.7	District Project C-950155 based on "emissions data from manufacturer
*SO_X	0.0051	Ultra-Low Sulfur Fuel See Mass Balance Equation Below
PM_{10}	0.218	District Project C-950155 based on emissions data from manufacturer
CO	2.16	
VOC	0.109	

**The SOx EF is based on the use of ultra-low sulfur diesel fuel with 0.0015% sulfur by weight, as shown in the equation below.*

$$\frac{0.0015\ \text{lb} - \text{S}}{100\ \text{lb} - \text{Diesel}} \times \frac{64\ \text{lb} - \text{SO}_2}{32\ \text{lb} - \text{S}} \times \frac{7.1\ \text{lb} - \text{Diesel}}{\text{gal} - \text{Diesel}} \times \frac{1\ \text{gal} - \text{Diesel}}{137{,}381\ \text{Btu}} \times \frac{1\ \text{Btu}_{\text{in}}}{0.35\ \text{Btu}_{\text{out}}} \times \frac{2{,}545\ \text{Btu}}{1\ \text{bhp} - \text{hr}} \times \frac{453.59\ \text{g}}{1\ \text{lb}} = 0.0051\ \frac{\text{g} - \text{SO}_\text{X}}{\text{bhp} - \text{hr}}$$

PE Calculations

Annual PE for C-535-10 (Emergency IC Engine)							
Pollutant	**EF (g/bhp-hr)**	**x**	**Engine bhp**	**x**	**(hr/yr)**	**÷ 453.59 (g/lb) =**	**lb/yr**
NO_X	10.7	x	2,307	x	20	÷ 453.59 (g/lb) =	**1,088**
SO_X	0.0051	x	2,307	x	20	÷ 453.59 (g/lb) =	**1**
PM_{10}	0.218	x	2,307	x	20	÷ 453.59 (g/lb) =	**22**
CO	2.16	x	2,307	x	20	÷ 453.59 (g/lb) =	**220**
VOC	0.109	x	2,307	x	20	÷ 453.59 (g/lb) =	**11**

C-535-13-8 – Odor Control Scrubbing System

Assumptions:

- VOC is the only affected pollutant of concern emitted by the operation.
- The influent flow rate through the odor control system is 106 million gallons per day (MGD) (current permit)
- VOC emissions from the operation are limited to 0.075 lb-VOC per million gallons (MG) of influent flow (Current permit and Project C-1152998).
- Maximum equipment operating schedule is 24 hr/day, 365 day/year (current permit)

Emission Factor:

VOC = 0.075 lb-VOC/MG (current permit)

Calculations:

PE = Throughput (MG/day) x EF (lb-VOC/MG) x 365 day/year

PE = (106 MG/day) x (0.075 lb-VOC/MG) x 365 day/year
= 2,902 lb-VOC/year

C-535-17-4 – 455 bhp Diesel-Fired Emergency IC Engine Powering an Electric Generator

Assumptions

Non-emergency operating schedule:	20 hours/year (Current Permit)
Fuel Used:	CARB certified diesel fuel with a maximum sulfur content of 0.0015% (Current permit and ATCM)
Density of diesel fuel:	7.1 lb/gal
Fuel heating value:	137,381 Btu/gal (US Energy Information Administration)
bhp to Btu/hr conversion:	2,545 Btu/bhp-hr
Thermal efficiency of engine:	commonly ≈ 35%
Conversion factor:	453.59 g/lb

Emission Factors

Emission Factors for C-535-17-4		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	5.61	District Project C-980317 based on "emissions data from manufacturer
SO_X	0.0051	Ultra-Low Sulfur Fuel See Mass Balance Equation Above
PM_{10}	0.19	District Project C-980317 based on emissions data from manufacturer
CO	1.50	
VOC	0.31	

PE Calculations

Annual PE for C-535-17 (Emergency IC Engine)							
Pollutant	**EF (g/bhp-hr)**	**x**	**Engine bhp**	**x**	**(hr/yr)**	**÷ 453.59 (g/lb) =**	**lb/yr**
NO_X	5.61	x	455	x	20	÷ 453.59 (g/lb) =	**113**
SO_X	0.0051	x	455	x	20	÷ 453.59 (g/lb) =	**0**
PM_{10}	0.19	x	455	x	20	÷ 453.59 (g/lb) =	**4**
CO	1.50	x	455	x	20	÷ 453.59 (g/lb) =	**30**
VOC	0.31	x	455	x	20	÷ 453.59 (g/lb) =	**6**

C-535-26-7 – Digester Gas Treatment System

Assumptions

- Maximum Heat input rating is 7.46 MMBtu/hr (Current Permit)
- The maximum operating schedule is 24 hours per day and 365 days per year (No limit in Current Permit)
- Maximum Inlet H_2S concentration of gas processed through the gas treatment system: 200 ppmv (Current permit limit)
- Inlet Waste Gas Flow Rate is 704 scfm (proposed by applicant in Project C-1110245)

Emission Factors

Emission Factors for C-535-26-7		
Pollutant	**lb/MMBtu**	**Source**
NO_X	0.06	Current Permit C-535-26-7
SO_X	0.191	Inlet flowrate of 704 scfm, 200 ppmv H_2S in gas processed, and 7.46 MMBtu/hr rating (see equation below
PM_{10}	0.016	Current Permit C-535-26-7
CO	0.20	Current Permit C-535-26-7
VOC	0.084	Current Permit C-535-26-7

$$\frac{200\ \text{ft}^3\ \text{H}_2\text{S}}{10^6\ \text{ft}^3} \times \frac{32.06\ \text{lb} - \text{S}}{\text{lb} - \text{mol}\ \text{H}_2\text{S}} \times \frac{\text{lb} - \text{mol}}{379.5\ \text{ft}^3} \times \frac{64.06\ \text{lb} - \text{SO}_2}{32.06\ \text{lb} - \text{S}} = 33.76\ \frac{\text{lb} - \text{SO}_\text{X}}{10^6\ \text{ft}^3}$$

$$\frac{33.76\ \text{lb} - \text{SO}_\text{X}}{10^6\ \text{ft}^3} \times \frac{704\ \text{ft}^3}{\text{min}} \times \frac{60\ \text{min}}{\text{hr}} = 1.426\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{hr}} \div \frac{7.46\ \text{MMBtu}}{\text{hr}} = 0.191\ \frac{\text{lb} - \text{SO}_\text{X}}{\text{MMBtu}}$$

PE Calculations

Annual PE for C-535-26-7									
Pollutant	Emission Factor (lb/MMBtu)	x	Max Heat Input (MMBtu/hr)	x	Daily Hours of Operation (hr/day)	x	Day/Year Operated (day/yr)	=	PE2 (lb/year)
NO_X	0.06	x	7.46	x	24	x	365	=	**3,921**
SO_X	0.191	x	7.46	x	24	x	365	=	**12,482**
PM_{10}	0.016	x	7.46	x	24	x	365	=	**1,046**
CO	0.20	x	7.46	x	24	x	365	=	**13,070**
VOC	0.084	x	7.46	x	24	x	365	=	**5,489**

C-535-48-1 – Metal Parts and Wood Products Coating Operation

Assumptions

- Permitted VOC emissions from metal parts and products coating operations are limited to 280 lb-VOC/year (Current Permit)
- Permitted VOC emissions from wood products coating operations are limited to 230 lb-VOC/year (Current Permit)
- PM_{10} emissions from metal parts and products coating operations are limited to 7 lb-PM_{10}/year (Current Permit)
- PM_{10} emissions from wood products coating operations are limited to 7 lb- PM_{10}/year (Current Permit)
- VOC emissions are calculated daily based on the VOC content and amount of each coating and solvent used (Current Permit)
- PM_{10} emissions are calculated daily based on the solids content and amount of each coating used, the transfer efficiency of the coating equipment, and the control efficiency of the booth filters (Current Permit)
- Total PE from the operation are the total emissions from metal parts and products coating operations and wood products coating operations

Emission Rates

Emission Rates for C-535-48-1			
Pollutant	**Metal Products Coating (lb/yr)**	**Wood Products Coating (lb/yr)**	**Source**
PM_{10}	7	7	Current Permit C-535-48-1
VOC	280	230	Current Permit C-535-48-1

PE Calculations

PE_{VOC} = Metal Products Coating + Wood Products Coating

= 280 lb-VOC/yr + 230 lb-VOC/yr = 510 lb-VOC/yr

PE_{PM10} = Metal Products Coating + Wood Products Coating

= 7 lb-PM_{10}/yr + 7 lb-PM_{10}/yr =14 lb-PM_{10}/yr

C-535-49-1 & -53-1 – 247 BHP Diesel-Fired Emergency IC Engines Powering an Electric Generator

Assumptions

Non-emergency operating schedule:	50 hours/year (Current Permits)
Fuel Used:	CARB certified diesel fuel with a maximum sulfur content of 0.0015% (Current permit and ATCM)
Density of diesel fuel:	7.1 lb/gal
Fuel heating value:	137,381 Btu/gal (US Energy Information Administration)
bhp to Btu/hr conversion:	2,545 Btu/bhp-hr
Thermal efficiency of engine:	commonly ≈ 35%
Conversion factor:	453.59 g/lb

Emission Factors

Emission Factors for C-535-49-1 & -53-1		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	2.61	Current Permits C-535-49-1 & -53-1
SO_X	0.0051	Ultra-Low Sulfur Fuel See Mass Balance Equation Above
PM_{10}	0.10	Current Permits C-535-49-1 & -53-1
CO	0.75	Current Permits C-535-49-1 & -53-1
VOC	0.14	Current Permits C-535-49-1 & -53-1

PE Calculations

Annual PE for C C-535-49-1 & -53-1 (Emergency IC Engines)							
Pollutant	**EF (g/bhp-hr)**	**x**	**Engine bhp**	**x**	**(hr/yr)**	**÷ 453.59 (g/lb) =**	**lb/yr**
NO_X	2.61	x	247	x	50	÷ 453.59 (g/lb) =	**71**
SO_X	0.0051	x	247	x	50	÷ 453.59 (g/lb) =	**0**
PM_{10}	0.10	x	247	x	50	÷ 453.59 (g/lb) =	**3**
CO	0.75	x	247	x	50	÷ 453.59 (g/lb) =	**20**
VOC	0.14	x	247	x	50	÷ 453.59 (g/lb) =	**4**

C-535-54-0 – 539 BHP Diesel-Fired Emergency IC Engine Powering an Electric Generator

Assumptions

Non-emergency operating schedule:	50 hours/year (Current Permit)
Fuel Used:	CARB certified diesel fuel with a maximum sulfur content of 0.0015% (Current permit and ATCM)
Density of diesel fuel:	7.1 lb/gal
Fuel heating value:	137,381 Btu/gal (US Energy Information Administration)
bhp to Btu/hr conversion:	2,545 Btu/bhp-hr
Thermal efficiency of engine:	commonly ≈ 35%
Conversion factor:	453.59 g/lb

Emission Factors

Emission Factors for C-535-54-0		
Pollutant	**Emission Factor (g/bhp-hr)**	**Source**
NO_X	2.65	Current Permit C-535-54-0
SO_X	0.0051	Ultra-Low Sulfur Fuel See Mass Balance Equation Above
PM_{10}	0.12	Current Permit C-535-54-0
CO	2.01	Current Permit C-535-54-0
VOC	0.14	Current Permit C-535-54-0

PE Calculations

Annual PE for C C-535-54-0 (Emergency IC Engine)							
Pollutant	**EF (g/bhp-hr)**	**x**	**Engine bhp**	**x**	**(hr/yr)**	**÷ 453.59 (g/lb) =**	**lb/yr**
NO_X	2.65	x	539	x	50	÷ 453.59 (g/lb) =	**157**
SO_X	0.0051	x	539	x	50	÷ 453.59 (g/lb) =	**0**
PM_{10}	0.12	x	539	x	50	÷ 453.59 (g/lb) =	**7**
CO	2.01	x	539	x	50	÷ 453.59 (g/lb) =	**119**
VOC	0.14	x	539	x	50	÷ 453.59 (g/lb) =	**8**

APPENDIX D

Major Source SSPE1 and SSPE2 Calculations

Emissions from non-road IC engines shall not be included when determining if a facility is a major source. The facility has permits for transportable IC engines that do not remain at one particular site for more than 12 months and, as a result are non-road IC engines; therefore, the emissions from these engines are excluded when determining if the facility is a major source.

In addition, Pursuant to California Health & Safety Code Sections 41901 to 41905, abrasive blasting operations are exempt from District New Source Review (NSR) rules and requirements; therefore, emissions from the abrasive blasting operations are not included in SSPE1 or SSPE2.

The SSPE1 and SSPE2 used for Major Source determination purposes are included summarized in the tables below.

Major Source Determination Pre-Project Stationary Source Potential to Emit (SSPE1)

$SSPE2_{Total} = SSPE2_{Permit\ Unit} + Total_{ERC}$

Major Source Determination SSPE1 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
C-535-6-18 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler)	1,609	3,804	702	8,924	805
C-535-9-18 (Digester Tanks with 36.3 MMBtu/hr Flare)	19,079	19,524	4,770	92,217	859
C-535-10-4 (2,307 bhp Diesel Emergency IC Engine)	1,088	1	22	220	11
C-535-11-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	0	0	0	0	0
C-535-12-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	0	0	0	0	0
C-535-13-8 (150 Electric hp Odor Control Scrubbing System)	0	0	0	0	2,902
C-535-17-4 (455 bhp Diesel Emergency IC Engine)	113	0	4	30	6
C-535-24-5 (Transportable 125 bhp IC Engine Powering an Air Compressor)	0	0	0	0	0
C-535-26-7 (Digester Gas Treatment System with a 7.46 MMBtu/hr Waste Gas Combustion Device)	3,921	12,482	1,046	13,070	5,489
C-535-28-2 (Unconfined Abrasive Blasting Operation with a 600 lb Blasting Pot)[a]	0	0	0	0	0
C-535-44-1 (Transportable 74 bhp Diesel IC Engine Powering a Water Pump)	0	0	0	0	0
C-535-45-0 (Wastewater Treatment Plant Operation Served by a 58.5 MMBtu/hr Digester Flare)	30,748	26,597	7,687	102,492	1,384

Major Source Determination SSPE1 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
C-535-48-1 (Metal Parts and Products and Wood Products Coating Operation with a Spray Booth with Exhaust Filters)	0	0	14	0	510
C-535-49-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-53-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-54-0 (539 bhp Diesel Emergency IC Engine)	157	0	7	119	8
Major Source $SSPE1_{Permit\_Units}$	**56,857**	**62,408**	**14,258**	**217,112**	**11,982**
ERC	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
ERC C-1211-1	-	-	-	-	22
ERC C-1211-2	260	-	-	-	-
ERC C-1211-3	-	-	-	56	-
ERC C-1211-4	-	-	18	-	-
$Total_{ERC}$	**260**	**0**	**18**	**56**	**22**
Total Major Source SSPE1	**57,117**	**62,408**	**14,276**	**217,168**	**12,004**

a. Pursuant to California Health & Safety Code Sections 41901 to 41905, abrasive blasting operations are exempt from District New Source Review (NSR) rules and requirements. The SSPE values are only used to determine applicable NSR requirements; therefore, the potential emissions from the abrasive blasting operation are not included in the SSPE1

Major Source Determination Post-Project Stationary Source Potential to Emit (SSPE2)

$SSPE2_{Total} = SSPE2_{Permit\ Unit} + Total_{ERC}$

Major Source SSPE2 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
~~C-535-6-18 (16.7 MMBtu/hr Digester Gas/Natural Gas-Fired Boiler)~~[a]	0	0	0	0	0
ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)	109	111	27	526	5
C-535-10-4 (2,307 bhp Diesel Emergency IC Engine)	1,088	1	22	220	11
C-535-11-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	0	0	0	0	0
C-535-12-4 (Transportable 140 bhp Diesel Emergency IC Engine Powering a Water Transfer Pump)	0	0	0	0	0
C-535-13-8 (150 Electric hp Odor Control Scrubbing System)	0	0	0	0	2,902
C-535-17-4 (455 bhp Diesel Emergency IC Engine)	113	0	4	30	6

Major Source SSPE2 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
ATC C-535-24-6 (Transportable 125 bhp IC Engine Powering an Air Compressor)	0	0	0	0	0
C-535-26-7 (Digester Gas Treatment System with a 7.46 MMBtu/hr Waste Gas Combustion Device)	3,921	12,482	1,046	13,070	5,489
C-535-28-2 (Unconfined Abrasive Blasting Operation with a 600 lb Blasting Pot)[b]	0	0	0	0	0
ATC C-535-44-2 (Transportable 74 bhp Diesel IC Engine Powering a Water Pump)[b]	0	0	0	0	0
~~C-535-45-0 (Wastewater Treatment Plant Operation Served by a 58.5 MMBtu/hr Digester Flare)~~[a]	0	0	0	0	0
C-535-48-1 (Metal Parts and Products and Wood Products Coating Operation with a Spray Booth with Exhaust Filters)	0	0	14	0	510
C-535-49-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-53-1 (247 bhp Diesel Emergency IC Engine)	71	0	3	20	4
C-535-54-0 (539 bhp Diesel Emergency IC Engine)	157	0	7	119	8
ATC C-535-50-0 (75.1 MMBtu/hr ultra-low emission flare)[c]	26,056	40,394	9,868	39,473	1,776
ATC C-535-51-0 (75.1 MMBtu/hr ultra-low emission flare)[c]		40,394	9,868	39,473	1,776
Major Source $SSPE2_{Permit\_Units}$	**31,586**	**93,382**	**20,862**	**92,951**	**12,491**
ERC	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
ERC C-1211-1	-	-	-	-	22
ERC C-1211-2	260	-	-	-	-
ERC C-1211-3	-	-	-	56	-
ERC C-1211-4	-	-	18	-	-
$Total_{ERC}$	**260**	**0**	**18**	**56**	**22**
Total Major Source SSPE2	**31,846**	**93,382**	**20,880**	**93,007**	**12,513**

a. The applicant has proposed to permanently remove Permit Units C-535-6 and C-535-45 for the exiting boiler and flare as part of this project. The existing boiler is not being replaced, while the flare is being replaced with the proposed ultra-low emission flares.
b. Pursuant to California Health & Safety Code Sections 41901 to 41905, abrasive blasting operations are exempt from District NSR rules and requirements. The SSPE values are only used to determine applicable NSR requirements; therefore, the potential emissions from the abrasive blasting operation are not included in the SSPE2
c. The total combined annual PE2 for NO_X from the new flares will be limited to 26,056 lb-NO_X/year.

APPENDIX E

Quarterly Net Emissions Change (QNEC)

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.
PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

ATC C-535-9-19 (Digester Tanks with 36.3 MMBtu/hr Flare)

As discussed in Sections I and VII.A of this evaluation, the conditions of the current permits for Permit Unit C-535-9 (existing digester gas flare), Permit Unit C-535-24 (transportable diesel-fired IC engine powering an air compressor), and Permit Unit C-535-44 (transportable diesel-fired IC engine powering a pump) limit the total combined annual PE for NO_X for these units to 19,272 lb-NO_X/year. Because the designation of Permit Unit C-535-9 will reduce the total potential NO_X emissions from the units while Permit Units C-535-24 and -44 will continue to be able to operate at full capacity, the quarterly NO_X emission reductions from the units will all be attributed to Permit Unit C-535-9.

QNEC for NO_X for these units is calculated as follows by adding the PE2 for Permit Units C-535-9, -24, -44 and subtracting the total combined PE1 for the units:

109 lb-NO_X/year + 9,898 lb-NO_X/year + 1,099 lb-NO_X/year - 19,272 lb-NO_X/year =
-8,166 lb-NO_X/year ÷ 4 = -2,041.5 lb-NO_X/qtr

PE1 (lb/qtr) C-535-9-18					
	PE1 (lb/year)	÷	4 qtr/year	=	PE1 (lb/qtr)
NO_X	19,079				
SO_X	19524	÷	4 qtr/year	=	4,881.00
PM_{10}	4,770	÷	4 qtr/year	=	1,192.50
CO	92,217	÷	4 qtr/year	=	23,054.25
VOC	859	÷	4 qtr/year	=	214.75

PE2 (lb/qtr) C-535-9-19					
	PE2 (lb/year)	÷	4 qtr/year	=	PE2 (lb/qtr)
NO_X	109				
SO_X	111	÷	4 qtr/year	=	27.75
PM_{10}	27	÷	4 qtr/year	=	6.75
CO	526	÷	4 qtr/year	=	131.50
VOC	5	÷	4 qtr/year	=	1.25

Quarterly NEC [QNEC] C-535-9-19					
	PE2 (lb/qtr)	-	PE1 (lb/qtr)	=	NEC (lb/qtr)
NO_X	=				-2,041.5
SO_X	27.75	-	4,881.00	=	-4,853.25
PM_{10}	6.75	-	1,192.50	=	-1,185.75
CO	131.50	-	23,054.25	=	-22,922.75
VOC	1.25	-	214.75	=	-213.50

ATC C-535-24-6 (Transportable IC Engine Powering an Air Compressor)

As discussed above, all potential NO_X emission reductions from removing the total combined NO_X limit for Permit Units C-535-9, -24, -44 will be attributed to Permit Unit C-535-9.

PE1 (lb/qtr) C-535-24-5					
	PE1 (lb/year)	÷	4 qtr/year	=	PE1 (lb/qtr)
NO_X	9,898	÷	4 qtr/year	=	2,474.50
SO_X	12	÷	4 qtr/year	=	3.00
PM_{10}	459	÷	4 qtr/year	=	114.75
CO	1,811	÷	4 qtr/year	=	452.75
VOC	724	÷	4 qtr/year	=	181.00

PE2 (lb/qtr) C-535-24-6					
	PE2 (lb/year)	÷	4 qtr/year	=	PE2 (lb/qtr)
NO_X	9,898	÷	4 qtr/year	=	2,474.50
SO_X	12	÷	4 qtr/year	=	3.00
PM_{10}	459	÷	4 qtr/year	=	114.75
CO	1,811	÷	4 qtr/year	=	452.75
VOC	724	÷	4 qtr/year	=	181.00

Quarterly NEC [QNEC] C-535-24-6					
	PE2 (lb/qtr)	-	PE1 (lb/qtr)	=	NEC (lb/qtr)
NO_X	2,474.50	-	2,474.50	=	0.00
SO_X	3.00	-	3.00	=	0.00
PM_{10}	114.75	-	114.75	=	0.00
CO	452.75	-	452.75	=	0.00
VOC	181.00	-	181.00	=	0.00

ATC C-535-44-2 (Transportable IC Engine Powering a Pump)

As discussed above, all potential NO_X emission reductions from removing the total combined NO_X limit for Permit Units C-535-9, -24, -44 will be attributed to Permit Unit C-535-9.

PE1 (lb/qtr) C-535-44-1					
	PE1 (lb/year)	÷	4 qtr/year	=	PE1 (lb/qtr)
NO_X	1,099	÷	4 qtr/year	=	274.75
SO_X	2	÷	4 qtr/year	=	0.50
PM_{10}	0	÷	4 qtr/year	=	0.00
CO	26	÷	4 qtr/year	=	6.50
VOC	56	÷	4 qtr/year	=	14.00

PE2 (lb/qtr) C-535-44-2					
	PE2 (lb/year)	÷	4 qtr/year	=	PE2 (lb/qtr)
NO_X	1,099	÷	4 qtr/year	=	274.75
SO_X	2	÷	4 qtr/year	=	0.50
PM_{10}	0	÷	4 qtr/year	=	0.00
CO	26	÷	4 qtr/year	=	6.50
VOC	56	÷	4 qtr/year	=	14.00

Quarterly NEC [QNEC] C-535-44-2					
	PE2 (lb/qtr)	-	PE1 (lb/qtr)	=	NEC (lb/qtr)
NO_X	274.75	-	274.75	=	0.00
SO_X	0.50	-	0.50	=	0.00
PM_{10}	0.00	-	0.00	=	0.00
CO	6.50	-	6.50	=	0.00
VOC	14.00	-	14.00	=	0.00

ATCs C-535-50-0 and -51-0 (Proposed Ultra-Low Emission Flares)

As discussed in Section I of this evaluation, the total combined annual PE2 for NO_X from the new flares will be limited to 26,056 lb-NO_X/year. Therefore, the total QNEC for each of the flares is calculated as follows:

(26,056 lb-NO_X/year ÷ 2) ÷ 4 = 3,257 lb-NO_X/qtr

PE1 (lb/qtr) C-535-50-0 & -51-0					
	PE1 (lb/year)	÷	4 qtr/year	=	PE1 (lb/qtr)
NO_X	0	÷	4 qtr/year	=	0.00
SO_X	0	÷	4 qtr/year	=	0.00
PM_{10}	0	÷	4 qtr/year	=	0.00
CO	0	÷	4 qtr/year	=	0.00
VOC	0	÷	4 qtr/year	=	0.00

PE2 (lb/qtr) C-535-50-0 & -51-0					
	PE2 (lb/year)	÷	4 qtr/year	=	PE2 (lb/qtr)
NO_X	16,447				
SO_X	40,394	÷	4 qtr/year	=	10,098.50
PM_{10}	9,868	÷	4 qtr/year	=	2,467.00
CO	39,743	÷	4 qtr/year	=	9,935.75
VOC	1,776	÷	4 qtr/year	=	444.00

Quarterly NEC [QNEC] C-535-50-0 & -51-0					
	PE2 (lb/qtr)	-	PE1 (lb/qtr)	=	NEC (lb/qtr)
NO_X	=				3,257
SO_X	10,098.50	-	0.00	=	10,098.50
PM_{10}	2,467.00	-	0.00	=	2,467.00
CO	9,935.75	-	0.00	=	9,935.75
VOC	444.00	-	0.00	=	444.00

APPENDIX F

BACT Analysis for Wastewater Digester Tanks Controlled by Flares

Top-Down BACT Analysis for Project C-1193676
Wastewater Digester Tanks Controlled by Flares

Previous District BACT Guideline 1.4.4 – Digester Gas-Fired Flare, which was rescinded on November 7, 2016, listed the BACT requirements that applied to digesters controlled by flares. Because there is no existing District BACT Guideline that applies to the digester gas tanks that are controlled by flares, a project-specific BACT analysis will be performed in accordance the District BACT policy to determine the BACT requirements for the modification of the existing wastewater treatment digester tanks controlled by flares.

I. Proposal

Fresno/Clovis Regional WWTP has requested Authority to Construct (ATC) permits to modify their existing wastewater treatment digester gas tanks by designating an existing flare for the digester tanks as an emergency flare (Permit Unit C-535-9), removing one existing flare (Permit Unit C-535-45), and installing two new ultra-low emission flares to serve as the primary means of disposal of the gas (Permit Units C-535-50 and -51). Fresno/Clovis Regional WWTP operates 13 complete mix mesophilic digesters,[7] which can be operated independently and may be considered separate emission units. However, for purposes of the determination of BACT applicability, each group of digesters served by a flare was treated as an emissions unit. For the determination of the Adjusted Increase in Permitted Emissions (AIPE), the total daily increase in permitted emissions from the digester tanks was divided evenly between the digester tanks that will be controlled by the proposed new flares.

As explained in this evaluation, the flares are emissions control devices used to control the gas from the digester system. The District has determined that an emissions control device is not a source operation that is subject to BACT. Because of this, only direct emissions from the digester tanks may trigger District BACT requirements, not secondary emissions from the flares (i.e. NO_X, SO_X, PM_{10}, and CO). Therefore, BACT for modification of the digester gas tanks served by the flares may only be triggered for VOC emissions. In addition, because this project is a Federal Major Modification for NO_X emissions, BACT will also be addressed for the increases in NO_X emissions from the anaerobic digester tanks controlled by the flares.

[7] Anaerobic Digesters at Water Resource Recovery Facilities – City of Fresno Reclamation Facility (May 12, 2016) https://19january2017snapshot.epa.gov/sites/production/files/2016-05/documents/wrrf_fresno_v2_may_12.pdf

II. BACT Applicability

Modification of Emissions Units with AIPE > 2.0 lb/day

BACT Applicability for Modification of Emissions Unit for C-535-50-0 and -50-0 (Each Group of Digester Tanks Controlled by Flare)				
Pollutant	AIPE for the Digester Tanks (lb/day)	BACT Threshold (lb/day)	SSPE2 (lb/yr)	BACT Triggered?
NO_X*	N/A	N/A	N/A	**Yes****
VOC	3.0	> 2.0	N/A	**Yes**

* NO_X emissions from the units are the result of combustion of gas in the flares. Because the flares are emissions control devices, BACT for modification of an emissions unit may only be triggered for direct emissions from the digester tanks not secondary emissions from the flares, such as NO_X

** BACT for NO_X from the modification of the digester tanks controlled by flares will be addressed because the project is a Federal Major Modifications for NO_X and the modification of the digester gas tanks to install new flares results in a calculated increase in NO_X emissions

III. Top-Down BACT Analyses for the Modification of the Wastewater Treatment Digester Tanks Controlled by Flares

As stated above, a project-specific BACT analysis will be performed for the proposed modification of the existing digester gas tanks by installing two new flares.

1. BACT Analysis for NO_X Emissions:

a. Step 1 - List all control technologies

As mentioned above, District BACT Guideline 1.4.4 – Digester Gas-Fired Flare, which listed BACT requirements for digesters controlled by flares, was rescinded. District BACT Guideline 1.4.4 listed the following BACT requirements for NO_X for wastewater digesters controlled by flares.

Previous SJVAPCD BACT Guideline 1.4.4 for Digester Gas-Fired Flare NO_X Emission Requirements		
Achieved in Practice	Technologically Feasible	Alternate Basic Equipment
Enclosed flare and NO_X emissions ≤ 0.06 lb/MMBtu	Ultra-Low NO_X flare with NO_X emissions ≤ 0.03 lb/MMBtu	--

In addition, the District reviewed the USA Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse, the California Air Resources Board (CARB) BACT Clearinghouse, and the South Coast Air Quality Management District (SCAQMD), the Ventura County Air Pollution Control District (VCAPCD), the Bay Area Air Quality Management District (BAAQMD), and the Sacramento Metropolitan Air Quality Management District (SMAQMD) BACT Guidelines to determine potential control technologies for this class and category of operation. The District also reviewed the applicable flare rules from the District and other California air districts.

The following table summarizes the results of the review of the BACT guidelines and applicable rules for wastewater digesters controlled by flares:

BACT Guideline/Applicable Rule Source	Equipment Rating	NO_X Control Technology/Requirement
SJVAPCD BACT Guideline 2.2.3 Cheese Wastewater Digester (12/30/2021)	All	Achieved in Practice -- Technologically Feasible Ultra low emissions flare with a VOC control efficiency > 99% by weight or VOC emissions < 20 ppmv @ 3% O_2, and NO_X emissions ≤ 0.025 lb-NO_X/MMBtu
SJVAPCD Rule 4311 - Flares (12/17/2020)	All	For enclosed flares at digester operations that operate at an annual capacity not exceeding 100,000 MMBtu/year for two consecutive years: Flare Heat Release Rating < 10 MMBtu/hr: 0.0051 lb-VOC/MMBtu and 0.0952 lb-NO_X/MMBtu Flare Heat Rating 10 - 100 MMBtu/hr: 0.0027 lb-VOC/MMBtu and 0.1330 lb-NO_X/MMBtu Flare Heat Rating > 100 MMBtu/hr: 0.0013 lb-VOC/MMBtu and 0.5240 lb-NO_X/MMBtu For enclosed flares at digester operations that operate at an annual capacity exceeding 100,000 MMBtu/year for two consecutive years: Flares at Digester Operations Located at a Major Source: 0.025 lb-NO_X/MMBtu and 0.038 lb-VOC/MMBtu Flares at Digester Operations Not Located at a Major Source: 0.060 lb-NO_X/MMBtu
SCAQMD BACT Guidelines Part B - Flare, Digester Gas-Fired, Digester Gas, Food Waste and Manure Digester (3/17/2017)	39.3 MMBtu/hr	0.025 lb-NO_X/MMBtu (John Zink Ultra Low Emission (ZULE) Flare)
SCAQMD BACT Guidelines Part B - Flare, Digester Gas-Fired, Digester Gas, Wastewater (3/15/2017)	12 MMBtu/hr	0.025 lb-NO_X/MMBtu (Bekaert CEB 350 Flare)

BACT Guideline/Applicable Rule Source	Equipment Rating	NO_X Control Technology/Requirement
SCAQMD BACT Guidelines Part D Flare, Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill (2/5/2021)	All	1988 0.06 lb-NO_X/MMBtu 2/5/2021 Compliance with SCAQMD Rule 1118.1 (January 4, 2019) For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed digester gas flares that operate at more than 70% capacity for two consecutive years: Digester Gas Flares at Major Facility: 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu Digester Gas Flares at Minor Facility: 0.06 lb-NO_X/MMBtu
SCAQMD Rule 1118.1 – Control of Emissions from Non-Refinery Flares (1/4/2019)	All	For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed digester flares that operate at more than 70% capacity for two consecutive years: Digester Gas Flares at Major Facility: 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu Digester Gas Flares at Minor Facility: 0.06 lb-NO_X/MMBtu
Bay Area AQMD BACT Workbook Flare - Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill (12/16/1991 revised 6/11/2015)	All	Achieved in Practice 0.06 lb-NO_X/MMBtu Technologically Feasible < 0.06 lb-NO_X/MMBtu
Bay Area AQMD BACT Workbook Flare - Digester Gas or Landfill Gas from Hazardous Waste Landfill (10/18/1991 revised 6/11/2015)	All	Achieved in Practice 0.06 lb-NO_X/MMBtu Technologically Feasible < 0.06 lb-NO_X/MMBtu

Additionally, because manure digesters and landfills generate biogas that is similar to the biogas generated by wastewater digesters, the District considered BACT guidelines and rules that are applicable to manure digesters and landfill gas collection systems controlled by flares for the potential transfer of control technologies or emission limits used for these sources to wastewater digesters controlled by flares. The controls and emission limits located that were applicable these sources are shown in the table below.

BACT Guideline/Applicable Rule Source	Equipment Rating	NO_X Control Technology/Requirement
SJVAPCD BACT Guideline 5.8.12 Dairy Manure Digester with Backup/Emergency Flare (8/2/2018)	All	Achieved in Practice -- Technologically Feasible Ultra-low emissions enclosed flare
SJVAPCD BACT Guideline 1.4.3 Landfill Gas Vapor Collection System (1/12/2021)	All	Achieved in Practice Use of an enclosed ultra-low NO_X flare with a control efficiency of = 98% or a controlled VOC emissions concentration of = 20 ppmvd @ 3% O_2 (as hexane, equivalent to 0.038 lb-VOC/MMBtu) and a NO_X emissions rate of = 0.025 lb-NO_X/MMBtu Technologically Feasible --
SCAQMD BACT Guidelines Part B - Flare, Landfill Gas, Active Solid Waste Landfill, Non-Hazardous Waste (3/17/2017)	120 MMBtu/hr 4,000 scfm landfill gas	0.025 lb-NO_X/MMBtu (John Zink Ultra Low Emission (ZULE) Flare)
SCAQMD BACT Guidelines Part B - Flare, Landfill Gas Gathering System (6/8/2001)	248 MMBtu/hr 8,750 scfm	0.06 lb-NO_X/MMBtu
SCAQMD BACT Guidelines Part D Flare, Landfill Gas from Hazardous Waste Landfill (2/5/2021)	All	2020 0.06 lb-NO_X/MMBtu 2/5/2021 Compliance with SCAQMD Rule 1118.1 (January 4, 2019) For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed landfill gas flares that operate at more than 20% capacity for two consecutive years: Landfill Gas Flares 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu
SCAQMD Rule 1118.1 – Control of Emissions from Non-Refinery Flares (1/4/2019)	All	For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed digester flares that operate at more than 70% capacity for two consecutive years: Landfill Gas Flares 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu
Sacramento Metropolitan AQMD BACT Determination 198 –Non-Hazardous Landfill Gas Flare (1/11/2019) (Expired)	All	Achieved in Practice 0.05 lb-NO_X/MMBtu

BACT Guideline/Applicable Rule Source	Equipment Rating	NO_X Control Technology/Requirement
Ventura County APCD Rule 74.17 – Municipal Solid Waste Landfills (2/9/1999)	Design capacity ≥ 2.5 million megagrams and 2.5 million cubic meters, and a NMOC emission rate of ≥ 50 megagrams/yr, as calculated pursuant to 40 CFR 60.754; or More than 500,000 tons of degradable waste in place	0.06 lb-NO_X/MMBtu

There were no NO_X control technologies or emission limits for manure digesters or landfill gas collection systems controlled by flares identified that could applied to wastewater digesters controlled by flares that were more stringent than the most stringent NO_X emission limits identified for wastewater digesters controlled by flares, which was 0.025 lb-NO_X/MMBtu.

Based on an extensive review of California air district rules and BACT guidelines for wastewater digesters controlled by flares and a review of other processes that generate biogas that is controlled by flares, the following emission limit was identified as the most stringent NO_X emission limit that has been achieved for wastewater digester systems controlled by flares:

<u>NO_X Control Option #1: 0.025 lb-NO_X/MMBtu</u>

This option is based upon the District and SCAQMD BACT guidelines and District Rule 4311 – Flares (12/17/2020) and SCAQMD Rule 1118.1 - Control of Emissions from Non-Refinery Flares (1/4/2019). This emission limit has been determined to be achieved in practice.

b. Step 2 - Eliminate technologically infeasible options

There are no technologically infeasible options to eliminate from step 1.

c. Step 3 - Rank remaining options by control effectiveness

1) 0.025 lb-NO_X/MMBtu (Achieved in Practice)

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the highest ranked control option identified above and this option has been determined to be achieved in practice. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

Pursuant to the above BACT Analysis, BACT for NO_X emissions from the modification of the digester tanks to install flares is NO_X emissions 0.025 lb-NO_X/MMBtu. The applicant has proposed to modify the digester gas tanks by installing ultra-low emission flares with NO_X emissions ≤ 0.025 lb-NO_X/MMBtu. Therefore, the BACT requirements for NO_X will be satisfied.

2. BACT Analysis for VOC Emissions:

a. Step 1 - List all control technologies

As mentioned above, District BACT Guideline 1.4.4 – Digester Gas-Fired Flare, which listed BACT requirements for digesters controlled by flares, was rescinded. District BACT Guideline 1.4.4 listed the following BACT requirements for VOC for wastewater digesters controlled by flares.

Previous SJVAPCD BACT Guideline 1.4.4 for Digester Gas-Fired Flare VOC Emission Requirements		
Achieved in Practice	Technologically Feasible	Alternate Basic Equipment
Enclosed flare and VOC emissions ≤ 0.068 lb/MMBtu	--	--

In addition, the District reviewed the USA Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse, the California Air Resources Board (CARB) BACT Clearinghouse, and the South Coast Air Quality Management District (SCAQMD), the Ventura County Air Pollution Control District (VCAPCD), the Bay Area Air Quality Management District (BAAQMD), and the Sacramento Metropolitan Air Quality Management District (SMAQMD) BACT Guidelines to determine potential control technologies for this class and category of operation. The District also reviewed the applicable flare rules from the District and other California air districts.

The following table summarizes the results of the review of the BACT guidelines and applicable rules for wastewater digesters controlled by flares:

BACT Guideline/Applicable Rule Source	Equipment Rating	VOC Control Technology/Requirement
SJVAPCD BACT Guideline 2.2.3 Cheese Wastewater Digester (12/30/2021)	All	Achieved in Practice -- Technologically Feasible Ultra low emissions flare with a VOC control efficiency ≥ 99% by weight or VOC emissions ≤ 20 ppmv @ 3% O_2, and NO_X emissions ≤ 0.025 lb-NO_X/MMBtu
SJVAPCD Rule 4311 - Flares (12/17/2020)	All	For enclosed flares at digester operations that operate at an annual capacity not exceeding 100,000 MMBtu/year for two consecutive years: Flare Heat Release Rating < 10 MMBtu/hr: 0.0051 lb-VOC/MMBtu and 0.0952 lb-NO_X/MMBtu Flare Heat Rating 10 - 100 MMBtu/hr: 0.0027 lb-VOC/MMBtu and 0.1330 lb-NO_X/MMBtu Flare Heat Rating > 100 MMBtu/hr: 0.0013 lb-VOC/MMBtu and 0.5240 lb-NO_X/MMBtu For enclosed flares at digester operations that operate at an annual capacity exceeding 100,000 MMBtu/year for two consecutive years: Flares at Digester Operations Located at a Major Source: 0.025 lb-NO_X/MMBtu and 0.038 lb-VOC/MMBtu Flares at Digester Operations Not Located at a Major Source: --
SCAQMD BACT Guidelines Part B - Flare, Digester Gas-Fired, Digester Gas, Food Waste and Manure Digester (3/17/2017)	39.3 MMBtu/hr	--
SCAQMD BACT Guidelines Part B - Flare, Digester Gas-Fired, Digester Gas, Wastewater (3/15/2017)	12 MMBtu/hr	0.038 lb-VOC/MMBtu (Bekaert CEB 350 Flare)
SCAQMD BACT Guidelines Part D Flare, Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill (2/5/2021)	All	1988 Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1,400 °F, Auto Combustion Air Control, Automatic Shutoff Gas Valve and Automatic Re-Start System 2/5/2021 (Landfill Gas Only) Compliance with SCAQMD Rule 1118.1 (January 4, 2019)

BACT Guideline/Applicable Rule Source	Equipment Rating	VOC Control Technology/Requirement
SCAQMD Rule 1118.1 – Control of Emissions from Non-Refinery Flares (1/4/2019)	All	For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed digester flares that operate at more than 70% capacity for two consecutive years: Digester Gas Flares at Major Facility: 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu Digester Gas Flares at Minor Facility: --
Bay Area AQMD BACT Workbook Flare - Digester Gas or Landfill Gas from Non-Hazardous Waste Landfill (12/16/1991 revised 6/11/2015)	All	Achieved in Practice Ground level, enclosed, >0.6 sec. retention time at >1,400 °F, auto combustion air control, automatic shutoff gas valve and automatic re-start system Technologically Feasible --
Bay Area AQMD BACT Workbook Flare - Digester Gas or Landfill Gas from Hazardous Waste Landfill (10/18/1991 revised 6/11/2015)	All	Achieved in Practice Ground level, enclosed, >0.6 sec. retention time at >1,500 °F, auto combustion air control, automatic shutoff gas valve and automatic re-start system Technologically Feasible --

Additionally, because manure digesters and landfills generate biogas that is similar to the biogas generated by wastewater digesters, the District considered BACT guidelines and rules that are applicable to manure digesters and landfill gas collection systems controlled by flares for the potential transfer of control technologies or emission limits used for these sources to wastewater digesters controlled by flares. The controls and emission limits located that were applicable these sources are shown in the table below.

BACT Guideline/Applicable Rule Source	Equipment Rating	VOC Control Technology/Requirement
SJVAPCD BACT Guideline 5.8.12 Dairy Manure Digester with Backup/Emergency Flare (8/2/2018)	All	Achieved in Practice Open flare (98% control efficiency) Technologically Feasible Ultra-low emissions enclosed flare
SJVAPCD BACT Guideline 1.4.3 Landfill Gas Vapor Collection System (1/12/2021)	All	Achieved in Practice Use of an enclosed ultra-low NO_X flare with a control efficiency of = 98% or a controlled VOC emissions concentration of = 20 ppmvd @ 3% O_2 (as hexane, equivalent to 0.038 lb-VOC/MMBtu) and a NO_X emissions rate of = 0.025 lb-NO_X/MMBtu Technologically Feasible --

BACT Guideline/Applicable Rule Source	Equipment Rating	VOC Control Technology/Requirement
SJVAPCD Rule 4642 – Solid Waste Disposal Sites (4/16/1998)	All	ATC issued prior to July 20, 1995 VOC Control device with a destruction efficiency of at least 90% by weight or reduce the VOC concentration to 30 ppmv or less (measured as methane) corrected to 3% O_2 ATC issued on or after July 20, 1995 VOC Control device with a destruction efficiency of at least 98% by weight or reduce the VOC concentration to 20 ppmv or less (measured as methane) corrected to 3% O_2
SCAQMD BACT Guidelines Part B - Landfill Gas, Active Solid Waste/ Landfill, Non-Hazardous Waste (3/17/2017)	120 MMBtu/hr 4,000 scfm	Permit requirements: 1,400 °F minimum temperature 98% by wt destruction efficiency or less than 20 ppmvd, hexane, @ 3% O_2
SCAQMD BACT Guidelines Part B - Flare, Landfill Gas Gathering System (6/8/2001)	248 MMBtu/hr 8,750 scfm	Minimum Temperature in Flare Stack: 1,400 °F
SCAQMD BACT Guidelines Part D Flare, Landfill Gas from Hazardous Waste Landfill (2/5/2021)	All	1988 Ground Level, Shrouded, ≥ 0.6 Sec. Retention Time at ≥ 1,400 °F, Auto Combustion Air Control, Automatic Shutoff Gas Valve and Automatic Re-Start System 2/5/2021 Compliance with SCAQMD Rule 1118.1 (January 4, 2019) For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed landfill gas flares that operate at more than 20% capacity for two consecutive years: Landfill Gas Flares 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu
SCAQMD Rule 1118.1 – Control of Emissions from Non-Refinery Flares (1/4/2019)	All	For flares installed, replaced, or relocated after January 4, 2019; open flares that operate at more than 5% annual capacity for two consecutive years; and enclosed digester flares that operate at more than 70% capacity for two consecutive years: Landfill Gas Flares 0.025 lb-NO_X/MMBtu, 0.06 lb-CO/MMBtu, and 0.038 lb-VOC/MMBtu

BACT Guideline/Applicable Rule Source	Equipment Rating	VOC Control Technology/Requirement
SCAQMD Rule 1150.1 – Control of Gaseous Emissions from Municipal Solid Waste Landfills (4/1/2011)	All municipal solid waste landfills	Reduce NMOC by at least 98% by weight or reduce the outlet NMOC concentration to less than 20 parts per million by volume (ppmv), dry basis as hexane at 3% oxygen Enclosed flare required unless the flare heat input rating is less than 3.0 MMBtu/hr and cannot support continuous operation of an enclosed flare
Bay Area AQMD Regulation 8, Rule 34 – Solid Waste Disposal Sites (6/15/2005)	Design capacity ≥ 2.5 million megagrams and 2.5 million cubic meters, and a NMOC emission rate of ≥ 50 megagrams/yr, as calculated pursuant to 40 CFR 60.754	Effective July 1, 2002, the collected gases are processed in an enclosed ground type flare, which reduces the amount of NMOC in the collected gases by at least 98 percent by weight or emits less than 30 ppm by volume of NMOC at the outlet, dry basis, expressed as methane, corrected to 3% oxygen
Sacramento Metropolitan AQMD BACT Determination 198 –Non-Hazardous Landfill Gas Flare (1/11/2019) (Expired)	All	Achieved in Practice 98% Non-Methane Organic Compound (NMOC) destruction efficiency or 20 ppmvd NMOC @3% O_2 as hexane
San Luis Obispo County APCD Rule 426 – Landfill Gas Emissions (7/26/1995)	Existing solid waste disposal sites that have received more than 500,000 tons of solid waste and all new solid waste disposal sites constructed after July 26, 1995	VOC destruction/treatment efficiency of at least 98% by weight; or Reduce the VOC concentration at the outlet of the control device to a maximum of 30 ppmv measured as methane and corrected to 3% oxygen on a dry basis Flares shall be of the enclosed ground type with automatic dampers, an automatic shutdown device, a flame arrester, and continuous recording temperature sensors. NO_X emissions shall not exceed 0.06 lb-NO_X/MMBtu CO emissions shall not exceed 0.20 lb-CO/MMBtu

BACT Guideline/Applicable Rule Source	Equipment Rating	VOC Control Technology/Requirement
Ventura County APCD Rule 74.17 – Municipal Solid Waste Landfills (2/9/1999)	Design capacity ≥ 2.5 million megagrams and 2.5 million cubic meters, and a NMOC emission rate of ≥ 50 megagrams/yr, as calculated pursuant to 40 CFR 60.754; or More than 500,000 tons of degradable waste in place	Enclosed ground type flare with automatic dampers, an automatic shutdown device, a flame arrester, and continuous recording temperature sensors. NO_X emissions shall not exceed 0.06 lb-NO_X/MMBtu CO emissions shall not exceed 0.20 lb-CO/MMBtu
40 CFR 60, Subpart WWW - Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification on or After May 30, 1991, but Before July 18, 2014	Design capacity ≥ 2.5 million megagrams and 2.5 million cubic meters, and a NMOC emission rate of ≥ 50 megagrams/yr,	Control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3% oxygen
40 CFR 60, Subpart XXX - Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification After July 17, 2014	Design capacity ≥ 2.5 million megagrams and 2.5 million cubic meters, and a NMOC emission rate of ≥ 50 megagrams/yr,	Control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3% oxygen
40 CFR 63, Subpart AAAA - Subpart AAAA - National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills	Design capacity ≥ 2.5 million megagrams and 2.5 million cubic meters, and an uncontrolled NMOC emission rate of ≥ 50 megagrams/yr at major HAP source or collocated at major HAP source	Control system designed and operated to reduce NMOC by 98 weight-percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3% oxygen

The VOC control technologies and emission limits for manure digesters and landfill gas collection systems controlled by flares listed below were identified above that could potentially be applied to wastewater digesters controlled by flares will be evaluated below.

Based on an extensive review of California air district rules and BACT guidelines for wastewater digesters controlled by flares, the following controls and emission limits for VOC were identified for wastewater digester systems controlled by flares:

a. Ultra-low emissions flare with a VOC control efficiency ≥ 99% by weight or VOC emissions ≤ 20 ppmv @ 3% O_2 (as methane), and NO_X emissions ≤ 0.025 lb-NO_X/MMBtu

   To convert the exhaust VOC concentration to a lb/MMBtu value, it willbe assumed that the digester gas is made of approximately 60% methane (CH_4) and 40% carbon dioxide (CO_2) with an estimated F Factor of approximately 9,125 dscf/MMBtu, which results in a VOC emission factor of 0.009 lb-VOC/MMBtu (see equation below)

VOC – 20 ppmvd @ 3% O_2 as Methane, Digester Gas Combustion

$$\frac{20\ \text{ppmv VOC @ 3\% O}_2}{10^6} \times \frac{16\ \text{lb VOC}}{\text{lb} - \text{mole}} \times \frac{\text{lb} - \text{mole}}{379.5\ \text{ft}^3} \times \frac{9{,}125\ \text{ft}^3}{1\ \text{MMBtu}} \times \frac{20.9\%\ \text{O}_2}{(20.9 - 3)\%\ \text{O}_2} = 0.009\ \frac{\text{lb VOC}}{\text{MMBtu}}$$

b. For enclosed flares with a rating < 10 MMBtu/hr, emissions of 0.0051 lb-VOC/MMBtu and 0.0952 lb-NO_X/MMBtu (District Rule 4311)

c. For enclosed flares with a rating 10 - 100 MMBtu/hr, emissions of 0.0027 lb-VOC/MMBtu and 0.1330 lb-NO_X/MMBtu (District Rule 4311)

d. For enclosed flares with a rating > 100 MMBtu/hr, emissions of 0.0013 lb-VOC/MMBtu and 0.5240 lb-NO_X/MMBtu (District Rule 4311)

e. Enclosed flare with emissions of 0.038 lb-VOC/MMBtu and 0.025 lb-NO_X/MMBtu (District Rule 4311, SCAQMD Rule 1118.1, and SCAQMD BACT Guideline)

In addition, the VOC control technologies and emission limits for manure digesters and landfill gas collection systems controlled by flares that were identified that could potentially be applied to wastewater digesters controlled by flares are listed below. The majority of the limits of landfill gas flares were given in as a maximum emission concentration in parts per million by volume (ppmv) in the exhaust of the flare. The EPA Landfill Methane Outreach Program website[8] states that landfill gas is composed of roughly 50% methane (CH_4) and 50% carbon dioxide (CO_2) and AP 42 Chapter 3.1 – Stationary Gas Turbines (April 2000) gives an average landfill gas heating value of 400 Btu/scf, which is equivalent to approximately 40% methane by volume. To convert the ppmv values to lb/MMBtu values it will be assumed that the landfill gas is composed of 45% methane and 55% carbon dioxide with an estimated F Factor of approximately 9,650 dscf/MMBtu. The following potential VOC control technologies and emission limits for other biogas systems controlled by flares were identified:

a. 98% VOC control (open flare)

[8] https://www.epa.gov/lmop/basic-information-about-landfill-gas

b. Ultra-low emissions enclosed flare

c. Ultra-low NO_X flare with emissions of 0.038 lb-VOC/MMBtu and 0.025 lb-NO_X/MMBtu (District Rule 4311 and SCAQMD Rule 1118.1)

d. 20 ppmv VOC as methane corrected to 3% O_2 (District Rule 4642 and rules in other air districts), equivalent to 0.0095 lb-VOC/MMBtu (see equation below)

VOC – 20 ppmvd @ 3% O_2 as Methane, Landfill Gas Combustion

$$\frac{20\ \text{ppmv VOC @ 3\% O}_2}{10^6} \times \frac{16\ \text{lb VOC}}{\text{lb} - \text{mole}} \times \frac{\text{lb} - \text{mole}}{379.5\ \text{ft}^3} \times \frac{9{,}650\ \text{ft}^3}{1\ \text{MMBtu}} \times \frac{20.9\%\ \text{O}_2}{(20.9 - 3)\%\ \text{O}_2} = 0.0095\ \frac{\text{lb VOC}}{\text{MMBtu}}$$

e. 20 ppmv VOC as hexane corrected to 3% O_2 (California air district rules, 40 CFR 60, Subpart WWW, 40 CFR 60, Subpart XXX, and 40 CFR 63, Subpart AAAA), equivalent to 0.0511 lb-VOC/MMBtu (see equation below)

VOC – 20 ppmvd @ 3% O_2 as Hexane, Landfill Gas Combustion

$$\frac{20\ \text{ppmv VOC @ 3\% O}_2}{10^6} \times \frac{86\ \text{lb VOC}}{\text{lb} - \text{mole}} \times \frac{\text{lb} - \text{mole}}{379.5\ \text{ft}^3} \times \frac{9{,}650\ \text{ft}^3}{1\ \text{MMBtu}} \times \frac{20.9\%\ \text{O}_2}{(20.9 - 3)\%\ \text{O}_2} = 0.0511\ \frac{\text{lb VOC}}{\text{MMBtu}}$$

f. Enclosed Flare with VOC emissions of 30 ppmv as methane corrected to 3% O_2 (California air district rules), equivalent to 0.0143 lb-VOC/MMBtu (see equation below) and NO_X emissions of 0.06 lb-NO_X/MMBtu

VOC – 30 ppmvd @ 3% O_2 as Methane, Landfill Gas Combustion

$$\frac{30\ \text{ppmv VOC @ 3\% O}_2}{10^6} \times \frac{16\ \text{lb VOC}}{\text{lb} - \text{mole}} \times \frac{\text{lb} - \text{mole}}{379.5\ \text{ft}^3} \times \frac{9{,}650\ \text{ft}^3}{1\ \text{MMBtu}} \times \frac{20.9\%\ \text{O}_2}{(20.9 - 3)\%\ \text{O}_2} = 0.0143\ \frac{\text{lb VOC}}{\text{MMBtu}}$$

b. Step 2 - Eliminate technologically infeasible options

The following option will be eliminated from further consideration:

For enclosed flares with a rating > 100 MMBtu/hr, emissions of 0.0013 lb-VOC/MMBtu and 0.5240 lb-NO_X/MMBtu (District Rule 4311)

This option is included in District Rule 4311 and applies to enclosed flares rated greater than 100 MMBtu/hr that are not subject to ultra-low NO_X requirements. These emission limits were based on the limits in Santa Barbara APCD Rule 359 – Flares and Thermal Oxidizers (adopted 6/28/1994). The District adopted Santa Barbara APCD rule limits to satisfy the requirements for Reasonably Available Control Technology (RACT) for flares at major sources. The limits in Santa Barbara APCD Rule 359 appear to be based on the emission factors for the combustion of natural gas in a previous version of AP-42 (e.g. September 1991). These emission limits may not be appropriate for the combustion of biogas in flares.

In addition, there is often a tradeoff between the high temperatures needed for complete combustion and destruction of VOC and the lower temperature required to inhibit the formation of NO_X. District Rule 4311 allows these flares higher NO_X emissions to ensure the required VOC destruction.

Each of the proposed flares are rated less than 100 MMBtu/hr and are subject to the ultra-low NO_X requirements of District Rule 4311, which require NO_X emissions that 21 times lower than the NO_X emissions for this category in the rule. Therefore, the VOC emission limit is not applicable to the proposed flares and it may not be feasible for the flares to consistently achieve this limit; therefore it will be eliminated from further consideration.

c. Step 3 - Rank remaining options by control effectiveness

1) Enclosed flare with emissions of 0.0027 lb-VOC/MMBtu and 0.025 lb-NO_X/MMBtu (proposed by applicant)
2) Enclosed Flare with emissions of 0.0051 lb-VOC/MMBtu and 0.0952 lb-NO_X/MMBtu (District Rule 4311)
3) Enclosed flare with emissions of 20 ppmv VOC as methane corrected to 3% O_2, equivalent to 0.009 lb-VOC/MMBtu, and 0.025 lb-NO_X/MMBtu
4) Enclosed flare with emissions of 30 ppmv VOC as methane corrected to 3% O_2, equivalent to 0.0143 lb-VOC/MMBtu
5) Enclosed flare with emissions of 0.038 lb-VOC/MMBtu and 0.025 lb-NO_X/MMBtu

d. Step 4 - Cost Effectiveness Analysis

The applicant has proposed the highest ranked control option identified above and this option has been determined to be achieved in practice. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

Pursuant to the above BACT Analysis, BACT for VOC emissions from the modification of the digester tanks to install flares is enclosed flares with VOC emissions 0.0027 lb-VOC/MMBtu and NO_X emissions of 0.025 lb-NO_X/MMBtu. The applicant has proposed to modify the digester gas tanks by installing ultra-low emission enclosed flares with VOC emissions 0.0027 lb-VOC/MMBtu and NO_X emissions of 0.025 lb-NO_X/MMBtu. Therefore, the BACT requirements for VOC will be satisfied.

APPENDIX G

ERC Surplus Analyses

San Joaquin Valley Air Pollution Control District
Surplus ERC Analysis

Facility Name:	Fresno/Clovis Regional Wastewater Reclamation Facility	**Date:**	June 14, 2023
Mailing Address:	5607 W Jensen Ave Fresno, CA 93706	**Engineer:**	Ramon Norman
		Lead Engineer:	Derek Fukuda
Contact Person:	Jennifer Loving-Biggert		
Telephone #:	(559) 621-5122		
Email:	Jennifer.Loving@fresno.gov		
ERC Certificate #:	N-1595-2		
ATC Project #:	C-1193676		

I. Proposal

The purpose of this evaluation is to perform an analysis of the current surplus value of the following Emission Reduction Credit (ERC) certificate, which the Fresno/Clovis Regional Wastewater Reclamation Facility has proposed to withdraw to offset NO_X emission increases from Project C-1193676.

ERC Certificate	
Certificate #	**Criteria Pollutant**
N-1595-2	NOx

The purpose of this analysis is to ensure that the emission reductions on this ERC certificate are surplus of all applicable Federal requirements; therefore, this analysis establishes the surplus value of the ERC certificate as of the date of this analysis. The current face value and surplus value of the ERC certificate evaluated in this analysis are summarized in the following table:

Criteria Pollutant Summary: NOx

ERC Certificate N-1595-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Current Value	525	525	525	525
Surplus Value	525	525	525	525

II. Individual ERC Certificate Analysis

ERC Certificate N-1595-2

A. ERC Background

Criteria Pollutant: NOx

ERC Certificate N-1595-2 is a certificate that was split out from parent ERC Certificate N-1198-2. Original ERC Certificate N-1198-2 was issued to Pilkington North America, Inc. (Facility ID #N-477) on February 14, 2014 under Project N-1140725. The ERCs were generated from the shutdown of a glass melting furnace (Unit N-477-10; see attached equipment summary). The following table summarizes the value of the original parent certificate and the current value of the subject certificate proposed to be utilized as a part of the current District analysis:

ERC Certificates N-1198-2 and N-1595-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Original Value of Parent Certificate N-1198-2	106,987	106,252	113,427	113,777
Current Value of ERC Certificate N-1595-2	525	525	525	525

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of NOx generated by the reduction project.

1. District Rules

Rule 2201 – New and Modified Stationary Source Review (4/21/2011)
Rule 2301 – Emission Reduction Credit Banking (1/19/2012)

The application review for the original ERC banking project demonstrated that the operation was in compliance with the requirements of District Rule 2201, and that the ERC complied with the requirements of District Rule 2301 at the time it was issued.

Rule 4354 – Glass Melting Furnaces (5/19/11)

The application review for the original ERC banking project demonstrated that the glass melting furnace had NOx emission rates that were compliant with the applicable rule limits, which were the early enhanced Tier 4 limits of 3.4 lb/ton on a block 24-hr average and 2.9 lb/ton on a rolling 30-day average. The Historical Actual Emissions (HAE) from the shutdown of the unit were calculated using the most stringent applicable rule limit of

2.9 lb/ton (rolling 30-day average). The NOx emission reductions calculated in the original ERC banking project were therefore surplus of the requirements of this rule.

2. Federal Rules and Regulations

40 CFR 60 Subpart CC – Standards of Performance for Glass Manufacturing Plants

Pursuant to §60.290(a) and (b), the requirements of this subpart are applicable to each glass melting furnace that commences construction or modification after June 15, 1979. Since this facility's glass melting furnace did not commence construction or modification after June 15, 1979, it is not subject to the requirements of this subpart. The original NOx emission reductions were therefore surplus of the requirements of this subpart.

40 CFR 61 Subpart N – National Emission Standard for Inorganic Arsenic Emissions From Glass Manufacturing Plants

The source to which this subpart applies is each glass melting furnace that uses commercial arsenic as a raw material. Since the operation was prohibited by permit conditions from using arsenic as a raw material, this subpart was not applicable. The original NOx emission reductions were therefore surplus of the requirements of this subpart.

40 CFR 63 Subpart SSSSSS – National Emission Standard for Inorganic Arsenic Emissions From Glass Manufacturing Plants

This subpart applies to glass manufacturing facilities that are an area source of hazardous air pollutant (HAP) emissions and uses one or more continuous furnaces to produce glass that contains compounds of one or more glass manufacturing metal HAP. Since the operation was prohibited by permit conditions from using arsenic as a raw material, and no other metal HAP were used, this subpart was not applicable. The original NOx emission reductions were therefore surplus of the requirements of this subpart.

C. New or Modified Rules and Regulations Applicable to the Original Banking Project

All District and federal rules and regulations that have been adopted or amended since the date the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 2201 – New and Modified Stationary Source Review (8/15/2019)
Rule 2301 – Emission Reduction Credit Banking (8/15/2019)

Rules 2201 and 2301 have been amended since the original banking project was finalized. In addition, a public hearing to consider the adoption of proposed amendments to Rule 2201 by the District's Governing Board is scheduled for April 20, 2023.

However, the requirements of these rules only applied at the time of the original banking action. Thus, no further evaluation of these rules will be conducted in this analysis.

Rule 4354 – Glass Melting Furnaces (12/16/21)

On December 16, 2021, the District amended Rule 4354 to include lower NOx emission limits. Although EPA has not yet approved the recent amendments to this rule for inclusion in the State Implementation Plan (SIP), the surplus value of ERCS will be determined using the NOx emission limits in Rule 4354. The NOx Emission Limits of Rule 4354 are shown in the tables below.

Rule 4354, Table 1 – NOx Emission Limits, in pounds NOx per ton glass produced, in effect until December 31, 2023	
Type of Glass Produced	**NOx limit**
Container Glass	1.5 [B]
Fiberglass	1.3 [A, C] 3.0 [A, D]
Flat Glass Standard Option	3.7 [A] 3.2 [B]
Flat Glass Enhanced Option	3.4 [A] 2.9 [B]

[A] Block 24-hour average
[B] Rolling 30-day average
[C] Not subject to California Public Resources Code Section 19511
[D] Subject to California Public Resources Code Section 19511

Rule 4354, Table 2 – NOx Emission Limits, in pounds NOx per ton glass produced, in effect on and after January 1, 2024		
Type of Glass Produced	**Phase I NOx limit**	**Phase II NOx limit**
Container Glass	1.1 [B]	0.75 [B]
Fiberglass	1.3 [A, C] 3.0 [A, D]	1.3 [A, C] 3.0 [A, D]
Flat Glass (Standard)	2.8 [A]	1.7 [A]
Flat Glass (Enhanced)	2.5 [B]	1.5 [B]

[A] Block 24-hour average
[B] Rolling 30-day average
[C] Not subject to California Public Resources Code Section 19511
[D] Subject to California Public Resources Code Section 19511

As shown in the tables above, Rule 4354 currently limits NOx emissions from flat glass production to 2.9 lb/ton based on a rolling 30-day average, and on and after January 1, 2024, flat glass production will be subject to the Rule 4354 Phase I NOx limit of 2.5 lb/ton of glass produced based on a rolling 30-day average. In addition, flat glass production will become subject the Rule 4354 Phase II NOx limit of 1.5 lb/ton of glass produced based on a rolling 30-day average the date of completion of the next furnace rebuild or by January 1, 2030, whichever is sooner. The Phase II NOx limit of 1.5 lb/ton of glass

produced will be used to determine the surplus value of ERC Certificate N-1595-2.

2. Federal Rules and Regulations:

There are no new or modified federal rules or regulations that would have been applicable to the glass melting furnace that was shut down in the original ERC banking project. Therefore, the original NOx emission reductions continue to be surplus of the requirements of federal rules and regulations.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, rules and regulations applicable to permit unit in the original banking project have been adopted or amended since the date the original banking project was finalized. The emissions limits from these new/modified rules and regulations will be compared to the pre and post-project emission limits of the permit unit included in the original banking project to determine any discounting of the original surplus value of emission reductions due to the new/modified rule or regulation.

As discussed above, the original ERC banking Project N-1140725 calculated the emission from the shutdown of the unit using the current applicable Rule 4354 limit of 2.9 lb/ton, which is greater than future limits in the rule.

The amount of ERCs issued from the permit unit at each pre-project emission factor in the original banking project, the percentage of that amount which was discounted due to a new/modified rule or regulation, and the current surplus value of the amount of ERCs from each permit unit is calculated in the table below:

Surplus Value Calculations for Permit Unit N-477-10 Flat Glass Production Furnace		
(A) Emission Reductions Contributing to ERC	440,443	lb/year
Pre-Project (EF1)	2.9	lb/ton
Post-Project (EF2)	0	lb/ton
Most Stringent Applicable Rule (EF_{Rule}): [District Rule 4352, Tables 1 and 2]	1.5	lb/ton
(B) Percent Discount*	48.3%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	227,709	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
$(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

E. Surplus Value of ERC Certificate

As shown in the previous section, the surplus at time of use value of this ERC certificate will be adjusted. The current face value of the ERC certificate, the percent the current value is discounted by based on the surplus analysis in the previous section, and the current calculated surplus value of the ERC certificate is shown in the table below:

ERC Certificate N-1595-2 – Criteria Pollutant NOx					
		1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
(A)	Current ERC Quantity	525	525	525	525
(B)	Percent Discount	**48.3%**	**48.3%**	**48.3%**	**48.3%**
(C) = (A) x [1 – (B)]	**Surplus Value**	**271**	**271**	**271**	**271**

Attachment

Summary of Equipment Shut Down in Original ERC Banking Project

Summary of Equipment Shut Down in Original ERC Banking Project

Permit Number	Equipment Description
N-477-10-8	200 MMBTU/HR GLASS MELTING FURNACE WITH ECLIPSE COMBUSTION MODEL WRSP10.XX. LOW NOX BURNERS AND 3R NOX EMISSIONS CONTROL SYSTEM

San Joaquin Valley Air Pollution Control District
Surplus ERC Analysis

Facility Name:	Fresno/Clovis Regional Wastewater Reclamation Facility	**Date:**	June 14, 2023
Mailing Address:	5607 W Jensen Ave Fresno, CA 93706	**Engineer:**	Ramon Norman
		Lead Engineer:	Derek Fukuda
Contact Person:	Jennifer Loving-Biggert		
Telephone #:	(559) 621-5122		
Email:	Jennifer.Loving@fresno.gov		
ERC Certificate #:	N-1598-2		
ATC Project #:	C-1193676		

I. Proposal

The purpose of this evaluation is to perform an analysis of the current surplus value of the following Emission Reduction Credit (ERC) certificate, which the Fresno/Clovis Regional Wastewater Reclamation Facility has proposed to withdraw to offset NO_X emission increases from Project C-1193676.

Proposed ERC Certificate	
Certificate #	**Criteria Pollutant**
N-1598-2	NOx

The purpose of this analysis is to ensure that the emission reductions on this ERC certificate are surplus of all applicable Federal requirements; therefore, this analysis establishes the surplus value of the ERC certificate as of the date of this analysis. The current face value and surplus value of the ERC certificate evaluated in this analysis are summarized in the following table:

Criteria Pollutant: NOx

ERC Certificate N-1598-2				
	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Current Value	311	287	335	311
Surplus Value	311	287	335	311

II. Individual ERC Certificate Analysis

ERC Certificate N-1598-2

A. ERC Background

Criteria Pollutant: NOx

ERC Certificate N-1598-2 is a certificate that was split out from parent ERC Certificate N-679-2. Original ERC Certificate N-679-2 was issued to Silgan Containers Manufacturing Corp. on April 14, 2008 under project N-1070245. The ERCs were generated from the shutdown of a can manufacturing operation, facility ID N-764, which included coating operations with thermal oxidizers and curing ovens (see equipment summary in Attachment 1). The following table summarizes the values of the original parent certificate and the current value of the subject certificate proposed to be utilized as a part of the current District analysis:

ERC Certificates N-679-2 and N-1598-2				
Certificate	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Original Value of Parent Certificate N-679-2	2,154	2,045	2,093	1,783
Current Value of ERC Certificate N-1598-2	311	287	335	311

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of NOx generated by the reduction project.

1. District Rules

Rule 2201 New and Modified Stationary Source Review (4/21/2011)
Rule 2301 Emission Reduction Credit Banking (1/19/2012)

The application review for the original ERC banking project demonstrated that the operation was in compliance with the requirements of District Rule 2201, and that the ERC complied with the requirements of District Rule 2301 at the time it was issued.

Rule 4309 Dryers, Dehydrators, and Ovens (12/15/05)

This rule applies to any dryer, dehydrator, and oven with a total rated heat input of 5.0 MMBtu/hr or greater. Each of the four curing ovens at this facility had a total heat input of less than 5.0 MMBtu/hr. Therefore, they were not subject to this rule and the emissions reductions were surplus of this rule.

Rule 4604 Can and Coil Coating Operations (9/20/07)

The emission limits and requirements in this rule are only applicable to VOC emissions from the use of coatings and solvents. The rule does not have any limits or requirements that could have affected the NOx reductions from the thermal oxidizers and curing ovens that were used in conjunction with the coatings operations. The NOx reductions were therefore surplus of any requirements of this rule at the time of the original banking.

2. Federal Rules and Regulations

There were no applicable federal rules or regulations identified that applied at the time of this original ERC banking action; therefore, no further discussion is required.

C. New or Modified Rule and Regulations Applicable to the Original Banking Project

All District and federal rules and regulations that have been adopted or amended since the date the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 2201 New and Modified Stationary Source Review (8/15/2019)
Rule 2301 Emission Reduction Credit Banking (8/15/2019)

Rules 2201 and 2301 have been amended since the original banking project was finalized. In addition, a public hearing to consider the adoption of proposed amendments to Rule 2201 by the District's Governing Board is scheduled for April 20, 2023. However, the requirements of these rules only applied at the time of the original banking action. Thus, no further evaluation of these rules will be conducted in this analysis.

Rule 4604 Can and Coil Coating Operations (9/20/07)

Rule 4604 has been incorporated into the State Implementation Plan (SIP) since the original banking action. While incorporation into the SIP has no effect on the rule limits or requirements, it does make those limits and requirements federally enforceable for purposes such as determining whether offsets are surplus at time of use. However, since this rule does not have any limits or requirements that could have affected the NOx reductions from the thermal oxidizers and curing ovens that were used in conjunction with the coating operations, the NOx reductions from the original banking project remain surplus of the requirements of this rule.

2. Federal Rules and Regulations:

40 CFR Part 60 Subpart WW - Standards of Performance for the Beverage Can Surface Coating Industry

This subpart applies to beverage can surface coating facilities that commenced

construction, reconstruction, or modification after November 26, 1980.

Beverage can is defined in this subpart as *"any two-piece steel or aluminum container in which soft drinks or beer are packaged."* The can manufacturing lines at this facility were three-piece can lines and, therefore, this subpart does not apply to this type of operation. Furthermore, this subpart does not have any requirements for NOx emissions. Therefore, the emission reductions continue to be surplus of this subpart.

40 CFR Part 63 Subpart KKKK - National Emission Standards for Hazardous Air Pollutants: Surface Coating of Metal Cans

The requirements of this subpart are applicable to facilities that use 1,500 gallons per year, or more, of coatings in the source category defined in section 63.3481 (a) of this regulation and that is a Major HAP source (as defined in 40 CFR 63.2 – Definitions).

Under project N-1052084, the facility requested the inclusion of a facility-wide condition to limit the facility's HAP emissions to be below Major HAP Source threshold to less than 10 ton/year for any one HAP and less than 25 ton/year for any combination of HAPs in order to not be subject to the requirements of this subpart. Therefore, the requirements of this regulation do not apply.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, the emissions reductions from permit units in the original banking project continue to be surplus of all applicable District and Federal Rules and Regulations. Therefore, no discounting to the ERC values are necessary for surplus at time of use considerations.

E. Surplus Value of ERC Certificate

The emissions continue to be Surplus of all District and Federal Rules and Regulations; therefore, no adjustments to the ERC values are necessary.

ERC Certificate N-1598-2 – Criteria Pollutant NOx					
		1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
(A)	Current ERC Quantity	311	287	335	311
(B)	Percent Discount	**0%**	**0%**	**0%**	**0%**
(C) = (A) x [1 – (B)]	**Surplus Value**	**311**	**287**	**335**	**311**

Attachment

Summary of Equipment Shut Down in Original ERC Banking Project

Summary of Equipment Shut Down in Original ERC Banking Project

District Permit	Equipment Description
N-764-1-7	SHEET COATING LINE WITH A CURING TUNNEL SERVED BY AN 11.018 MMBTU/HR NATURAL GAS FIRED THERMAL OXIDIZER. THE COATING SYSTEM UTILIZED MAY BE EITHER AN ANILOX SINGLE-ROLLER OR A WAGNER TWO-ROLLER, AND THE BACK ROLLER CLEANING SYSTEM MAY BE EITHER A SOLVENTLESS SCRAPER OR A SOLVENT FLOOD SYSTEM
N-764-2-5	THREE PIECE CAN SIDE SEAM COATING AND CURING LINE (LINE #2) WITH A SOUDRONIC WELDER (MODEL # FBB 5502) AND A FLYNN BURNER CORP NATURAL GAS FIRED CURING OVEN (MODEL AEROBURNER, 800 KBTU/HR)
N-764-3-5	THREE PIECE CAN SIDE SEAM COATING AND CURING LINE (LINE #3) WITH A SOUDRONIC WELDER (MODEL # SBW-4400) AND A SARDEE NATURAL GAS FIRED CURING OVEN (175 KBTU/HR)
N-764-6-2	THREE PIECE CAN SIDE SEAM COATING AND CURING LINE (LINE #1) WITH A SOUDRONIC WELDER (MODEL # FBB 5501 R) AND A FLYNN BURNER CORP NATURAL GAS FIRED CURING OVEN (MODEL # AF9-FBB, 400 KBTU/HR)
N-764-7-2	THREE PIECE CAN SIDE SEAM COATING AND CURING LINE (LINE #4) WITH A CORONA WELDER (MODEL # MWM 6000) AND A FLYNN BURNER CORP NATURAL GAS FIRED CURING OVEN (MODEL # AF12-MWM-VG, 400 KBTU/HR)
N-764-8-3	LTG TECHNOLOGIES INC. TYPE DBL CONTINUOUS SHEET COATING LINE AND DRYING OVEN SERVED BY A 6.8 MMBTU/HR NATURAL GAS FIRED LTG TECHNOLOGIES INC. TYPE 8000 THERMAL OXIDIZER. THE COATING SYSTEM UTILIZED MAY BE EITHER AN ANILOX SINGLE ROLL COATING SYSTEM OR A CRABTREE TWO ROLL COATING SYSTEM

San Joaquin Valley Air Pollution Control District
Surplus ERC Analysis

Facility Name:	Fresno/Clovis Regional Wastewater Reclamation Facility	**Date:**	June 14, 2023
Mailing Address:	5607 W Jensen Ave Fresno, CA 93706	**Engineer:**	Ramon Norman
		Lead Engineer:	Derek Fukuda
Contact Person:	Jennifer Loving-Biggert		
Telephone #:	(559) 621-5122		
Email:	Jennifer.Loving@fresno.gov		
ERC Certificate #:	S-5313-2		
ATC Project #:	C-1193676		

I. Proposal

The purpose of this evaluation is to perform an analysis of the current surplus value of the following Emission Reduction Credit (ERC) certificate, which the Fresno/Clovis Regional Wastewater Reclamation Facility has proposed to withdraw to offset NO_X emission increases from Project C-1193676.

ERC Certificate	
Certificate #	**Criteria Pollutant**
S-5313-2	NOx

The purpose of this analysis is to ensure that the emission reductions on this ERC certificate are surplus of all applicable Federal requirements; therefore, this analysis establishes the surplus value of the ERC certificate as of the date of this analysis. The current face value and surplus value of the ERC certificate evaluated in this analysis are summarized in the following table:

Criteria Pollutant Summary: NOx

ERC Certificate S-5313-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Current Value	3,220	3,221	3,221	3,220
Surplus Value	3,220	3,221	3,221	3,220

II. Individual ERC Certificate Analysis

ERC Certificate S-5313-2

A. ERC Background

Criteria Pollutant: NOx

ERC Certificate S-5313-2 is a certificate that was split out from parent ERC Certificate S-4617-2. Original ERC Certificate S-4617-2 was issued to Rio Bravo Poso on August 6, 2015 under project S-1153416. The ERCs were generated from the shutdown of a solid fuel-fired cogeneration unit that used coal, petroleum coke, and biomass as fuel (Permit S-883-3) (see attached equipment summary). The following table summarizes the value of the original parent certificate and the current value of the subject certificate proposed to be utilized as a part of the current District analysis:

ERC Certificates S-4617-2 and S-5313-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Original Value of Parent Certificate S-4617-2	29,596	45,246	57,418	38,786
Current Value of ERC Certificate S-5313-2	3,220	3,221	3,221	3,220

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of NOx generated by the reduction project.

1. District Rules Evaluated

Rule 2201 – New and Modified Stationary Source Review (4/21/2011)
Rule 2301 – Emission Reduction Credit Banking (1/19/2012)

The application review for the original ERC banking project demonstrated that the operation was in compliance with the requirements of District Rule 2201, and that the ERC complied with the requirements of District Rule 2301 at the time it was issued.

2. Other Applicable District Rules at the time of ERC Banking

In addition, to the District rules identified above that were discussed in the application review for the original ERC banking project, the following District rules, which were not specifically discussed in the application review, were applicable at the time of the original ERC banking project.

Rule 4301 – Fuel Burning Equipment (12/17/92)

The solid fuel-fired cogeneration unit associated with the original banking action was subject to the NOx limit of 140 lb/hr specified in Section 5.2.2 of this rule. The permitted NOx limit for the cogeneration unit was 38.90 lb/hr, which is below the Rule 4301 NOx limit. Therefore, the original NOx emission reductions continue to be surplus of this rule.

Rule 4352 - Solid Fuel Fired Boilers, Steam Generators, and Process Heaters (12/15/11)

At the time of the original ERC banking project for the solid fuel-fired cogeneration unit that was shut down, the solid fuel-fired cogeneration unit was subject to the Rule 4352 NOx requirement of 65 ppmv @ 3% O_2 except during start-up and shutdown periods for coke and petroleum coke fuel and was subject to the Rule 4352 NOx requirement of 90 ppmv @ 3% O_2 except during start-up and shutdown periods for biomass fuel. District records indicate that the biomass combustor was primarily fueled with coal and petroleum coke with smaller amounts of biomass fuel. The permitted NOx limit for the cogeneration unit was 0.1000 lb/MMBtu except during periods of combustor start-up and shutdown, which based on the estimated composition of the fuel during the baseline period for the ERC banking project is approximately equivalent to 73 ppmv NOx @ 3% O_2 as shown below. However, based on the baseline emissions information from the Continuous Emissions Monitoring System (CEMS) data that was included in the original ERC banking project, the average NOx emission factor for the biomass combustor during the baseline period was 0.075 lb-NOx/MMBtu, which is approximately 55 ppmv NO_X @ 3% O_2 as shown below. Therefore, the original NOx emission reductions were surplus of the requirements of this rule.

Permit Unit S-883-3 Unit - Biomass Boiler NO_X Conversion

- Permit limit for NOx: 0.1000 lb-NOx/MMBtu
- Average NOx Emission Factor for ERC banking project: 0.075 lb-NOx/MMBtu
- Baseline Period for ERC Banking Action: July 2010 – June 2012
- F Factor (ratio of combustion exhaust volume to higher heating value of fuel) of fuel (coal) from November 15, 2010 Source Test: 9,468 dscf/MMBtu @ 60 °F (9,614 dscf/MMBtu @ 68 °F)
- F Factor of fuel (94% coal, 6% biomass) from August 23, 2011 Source Test: 9,848 dscf/MMBtu @ 60 °F (10,000 dscf/MMBtu @ 68 °F)
- F Factor of fuel (92.7% coal, 7.3% petroleum coke) from August 23, 2011 Source Test: 9,545 dscf/MMBtu @ 60 °F (9,692 dscf/MMBtu @ 68 °F)
- Average F Factor of Fuel during ERC banking baseline period: 9,620 dscf/MMBtu @ 60 °F (9,769 dscf/MMBtu @ 68 °F)

Calculated ppmv value of 0.1000 lb-NO_X/MMBtu during ERC Banking Baseline Period

$$\frac{0.1000\ \text{lb NO}_X}{\text{MMBtu}} \times \frac{(20.9-3)\%\ O_2}{20.9\%\ O_2} \times \frac{1\ \text{MMBtu}}{9{,}620\ \text{ft}^3} \times \frac{379.5\ \text{ft}^3}{\text{lb}-\text{mole}} \times \frac{\text{lb}-\text{mole}}{46\ \text{lb NO}_X} \times \frac{10^6\ \text{ppmv}}{1}$$

$$= 73\ \text{ppmv NO}_X\ @\ 3\%\ O_2$$

Calculated ppmv value of 0.075 lb-NO_X/MMBtu during ERC Banking Baseline Period

$$\frac{0.075\ \text{lb NO}_X}{\text{MMBtu}} \times \frac{(20.9-3)\%\ O_2}{20.9\%\ O_2} \times \frac{1\ \text{MMBtu}}{9{,}620\ \text{ft}^3} \times \frac{379.5\ \text{ft}^3}{\text{lb}-\text{mole}} \times \frac{\text{lb}-\text{mole}}{46\ \text{lb NO}_X} \times \frac{10^6\ \text{ppmv}}{1}$$

$$= 55\ \text{ppmv NO}_X\ @\ 3\%\ O_2$$

3. Federal Rules and Regulations

There were no applicable federal rules or regulations identified that applied at the time of this original ERC banking action; therefore, no further discussion is required.

C. New or Modified Rules and Regulations Applicable to the Original Banking Project

All District and federal rules and regulations that have been adopted or amended since the date the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 2201 – New and Modified Stationary Source Review (8/15/2019)
Rule 2301 – Emission Reduction Credit Banking (8/15/2019)

Rules 2201 and 2301 have been amended since the original banking project was finalized. In addition, a public hearing to consider the adoption of proposed amendments to Rule 2201 by the District's Governing Board is scheduled for April 20, 2023. However, the requirements of these rules only applied at the time of the original banking action. Thus, no further evaluation of these rules will be conducted in this analysis.

Rule 4352 - Solid Fuel Fired Boilers, Steam Generators, and Process Heaters (12/16/21)

On December 16, 2021, the District amended Rule 4352 to include lower the emission limits. EPA has not yet approved the recent amendments to this rule for inclusion in the State Implementation Plan (SIP). However, the requirements of Rule 4352, as amended on December 16, 2021, will be considered when determining the surplus value of ERC S-5313-2. The current NOx emission limits of Rule 4352 are summarized in the tables below.

Rule 4352, Table 1: NO_X Emission Limits	
Fuel Type	**Emission Limits effective until December 31, 2023**
	NO_X Limit
Municipal Solid Waste	165 ppmv corrected to 12% CO_2
Biomass	90 ppmv corrected to 3% O_2
All Others	65 ppmv corrected to 3% O_2

Rule 4352, Table 2: NO_X Emission Limits	
Fuel Type	**Emission Limits effective on and after January 1, 2024**
	NO_X Limit
Municipal Solid Waste	110 ppmv corrected to 12% CO_2 [A] 90 ppmv corrected to 12% CO_2 [B]
Biomass	65 ppmv corrected to 3% O_2 [A]
All Others	65 ppmv corrected to 3% O_2 [A]

[A] Block 24-hour average
[B] Rolling 12-month average

As discussed above, the ERCs being evaluated resulted from the shutdown of a solid fuel-fired cogeneration unit that was primarily fueled with coal and petroleum coke with smaller amounts of biomass. This unit was subject to the NOx emission limit of 65 ppmv @ 3% O_2 for all units that are not fueled primarily with municipal solid waste or biomass, excluding start-up and shutdown periods. As shown in the tables above, the December 16, 2021 amendments to Rule 4352 did not change the NOx emission limit for this category. As discussed above, the average NOx concentration from the unit during the original ERC banking project was approximately 55 ppmv NOx @ 3% O_2; therefore, NOx emissions from the original ERC banking project will continue to be surplus of the current requirements of Rule 4352.

2. Federal Rules and Regulations:

40 CFR Part 60 Subpart D - Standards of Performance for Fossil-Fuel-Fired Steam Generators

Any facility subject to either subpart Da or KKKK of this part is not subject to this subpart. As discussed below, the unit is subject to subpart Da; therefore, the emission reductions continue to be surplus of this subpart.

40 CFR Part 60 Subpart Da - Standards of Performance for Electric Utility Steam Generating Units

The unit in this project is capable of combusting more than 250 MMBtu/hr and constructed after September 18, 1978. Therefore, the unit is subject to this subpart.

The unit had NOx limits that were below the limits in this subpart; therefore, the emission

reductions continue to be surplus of this subpart.

40 CFR Part 60 Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

Steam generating units meeting the applicability requirements under subpart Da (Standards of performance for electric utility steam generating units) are not subject to this subpart. As discussed above, the unit in this project is subject to subpart Da; therefore, the unit is not subject to this subpart and the emission reductions continue to be surplus of this subpart.

40 CFR Part 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

This subpart does not have any requirements for NOx emissions. Therefore, the emission reductions continue to be surplus of this subpart.

40 CFR Part 63 Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

This subpart does not have any requirements for NOx emissions. Therefore, the emission reductions continue to be surplus of this subpart.

40 CFR Part 63 Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units

This subpart does not have any requirements for NOx emissions. Therefore, the emission reductions continue to be surplus of this subpart.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, rules and regulations applicable to permit unit in the original banking project have been adopted or amended since the date the original banking project was finalized. The emissions limits from these new/modified rules and regulations will be compared to the pre and post-project emission limits of the permit unit included in the original banking project to determine any discounting of the original surplus value of emission reductions due to the new/modified rule or regulation.

As discussed above, based on the CEMS data from ERC banking project S-1153416 and the F Factors from the fuel analyses during the ERC banking baseline period, the average NOx emission concentration from the unit during the ERC banking project was approximately 55 ppmv NOx @ 3% O_2.

The amount of ERCs issued from the permit unit at each pre-project emission factor in the original banking project, the percentage of that amount which was discounted due to a

new/modified rule or regulation, and the current surplus value of the amount of ERCs from each permit unit is calculated in the table below:

Surplus Value Calculations for Permit Unit S-883-3 Solid Fuel-Fired Cogeneration Unit		
(A) Emission Reductions Contributing to ERC	171,046	lb/year
Pre-Project (EF1)	55	ppmv @ 15% O_2
Post-Project (EF2)	0	ppmv @ 15% O_2
Most Stringent Applicable Rule (EF_{Rule}): [District Rule 4352, Tables 1 and 2]	65	ppmv @ 15% O_2
(B) Percent Discount*	0.0%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	171,046	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
$(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

E. Surplus Value of ERC Certificate

The emissions continue to be Surplus of all District and federal rules and regulations; therefore, no adjustments to the ERC values is necessary.

ERC Certificate S-5313-2 – Criteria Pollutant NOx					
		1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
(A)	Current ERC Quantity	3,220	3,221	3,221	3,220
(B)	Percent Discount	**0%**	**0%**	**0%**	**0%**
(C) = (A) x [1 – (B)]	**Surplus Value**	**3,220**	**3,221**	**3,221**	**3,220**

Attachment

Summary of Equipment Shut Down in Original ERC Banking Project

Summary of Equipment Shut Down in Original ERC Banking Project

Permit Number	Equipment Description
S-883-3-20	36.0 MW SOLID FUEL FIRED CIRCULATING BED COMBUSTOR COGENERATION UNIT INCLUDING 389 MMBTU/HR COMBUSTOR WITH LOW-TEMPERATURE STAGED COMBUSTION, AMMONIA INJECTION, AND PULVERIZED LIMESTONE INJECTION - POSO CREEK

San Joaquin Valley Air Pollution Control District
Surplus ERC Analysis

Facility Name:	Fresno/Clovis Regional Wastewater Reclamation Facility	**Date:**	June 14, 2023
Mailing Address:	5607 W Jensen Ave Fresno, CA 93706	**Engineer:**	Ramon Norman
		Lead Engineer:	Derek Fukuda
Contact Person:	Jennifer Loving-Biggert		
Telephone #:	(559) 621-5122		
Email:	Jennifer.Loving@fresno.gov		
ERC Certificate #:	S-5317-2		
ATC Project #:	C-1193676		

I. Proposal

The purpose of this evaluation is to perform an analysis of the current surplus value of the following Emission Reduction Credit (ERC) certificate, which the Fresno/Clovis Regional Wastewater Reclamation Facility has proposed to withdraw to offset NO_X emission increases from Project C-1193676.

Proposed ERC Certificate(s)	
Certificate #	**Criteria Pollutant**
S-5317-2	NOx

The purpose of this analysis is to ensure that the emission reductions on this ERC certificate are surplus of all applicable Federal requirements; therefore, this analysis establishes the surplus value of the ERC certificate as of the date of this analysis. The current face value and surplus value of the ERC certificate evaluated in this analysis are summarized in the following table:

Criteria Pollutant: NOx

ERC Certificate S-5317-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Current Value	1,077	304	1,854	1,077
Surplus Value	197	56	339	197

II. Individual ERC Certificate Analysis

ERC Certificate S-5317-2

A. ERC Background

Criteria Pollutant: NOx

ERC Certificate S-5317-2 is a certificate that was split out from parent ERC Certificate S-406-2. Original ERC Certificate S-406-2 was issued to University Cogen Partners LTD on July 1, 1995 under project S-950934 (see detailed equipment summary in Attachment 1). The ERCs were generated from the shutdown of a gas turbine (S-720-1). The following table summarizes the values of the original parent certificate and the current value of the subject certificate proposed to be utilized as a part of the current District analysis:

ERC Certificate S-5317-2				
Pollutant	1st Qtr. (lb/qtr)	2nd Qtr. lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
Original Value of Parent Certificate S-406-2	20,238	17,410	19,037	19,604
Current Value of ERC Certificate S-5317-2	1,077	304	1,854	1,077

B. Applicable Rules and Regulations at Time of Original Banking Project

Based on the application review for the original ERC banking project, the following rules and regulations were evaluated to determine the surplus value of actual emission reductions of NOx generated by the reduction project.

1. District Rules

Rule 2201 – New and Modified Stationary Source Review (4/21/2011)
Rule 2301 – Emission Reduction Credit Banking (1/19/2012)

The application review for the original ERC banking project demonstrated that the operation was in compliance with the requirements of District Rule 2201, and that the ERC complied with the requirements of District Rule 2301 at the time it was issued.

Rule 4703 Stationary Gas Turbines (3/16/95)

The application review for the original ERC banking project demonstrated that the gas turbine had NO_X limits that were below the limits in the Rules listed above (42 ppmv NOx). Therefore, the original NOx emission reductions were surplus of all applicable District Rule requirements.

2. Federal Rules and Regulations

There were no applicable federal rules or regulations with NOx emissions limitations identified that applied at the time of this original ERC banking action; therefore, no further discussion is required.

C. New or Modified Rule and Regulations Applicable to the Original Banking Project

All District and federal rules and regulations that have been adopted or amended since the date the original banking project was finalized will be evaluated below:

1. District Rules:

Rule 2201 – New and Modified Stationary Source Review (8/15/2019)
Rule 2301 – Emission Reduction Credit Banking (8/15/2019)

Rules 2201 and 2301 have been amended since the original banking project was finalized. In addition, a public hearing to consider the adoption of proposed amendments to Rule 2201 by the District's Governing Board is scheduled for April 20, 2023. However, the requirements of these rules only applied at the time of the original banking action. Thus, no further evaluation of these rules will be conducted in this analysis.

Rule 4703 Stationary Gas Turbines (9/20/07)

Any adjustments to the surplus value of emission reductions from these units due to the requirements of this rule (shown below) will be calculated in Section D of this analysis.

Table 5-3: Tier 3 NOx Compliance Limits

Turbine Classification Rating	NOx Compliance Limit, ppmvd @ 15% O2 (Gas Fuel)
d) 3 MW to 10 MW and permit condition for 877 hrs/yr operation or greater and not listed above.	5

2. Federal Rules and Regulations:

40 CFR 60 Subpart GG – Standards of Performance for Stationary Gas Turbines

Per section 60.332 this unit is subject to the NOx emissions as calculated in Section 60.332 (a)(2).

No owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any stationary gas turbine, any gases which contain nitrogen oxides in excess of:

$$STD = 0.0150\frac{(14.4)}{Y} + F$$

where:

STD = allowable ISO corrected (if required as given in § 60.335(b)(1)) NO_X emission concentration (percent by volume at 15 percent oxygen and on a dry basis),

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour, and

F = NO_X emission allowance for fuel-bound nitrogen as defined in paragraph (a)(4) of this section

For worst case emissions factor it is assumed

Y = 14.4
F = 0.005

Therefore,

STD = 0.0150 x (14.4/14.4) + 0.005
= 0.02
= 2% NOx by volume @ 15% O_2
= 2,000 ppmv @ 15% O_2

40 CFR Part 60 Subpart KKKK – Standards of Performance for Stationary Combustion Turbines

This subpart applies to stationary combustion turbine with a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the higher heating value of the fuel, which commenced construction, modification, or reconstruction after February 18, 2005. The turbine was not installed after February 18, 2005. Therefore, the emissions requirements from this rule do not apply to the turbine.

40 CFR Part 63 Subpart YYYY - National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines

This subpart does not have any requirements for NOx emissions. Therefore, the emission reductions continue to be surplus of this subpart.

D. Surplus at Time of Use Adjustments to ERC Quantities

As demonstrated in the section above, rules and regulations applicable to permit unit(s) in the original banking project have been adopted or amended since the date the original banking project was finalized. The emissions limits from these new/modified rules and regulations will be compared to the pre and post-project emission limits of each permit unit included in the original banking project to determine any discounting of the original surplus value of emission reductions due to the new/modified rule or regulation.

Per ERC project S-950934 the ERCs were based on the annual average of the actual emissions for the years of 1991 and 1992. The actual emissions used two different emission factors. The actual emissions for 1991 were based on the emission factor of 0.0981 lb/MMBtu (equivalent to 27.6 ppmv @ 15% O_2, pursuant to the source test results cited). The actual emissions for 1992 were based on the emission factor of 0.0961 lb/MMBTU (equivalent to 27.0 ppmv @ 15% O_2, pursuant to the source test results cited). The credits were therefore proportioned back into the baseline years in order to ensure an accurate discounting for each emission factor. The proportions of the actual emission reductions, on a quarterly basis, were used to proportion the total credits into the baseline years. The quarterly credits for each year were then summed to arrive at the annual total.

The amount of ERCs issued from the permit unit at each pre-project emission factor in the original banking project, the percentage of that amount which was discounted due to a new/modified rule or regulation, and the current surplus value of the amount of ERCs from each permit unit is calculated in the tables below:

Surplus Value Calculations for Permit Unit S-720-1 – Gas Turbine (Baseline Year 1991)		
(A) Emission Reductions Contributing to ERC	37,426	lb/year
Pre-Project (EF1)	27.6	ppmv @ 15% O_2
Post-Project (EF2)	0	ppmv @ 15% O_2
Most Stringent Applicable Rule (EF_{Rule}): [District Rule 4703, Table 5-3]	5	ppmv @ 15% O_2
(B) Percent Discount*	81.9%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	6,774	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
$(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Surplus Value Calculations for Permit Unit S-720-1 – Gas Turbine (Baseline Year 1992)		
(A) Emission Reductions Contributing to ERC	38,863	lb/year
Pre-Project (EF1)	27.0	ppmv @ 15% O_2
Post-Project (EF2)	0	ppmv @ 15% O_2
Most Stringent Applicable Rule (EF_{Rule}): [District Rule 4703, Table 5-3]	5	ppmv @ 15% O_2
(B) Percent Discount*	81.5%	--
Surplus Reductions Contributing to ERC (A) x [1- (B)]	7,190	lb/year

*If $EF_{Rule} \leq EF2$, Percent Discount = 100%, or
If $EF_{Rule} > EF1$, Percent Discount = 0%, otherwise,
$(EF1 - EF_{Rule}) \times 100 \div (EF1 - EF2)$

Total Discount Percentage for ERC Certificate

The total percentage ERC S-5317-2 is discounted by due to new and modified rules and regulations is summarized in the following table:

Total Percent Discount Summary for ERC Certificate S-406-2			
Permit(s)	Amount of ERCs Issued (lb/year)	Percent Discount	Surplus Value (lb/year)
S-720-1 –Gas Turbine (Baseline Year 1991)	37,426	81.9%	6,774
S-720-1 –Gas Turbine (Baseline Year 1992)	38,863	81.5%	7,190
Total	76,289	--	13,964
Total Percent Discount*		**81.7%**	

* Total Percent Discount = [(Total Amount of ERCs Issued – Total Surplus Value) ÷ Total Amount of ERCs Issued] x 100

E. Surplus Value of ERC Certificate

As shown in the previous section, the surplus at time of use value of this ERC certificate will be adjusted. The current face value of the ERC certificate, the percent the current value is discounted by based on the surplus analysis in the previous section, and the current calculated surplus value of the ERC certificate is shown in the table below:

ERC Certificate S-5317-2 – Criteria Pollutant NOx					
		1st Qtr. (lb/qtr)	2nd Qtr. (lb/qtr)	3rd Qtr. (lb/qtr)	4th Qtr. (lb/qtr)
(A)	Current ERC Quantity	1,077	304	1,854	1,077
(B)	Percent Discount	**81.7%**	**81.7%**	**81.7%**	**81.7%**
(C) = (A) x [1 – (B)]	**Surplus Value**	197	56	339	197

Attachment

1. Summary of Equipment Shut Down in Original ERC Banking Project

Summary of Equipment Shut Down in Original ERC Banking Project

District Permit	Equipment Summary
S-720-1-9	8.563 MW NATURAL GAS-FIRED G.T.E. COGENERATION FACILITY - NORTH BELRIDGE FIELD

APPENDIX H

ERC Withdrawal Calculations

ERC Withdrawal Calculations for NO_X

NO_X	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
Total Surplus NO_X Offsets Required (Includes distance offset ratio)	3,999	4,000	4,000	4,000

It will be assumed that Fresno/Clovis Regional Wastewater Reclamation Facility will use the all ERC certificates that are available to offset the NO_X emissions increase for the project. The ERC offsetting proposal below is based on this.

NO_X ERCs from N-1595-2	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC N-1595-2	525	525	525	525
ERC N-1595-2 Surplus Value	271	271	271	271
ERC N-1595-2 Surplus Value Percent Discount	48.3%	48.3%	48.3%	48.3%
Surplus Offsets Used from ERC N-1595-2 Including Surplus Discount	271	271	271	271
Total Offsets Used from ERC N-1595-2 Including Surplus Discount	525	525	525	525
Remaining Credits from ERC N-1595-2 to be reissued to Facility	0	0	0	0

NO_X ERCs from N-1598-2	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC N-1598-2	311	287	335	311
ERC N-1598-2 Surplus Value	311	287	335	311
ERC N-1598-2 Surplus Value Percent Discount	0%	0%	0%	0%
Surplus Offsets Used from ERC N-1598-2 Including Surplus Discount	311	287	335	311
Total Offsets Used from ERC N-1598-2 Including Surplus Discount	311	287	335	311
Remaining Credits from ERC N-1598-2 to be reissued to Facility	0	0	0	0

NO_X ERCs from S-5313-2	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC S-5313-2	3,220	3,221	3,221	3,220
ERC S-5313-2 Surplus Value	3,220	3,221	3,221	3,220
ERC S-5313-2 Surplus Value Percent Discount	0%	0%	0%	0%
Surplus Offsets Used from ERC S-5313-2 Including Surplus Discount	3,220	3,221	3,221	3,220
Total Offsets Used from ERC S-5313-2 Including Surplus Discount	3,220	3,221	3,221	3,220
Remaining Credits from ERC S-5313-2 to be reissued to Facility	0	0	0	0

NO_X ERCs from S-5317-2	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC S-5317-2	1,077	304	1,854	1,077
ERC S-5317-2 Surplus Value	197	56	339	197
ERC S-5317-2 Surplus Value Percent Discount	81.7%	81.7%	81.7%	81.7%
Surplus Offsets Used from ERC S-5317-2 Including Surplus Discount	197	56	339	197
Total Offsets Used from ERC S-5317-2 Including Surplus Discount	1,077	304	1,854	1,077
Remaining Credits from ERC S-5317-2 to be reissued to Facility	0	0	0	0

NOx ERC Withdrawal Summary				
NO_X	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
Total Surplus NO_X Offsets Required (Includes distance offset ratio)	3,999	4,000	4,000	4,000
Total Surplus NOx Offsets provided from ERC N-1595-2	271	271	271	271
Total Surplus NOx Offsets provided from ERC N-1598-2	311	287	335	311
Total Surplus NOx Offsets provided from ERC S-5313-2	3,220	3,221	3,221	3,220
Total Surplus NOx Offsets provided from ERC S-5317-2	197	56	339	197
Total Surplus NOx Offsets Provided	**3,999**	**3,835**	**4,166**	**3,999**

Pursuant to Rule 2201, Section 4.13.8, Actual Emission Reductions for NO_X that occurred from April through November (2nd qtr, 3rd qtr, and two of the three months in the 4th qtr) may be used to offset increases in NO_X during any period of the year. Therefore, as shown in the table above, the applicant has proposed to withdraw sufficient surplus NO_X offsets for the project.

ERC Withdrawal Calculations for SO_X

SO_X	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
Total SO_X Offsets Required (Includes distance offset ratio)	11,761	11,761	11,761	11,762

It will be assumed that Fresno/Clovis Regional Wastewater Reclamation Facility will use the smallest ERC certificates first in order to reduce the total number of ERC certificates that they must track. The ERC offsetting proposal below is based on this.

SO_X ERCs from N-1489-5	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC N-1489-5 Value	0	0	922	921
Offsets Used from ERC N-1489-5	0	0	922	921
Remaining Credits from ERC N-1489-5 to be reissued to Facility	0	0	0	0

SO_X ERCs from N-1491-5	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC N-1491-5 Value	921	922	0	0
Offsets Used from ERC N-1491-5	921	922	0	0
Remaining Credits from ERC N-1491-5 to be reissued to Facility	0	0	0	0

SO_X ERCs from N-1573-5	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
ERC N-1573-5 Value	15,511	15,511	13,652	13,652
Offsets Used from ERC N-1573-5	10,840	10,839	10,839	10,841
Remaining Credits from ERC N-1573-5 to be reissued to Facility	4,671	4,672	2,786	2,784

SOx ERC Withdrawal Summary				
SO_X	1st Quarter (lb)	2nd Quarter (lb)	3rd Quarter (lb)	4th Quarter (lb)
Total SO_X Offsets Required (Includes distance offset ratio)	11,761	11,761	11,761	11,762
Total SOx Offsets provided from ERC N-1489-5	0	0	922	921
Total SOx Offsets provided from ERC N-1491-5	921	922	0	0
Total SOx Offsets provided from ERC N-1573-5	10,840	10,839	10,839	10,841
Total SOx Offsets Provided	**11,761**	**11,761**	**11,761**	**11,762**

As shown in the table above, the applicant has proposed to withdraw sufficient SO_X offsets for the project.

APPENDIX I

Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) Memo

San Joaquin Valley Air Pollution Control District
Risk Management Review and Ambient Air Quality Analysis
REVISED

To:	Ramon Norman – Permit Services
From:	Will Worthley – Technical Services
Date:	April 18, 2023
Facility Name:	Fresno/Clovis Regional WWTP
Location:	5607 W Jensen Ave, Fresno, CA
Application #(s):	C-535-50-0, -51-0
Project #:	C-1193676

1. Summary

1.1 RMR

Units	Prioritization Score	Acute Hazard Index	Chronic Hazard Index	Maximum Individual Cancer Risk	T-BACT Required	Special Permit Requirements
50-0	3.71	0.00	0.00	3.69E-07	No	Yes
51-0	3.71	0.00	0.00	3.73E-07	No	Yes
Project Totals	7.43	0.00	0.00	7.42E-07		
Facility Totals	>1	0.02	0.01	5.30E-06		

1.2 AAQA

Pollutant	Air Quality Standard (State/Federal)				
	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass		Pass		
NO_x	Pass				Pass
SO_x	Pass	Pass		Pass	Pass
PM10				Pass[3]	Pass[3]
PM2.5				Pass[4]	Pass[4]

Notes:
1. Results were taken from the attached AAQA Report.
2. The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2) unless otherwise noted below.
3. Modeled PM10 concentrations were below the District SIL for non-fugitive sources of 5 $\mu g/m^3$ for the 24-hour average concentration and 1 $\mu g/m^3$ for the annual concentration.
4. Modeled PM2.5 concentrations were below the District SIL for non-fugitive sources of 1.2 $\mu g/m^3$ for the 24-hour average concentration and 0.2 $\mu g/m^3$ for the annual concentration.

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 50-0, 51-0

1. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap (flapper ok), roof overhang, or any other obstruction.

2. Project Description

Technical Services received a revised request to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the following:

- Unit -50-0: WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 75.1 MMBTU/HR JOHN ZINK ZULE ULTRA-LOW EMISSION ENCLOSED DIGESTER GAS FLARE.
- Unit -51-0: WASTEWATER TREATMENT DIGESTER TANKS SERVED BY A 75.1 MMBTU/HR JOHN ZINK ZULE ULTRA-LOW EMISSION ENCLOSED DIGESTER GAS FLARE

3. RMR Report

3.1 Analysis

The District performed an analysis pursuant to the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015) to determine the possible cancer and non-cancer health impact to the nearest resident or worksite. This policy requires that an assessment be performed on a unit by unit basis, project basis, and on a facility-wide basis. If a preliminary prioritization analysis demonstrates that:

- A unit's prioritization score is less than the District's significance threshold and;
- The project's prioritization score is less than the District's significance threshold and;
- The facility's total prioritization score is less than the District's significance threshold

Then, generally no further analysis is required.

The District's significant prioritization score threshold is defined as being equal to or greater than1.0. If a preliminary analysis demonstrates that either the unit(s) or the project's or the facility's total prioritization score is greater than the District threshold, a screening or a refined assessment is required

If a refined assessment is greater than one in a million but less than 20 in one million for carcinogenic impacts (Cancer Risk) and less than 1.0 for the Acute and Chronic hazard indices(Non-Carcinogenic) on a unit by unit basis, project basis and on a facility-wide basis the proposed application is considered less than significant. For unit's that exceed a cancer risk of 1 in one million, Toxic Best Available Control Technology (TBACT) must be implemented.

Toxic emissions for this project were calculated using the following methods:

- Toxic emissions for this proposed unit were calculated using 2001 Ventura County's Air Pollution Control District emission factors for Natural Gas Fired external combustion and the 1996 speciation of Pt Loma Waste Water Treatment Plant Raw Gas by the SDAPCD.

These emissions were input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy, risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required.

The AERMOD model was used, with the parameters outlined below and meteorological data for Fresno from 2013-2017 (rural dispersion coefficient selected) to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Source Process Rates					
Unit ID	**Process ID**	**Process Material**	**Process Units**	**Hourly Process Rate**	**Annual Process Rate**
50-0	1	Digester Gas	MMscf.	0.12	1051.20
51-0	1	Digester Gas	MMscf.	0.12	1051.20

Point Source Parameters						
Unit ID	**Unit Description**	**Release Height (m)**	**Temp. (°K)**	**Exit Velocity (m/sec)**	**Stack Diameter (m)**	**Vertical/ Horizontal/ Capped**
50-0	67.7 MMBtu/hr Digester Flare (620 HHV)	12.19	1144	5.90	3.05	Vertical
51-0	67.7 MMBtu/hr Digester Flare (620 HHV)	12.19	1144	5.90	3.05	Vertical

4. AAQA Report

The District modeled the impact of the proposed project on the National Ambient Air Quality Standard (NAAQS) and/or California Ambient Air Quality Standard (CAAQS) in accordance with District Policy APR-1925 (Policy for District Rule 2201 AAQA Modeling) and EPA's Guideline for Air Quality Modeling (Appendix W of 40 CFR Part 51). The District uses a progressive three level approach to perform AAQAs. The first level (Level 1) uses a very conservative approach. If this analysis indicates a likely exceedance of an AAQS or Significant Impact Level (SIL), the analysis proceeds to the second level (Level 2) which implements a more refined approach. For the 1-hour NO_2 standard, there is also a third level that can be implemented if the Level 2 analysis indicates a likely exceedance of an AAQS or SIL.

The modeling analyses predicts the maximum air quality impacts using the appropriate emissions for each standard's averaging period. Required model inputs for a refined AAQA include background ambient air quality data, land characteristics, meteorological inputs, a receptor grid, and source parameters including emissions. These inputs are described in the sections that follow.

Ambient air concentrations of criteria pollutants are recorded at monitoring stations throughout the San Joaquin Valley. Monitoring stations may not measure all necessary pollutants, so background data may need to be collected from multiple sources. The following stations were used for this evaluation:

Monitoring Stations				
Pollutant	**Station Name**	**County**	**City**	**Measurement Year**
CO	Clovis	Fresno	Clovis	2016
NOx	Fresno-Drummond	Fresno	Fresno	2016
PM10	Fresno-Drummond	Fresno	Fresno	2016
PM2.5	Clovis	Fresno	Clovis	2016
SOx	Fresno - Garland	Fresno	Fresno	2016

Technical Services performed modeling for directly emitted criteria pollutants with the emission rates below:

Emission Rates (lbs/hour)						
Unit ID	**Process**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
50-0	1	1.69	4.16	4.06	0.34	0.34
51-0	1	1.69	4.16	4.06	0.34	0.34

Emission Rates (lbs/year)						
Unit ID	**Process**	**NOx**	**SOx**	**CO**	**PM10**	**PM2.5**
50-0	1	14,826	36,413	35,588	2,956	2,956
51-0	1	14,826	36,413	35,588	2,956	2,956

The AERMOD model was used to determine if emissions from the project would cause or contribute to an exceedance of any state of federal air quality standard. The parameters outlined below and meteorological data for Fresno form 2013-2017 (rural dispersion coefficient selected) were used for the analysis:

The following parameters were used for the review:

Point Source Parameters						
Unit ID	**Unit Description**	**Release Height (m)**	**Temp. (°K)**	**Exit Velocity (m/sec)**	**Stack Diameter (m)**	**Vertical/ Horizontal/ Capped**
50-0	67.7 MMBtu/hr Digester Flare (620 HHV)	12.19	1144	5.90	3.05	Vertical
51-0	67.7 MMBtu/hr Digester Flare (620 HHV)	12.19	1144	5.90	3.05	Vertical

5. Conclusion

5.1 RMR

The cumulative acute and chronic indices for this facility, including this project, are below 1.0; and the cumulative cancer risk for this facility, including this project, is less than 20 in a million. In addition, the cancer risk for each unit in this project is less than 1.0 in a million. **In accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit requirements listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

5.2 AAQA

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

6. Attachments

A. Modeling request from the project engineer

B. Additional information from the applicant/project engineer

C. Prioritization score w/ toxic emissions summary

D. Facility Summary

E. AAQA results

APPENDIX J

Fresno/Clovis Regional Wastewater Reclamation Facility Compliance Certification

San Joaquin Valley Air Pollution Control District

HEALTHY AIR LIVING

TITLE V MODIFICATION - COMPLIANCE CERTIFICATION FORM

I. TYPE OF PERMIT ACTION (Check appropriate box)

☒ ADMINISTRATIVE AMENDMENT ☐ MINOR MODIFICATION ☐ SIGNIFICANT MODIFICATION

COMPANY NAME: FRESNO-CLOVIS REGIONAL WASTEWATER RECLAMATION FACILITY	FACILITY ID: C-535
1. Type of Organization: ☐ Corporation ☐ Sole Ownership ☒ Government ☐ Partnership ☐ Utility	
2. Owner's Name: CITY OF FRESNO	
3. Agent to the Owner: N/A	

II. COMPLIANCE CERTIFICATION (Read each statement carefully and initial **applicable** circles for confirmation):

(1) Based on information and belief formed after reasonable inquiry, the equipment identified in this application will continue to comply with the applicable federal requirement(s).

(2) Based on information and belief formed after reasonable inquiry, the equipment identified in this application will comply with applicable federal requirement(s) that will become effective during the permit term, on a timely basis.

(3) Corrected information will be provided to the District when I become aware that incorrect or incomplete information has been submitted.

(4) Based on information and belief formed after reasonable inquiry, information and statements in the submitted application package, including all accompanying reports, and required certifications are true, accurate, and complete.

(5) For minor modifications, this application meets the criteria for use of minor permit modification procedures pursuant to District Rule 2520.

I declare, under penalty of perjury under the laws of the state of California, that the forgoing is correct and true:

RE Staggs
Signature of Responsible Official

12-13-19
Date

RICK STAGGS
Name of Responsible Official (please print)

WASTEWATER MANAGER
Title of Responsible Official (please print)