



# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT

JUL 27 2011

Mr. Raul Campos  
Fresno/Clovis Regional WWTP  
5607 W. Jensen Avenue  
Fresno, CA 93706

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # C-535  
Project # 1110245**

Dear Mr. Campos:

Enclosed for your review is the District's analysis of an application for Authority to Construct (ATC) for the facility identified above. The applicant is requesting that a Certificate of Conformity (COC) with the procedural requirements of 40 CFR Part 70 be issued with this project. This ATC authorizes the installation of a digester gas treatment system consisting of a chiller, a compressor, a hydrogen sulfide removal unit, a membrane processing unit, activated carbon adsorption beds and a 7.46 MMBtu/hr waste gas/digester gas fired combustion device.

After addressing any EPA comments made during the 45-day comment period, the ATC will be issued to the facility with a COC. Prior to operating with modifications authorized by the ATC, 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. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner  
Director of Permit Services

Enclosures

c: Dustin Brown, Permit Services

**Seyed Sadredin**

Executive Director/Air Pollution Control Officer

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**Northern Region**

4800 Enterprise Way  
Modesto, CA 95356-8718  
Tel: (209) 557-6400 FAX: (209) 557-6475

**Central Region (Main Office)**

1990 E. Gettysburg Avenue  
Fresno, CA 93726-0244  
Tel: (559) 230-6000 FAX: (559) 230-6061  
[www.valleyair.org](http://www.valleyair.org)

**Southern Region**

2700 M Street, Suite 275  
Bakersfield, CA 93301-2373  
Tel: (661) 326-6900 FAX: (661) 326-6985



# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT

JUL 27 2011

Gerardo C. Rios, Chief  
Permits Office  
Air Division  
U.S. EPA - Region IX  
75 Hawthorne St.  
San Francisco, CA 94105

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # C-535  
Project # 1110245**

Dear Mr. Rios:

Enclosed for your review is the District's engineering evaluation of an application for Authority to Construct (ATC) for Fresno/Clovis Regional WWTP located at 5607 W. Jensen Avenue in Fresno, which has been issued a Title V permit. Fresno/Clovis Regional WWTP is requesting that a Certificate of Conformity (COC), with the procedural requirements of 40 CFR Part 70, be issued with this project. This ATC authorizes the installation of a digester gas treatment system consisting of a chiller, a compressor, a hydrogen sulfide removal unit, a membrane processing unit, activated carbon adsorption beds and a 7.46 MMBtu/hr waste gas/digester gas fired combustion device.

Enclosed is the engineering evaluation of this application with a copy of proposed ATC # C-535-26-0 with COC. After demonstrating compliance with the ATC, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 45-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,



David Warner  
Director of Permit Services

Enclosures

c: Dustin Brown, Permit Services

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Executive Director/Air Pollution Control Officer

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# San Joaquin Valley

AIR POLLUTION CONTROL DISTRICT

JUL 27 2011

Mike Tollstrup, Chief  
Project Assessment Branch  
Air Resources Board  
P O Box 2815  
Sacramento, CA 95812-2815

**Re: Proposed ATC / Certificate of Conformity (Significant Mod)  
District Facility # C-535  
Project # 1110245**

Dear Mr. Tollstrup:

Enclosed for your review is the District's analysis of an application for Authority to Construct (ATC) for the facility identified above. The applicant is requesting that a Certificate of Conformity (COC) with the procedural requirements of 40 CFR Part 70 be issued with this project. This ATC authorizes the installation of a digester gas treatment system consisting of a chiller, a compressor, a hydrogen sulfide removal unit, a membrane processing unit, activated carbon adsorption beds and a 7.46 MMBtu/hr waste gas/digester gas fired combustion device.

Enclosed is the engineering evaluation of this application with a copy of proposed ATC # C-535-26-0 with COC. After demonstrating compliance with the ATC, the conditions will be incorporated into the facility's Title V permit through an administrative amendment.

Please submit your written comments on this project within the 30-day comment period that begins on the date you receive this letter. If you have any questions, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900.

Thank you for your cooperation in this matter.

Sincerely,

David Warner  
Director of Permit Services

Enclosures

c: Dustin Brown, Permit Services

**Seyed Sadredin**

Executive Director/Air Pollution Control Officer

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Fresno Bee

**NOTICE OF PRELIMINARY DECISION  
FOR THE ISSUANCE OF AUTHORITY TO CONSTRUCT AND  
THE PROPOSED SIGNIFICANT MODIFICATION OF FEDERALLY  
MANDATED OPERATING PERMIT**

NOTICE IS HEREBY GIVEN that the San Joaquin Valley Air Pollution Control District solicits public comment on the proposed modification of Fresno/Clovis Regional WWTP for its wastewater treatment facility located at 5607 W. Jensen Avenue in Fresno, California. This ATC authorizes the installation of a digester gas treatment system consisting of a chiller, a compressor, a hydrogen sulfide removal unit, a membrane processing unit, activated carbon adsorption beds and a 7.46 MMBtu/hr waste gas/digester gas fired combustion device.

The District's analysis of the legal and factual basis for this proposed action, project #1110245, is available for public inspection at [http://www.valleyair.org/notices/public\\_notices\\_idx.htm](http://www.valleyair.org/notices/public_notices_idx.htm) and the District office at the address below. This will be the public's only opportunity to comment on the specific conditions of the modification. If requested by the public, the District will hold a public hearing regarding issuance of this modification. For additional information, please contact Mr. Jim Swaney, Permit Services Manager, at (559) 230-5900. Written comments on the proposed initial permit must be submitted within 30 days of the publication date of this notice to DAVID WARNER, DIRECTOR OF PERMIT SERVICES, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 1990 E. GETTYSBURG AVE, FRESNO, CA 93726-0244.

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

## *Installation of Digester Gas Treatment System*

Facility Name: Fresno/Clovis Regional Waste Water  
Treatment Plant

Date: July 26, 2011

Mailing Address: 5607 W. Jensen Avenue  
Fresno, CA 93706

Engineer: Dustin Brown  
Lead Engineer: Joven Refuerzo

Contact Person: Raul Campos

Telephone: (559) 621-5132

Fax: (559) 457-1168

Email: Raul.Campos@fresno.gov

Application #'s: C-535-26-0

Project #: 1110245

Deemed Complete: June 10, 2011

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### **I. PROPOSAL:**

Fresno/Clovis Regional Waste Water Treatment Plant, herein referred to as Fresno/Clovis WWTP, is requesting an Authority to Construct (ATC) permit for the installation of a digester gas treatment system consisting of a chiller, a compressor, a hydrogen sulfide removal unit, a membrane processing unit, activated carbon adsorption beds and a 7.46 MMBtu/hr waste gas/digester gas fired John Zink ZBRID combustion device. The proposed digester gas treatment system is being installed as a part of Phase 1 of Fresno/Clovis WWTP's project to bring the stationary gas turbines operating under permits C-535-18 and '-19 in to compliance with the requirements of District Rule 4703. Phase 2 of Fresno/Clovis WWTP's project will consist of installing a selective catalytic reduction system on each turbine to meet the Tier 3 NO<sub>x</sub> emission limits of District Rule 4703 (reference project C-1112190).

Fresno/Clovis WWTP received their Title V Permit for this stationary source on March 19, 2001. This modification can be classified as a Title V significant modification pursuant to Rule 2520, Sections 3.20 and 3.29, 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 WWTP must apply to administratively amend their Title V Operating Permit to include the requirements of the ATC issued with this project.

### **II. APPLICABLE RULES:**

- Rule 2201** New and Modified Stationary Source Review Rule (4/21/11)
- Rule 2520** Federally Mandated Operating Permits (6/21/01)
- Rule 4001** New Source Performance Standards (4/14/99)
- Rule 4002** National Emissions Standards for Hazardous Air Pollutants (5/18/00)
- 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 (6/18/09)  
**Rule 4801** Sulfur Compounds (12/17/92)  
**Code of Federal Regulations, Title 40, Part 64** Compliance Assurance Monitoring (CAM)  
**California Environmental Quality Act (CEQA)**  
**California Health & Safety Code (CH&S),** Sections 41700 (Health Risk Analysis), 42301.6 (School Notice), and 44300 (Air Toxic "Hot Spots")

### **III. PROJECT LOCATION:**

The facility is located at 5607 W. Jensen Avenue in Fresno, CA.

The District has verified that the facility is not located within 1,000 feet of the outer boundary of any K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project and no further discussion is required.

### **IV. PROCESS DESCRIPTION:**

The Fresno/Clovis WWTP treats wastewater generated in the greater Fresno metropolitan area. The facility is equipped with anaerobic digesters, which produce digester gas. The digester gas is burned in one of two 3.377 MW digester/natural gas-fired turbines (permits C-535-18 and '-19), which produce electrical energy sufficient to meet a significant portion of the facility's electricity requirements; a 16.7 MMBtu/hr digester gas-fired process boiler (permit C-535-6), which provides heat to the digesters; or a 36.3 MMBtu/hr enclosed flare (permit C-535-9).

In order to bring their two 3.377 MW turbines in to compliance with the Tier 3 NO<sub>x</sub> emission requirements of Rule 4703, the Fresno/Clovis WWTP is proposing to perform a rule compliance project which will consist of two phases. The first phase (current project) will consist of installing a digester gas treatment system. The second phase (future project – reference project C-1112190) will consist of installing a selective catalytic reduction system on each turbine.

The raw digester gas constituents, such as hydrogen sulfide, siloxanes, and carbon dioxide, can reduce turbine efficiency, damage engine and SCR system components and create increased maintenance needs. Therefore, the Fresno/Clovis WWTP is proposing to install a gas treatment system that will remove these harmful constituents from the digester gas before it is burned in the turbines, boiler or flare. The gas treatment system will consist of the following: one chiller; one compressor, one hydrogen sulfide removal unit; one membrane processing unit; one 7.46 MMBtu/hr enclosed John Zink ZBRID combustion device; and activated carbon adsorption beds.

The enclosed combustion device will burn the waste gas from the gas treatment system. Waste gas is primarily made up of carbon dioxide (CO<sub>2</sub>), air and other inert gases. It also will contain approximately 20% methane. With such a low methane content, it is considered a low BTU content gas. Therefore, at times, the combustion device will not be able to burn the waste gas by itself. Supplement fuel, untreated raw digester gas, with a methane content around 65% and a higher BTU content, will be burned in combination with the waste gas to ensure the John Zink ZBRID combustion device is maintained at its optimum operating temperature.

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**V. EQUIPMENT LISTING:**

**C-535-26-0:** DIGESTER GAS TREATMENT SYSTEM CONSISTING OF A CHILLER, COMPRESSOR, HYDROGEN SULFIDE REMOVAL UNIT, MEMBRANE PROCESSING UNIT, 7.46 MMBTU/HR JOHN ZINK MODEL ZBRID WASTE GAS/DIGESTER GAS-FIRED COMBUSTION DEVICE AND ACTIVATED CARBON ADSORPTION BEDS

**VI. EMISSION CONTROL TECHNOLOGY EVALUATION:**

The digester gas treatment system is not designed to control criteria pollutant emissions. However, the system is designed to removal harmful constituents from the digester gas before it is burned in the turbines, boiler or flare. The chiller will remove moisture from the raw digester gas. Once the moisture is removed, the remaining gas will be compressed to approximately 180 psig. After the gas has been compressed, it will be treated for hydrogen sulfide removal, using SulfaTreat media, which is a non-regenerative media. From the H<sub>2</sub>S removal unit, the gas will be processed through a membrane processing skid. The membrane processing skid separates the carbon dioxide and methane that primarily make up the raw digester gas. The skid employs pressure swing adsorption and active carbon for preliminary gas clean-up prior to the membranes. The waste gas produced by the membrane processing skid is primarily made up of carbon dioxide and will be sent to a 7.46 MMBtu/hr John Zink ZBRID enclosed combustion device. Treated gas is passed through one final set of activated carbon beds to provide final polishing of the product gas that will be sent to the combustion equipment operated at this facility.

The treated digester gas will be sent from the new gas treatment system to either of the two turbines (permits C-535-18 and '-19), the process boiler (permit C-535-6) or the waste gas flare (permit C-535-9) operating at this facility. The proposed project is not expected to result in any changes to these pieces of process equipment, the emission rates resulting from the fuel combustion in any of these units, or the effectiveness of the control technologies that are currently employed by these units.

**VII. GENERAL CALCULATIONS:**

**A. Assumptions**

Operating schedule:	24 hours/day and 8,760 hours/year
Waste Gas Inlet H <sub>2</sub> S Concentration:	200 ppmv (current permit limit on existing waste gas flare and proposed by the applicant)
Maximum Inlet Waste Gas Flow Rate:	704 scfm (proposed by the applicant)
Waste Gas Heating Value:	200 Btu/scf

The waste gas combustion device is the only point where emissions are vented to the atmosphere from the digester gas treatment system.

**B. Emission Factors**

Pollutant	Emission Factor (ppmvd @ 3% O <sub>2</sub> )	Emission Factor (lb/MMBtu)	Source(s)
NO <sub>x</sub>	N/A	0.06	Manufacturer's Guarantee
CO	N/A	0.20	Manufacturer's Guarantee
VOC	20 ppmv, as hexane	0.084	Applicant
PM <sub>10</sub>	N/A	0.016	Applicant
SO <sub>x</sub>	200 ppmv H <sub>2</sub> S, inlet concentration in waste gas/digester gas to be combusted	0.19	Mass Balance (see equation below)

$$SO_x = [(704 \text{ scfm})(60 \text{ min/hr})(200 \text{ parts}/10^6 \text{ parts})(34 \text{ lb-H}_2\text{S/lb-mol})] / [379.5 \text{ scf-H}_2\text{S/lb-mol})(34 \text{ lb-H}_2\text{S}/32 \text{ lb-S})(32 \text{ lb-S}/64 \text{ lb-SO}_x)]$$

$$SO_x = 1.42 \text{ lb/hr} \Rightarrow (1.42 \text{ lb/hr} / 7.46 \text{ MMBtu/hr}) = 0.19 \text{ lb/MMBtu}$$

**C. Calculations**

**1. Pre-Project Potential to Emit (PE1)**

Since this digester gas treatment system is a new unit, PE1 = 0 for all pollutants.

**2. Post Project Potential to Emit (PE2)**

The daily and annual PE2 values are calculated as follows:

$$PE = EF \text{ (lb/MMBtu)} \times \text{Rating (MMBtu/hr)} \times 24 \text{ hours per day (daily operation) or } 8,760 \text{ hours per year (annual operation)}$$

Daily Post Project Emissions				
Pollutant	Emissions Factor (lb/MMBtu)	Rating (MMBtu/hr)	Daily Hours of Operation (hours/day)	PE2 Total (lb/day)
NO <sub>x</sub>	0.06	7.46	24	10.7
CO	0.20	7.46	24	35.8
VOC	0.084	7.46	24	15.0
PM <sub>10</sub>	0.016	7.46	24	2.9
SO <sub>x</sub>	0.19	7.46	24	34.0

<b>Annual Post Project Emissions</b>				
Pollutant	Emissions Factor (lb/MMBtu)	Rating (MMBtu/hr)	Annual Hours of Operation (hours/year)	PE2 Total (lb/year)
NO <sub>x</sub>	0.06	7.46	8,760	3,921
CO	0.20	7.46	8,760	13,070
VOC	0.084	7.46	8,760	5,489
PM <sub>10</sub>	0.016	7.46	8,760	1,046
SO <sub>x</sub>	0.19	7.46	8,760	12,416

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

Pursuant to Section 4.9 of District Rule 2201, the Pre-project Stationary Source Potential to Emit (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 that have occurred at the source, and which have not been used on-site.

<b>Pre-project Stationary Source Potential to Emit [SSPE1]</b>						
Permit Unit	NO <sub>x</sub> (lb/year)	CO (lb/year)	VOC (lb/year)	PM <sub>10</sub> (lb/year)	SO <sub>x</sub> (lb/year)	Reference Project
C-535-6-10	1,613	8,944	587	704	3,796	C-1095508
C-535-10-2	1,554	336	124	111	1	C-1090474
C-535-11-2	37	19	7	6	0	C-1090474*
C-535-12-2	37	19	7	6	0	C-1090474*
C-535-13-2	0	0	2,902	0	0	C-1090474
C-535-17-2	113	61	22	20	0	C-1090474
C-535-18-3	50,297	244,842	183	11,753	8,760	C-1090474
C-535-19-3	50,297	244,842	183	11,753	8,760	C-1090474
C-535-20-2	230	49	19	16	0	C-1000688
C-535-21-2	230	49	19	16	0	C-1000688
C-535-9-3	19,272	91,980	859	1,577	15,768	C-1090474
C-535-24-2		1,811	724	459	12	C-1074104
<b>Pre-project SSPE (SSPE1)</b>	<b>123,680</b>	<b>592,952</b>	<b>5,636</b>	<b>26,421</b>	<b>37,097</b>	

\*NO<sub>x</sub> emission values adjusted based on current permitted emission factor and operating hour limitation.

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

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) 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 that have occurred at the source, and which have not been used on-site.

<b>Post Project Stationary Source Potential to Emit [SSPE2]</b>					
Permit Unit	NO <sub>x</sub> (lb/year)	CO (lb/year)	VOC (lb/year)	PM <sub>10</sub> (lb/year)	SO <sub>x</sub> (lb/year)
C-535-6-10	1,613	8,944	587	704	3,796
C-535-10-2	1,554	336	124	111	1
C-535-11-2	37	19	7	6	0
C-535-12-2	37	19	7	6	0
C-535-13-2	0	0	2,902	0	0
C-535-17-2	113	61	22	20	0
C-535-18-3	50,297	244,842	183	11,753	8,760
C-535-19-3	50,297	244,842	183	11,753	8,760
C-535-20-2	230	49	19	16	0
C-535-21-2	230	49	19	16	0
C-535-9-3	19,272	91,980	859	1,577	15,768
C-535-24-2		1,811	724	459	12
C-535-26-0	3,921	13,070	5,489	1,046	12,416
<b>Post Project SSPE (SSPE2)</b>	<b>127,601</b>	<b>606,022</b>	<b>11,125</b>	<b>27,467</b>	<b>49,513</b>

#### 5. Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a major source is a stationary source with post-project emissions or a Post-project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values.

<b>Major Source Determination</b>					
	NO <sub>x</sub> (lb/year)	CO (lb/year)	VOC (lb/year)	PM <sub>10</sub> (lb/year)	SO <sub>x</sub> (lb/year)
Post-project SSPE (SSPE2)	127,601	606,022	11,125	27,467	49,513
Major Source Threshold	20,000	200,000	20,000	140,000	140,000
Major Source?	Yes	Yes	No	No	No

## 6. Annual Baseline Emissions (BE)

Per District Rule 2201, Section 3.7, the baseline emissions, for a given pollutant, shall be equal to the pre-project potential to emit for:

- Any emission unit located at a non-major source,
- Any highly utilized emission unit, located at a major source,
- Any fully-offset emission unit, located at a major source, or
- Any clean emission unit located at a major source

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to Section 3.22 of District Rule 2201

Since this digester gas treatment system is a new unit, BE = PE1 = 0 for all pollutants.

## 7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "*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.*"

As discussed in Section VII.C.5 above, the facility is not a Major Source for VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions; therefore, the project does not constitute an SB 288 Major Modification for VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions. In addition, there is not an SB 288 Major Modification threshold for CO emissions, therefore, even though this facility is a major source for CO emissions, it cannot trigger an SB288 Major Modification for CO emissions.

As discussed in Section VII.C.5 above, the facility is an existing Major Source for NO<sub>x</sub> emissions and an SB 288 Major Modification cannot be triggered for CO emissions. However, the project by itself would need to be a significant increase in order to trigger a Major Modification. The emissions unit within this project does not have a total potential to emit which is greater than SB 288 Major Modification threshold (see table below). Therefore, the project cannot be a significant increase and the project does not constitute an SB 288 Major Modification.

<b>SB 288 Major Modification Threshold</b>			
<b>Pollutant</b>	<b>Project PE (lb/year)</b>	<b>Threshold (lb/year)</b>	<b>Major Modification?</b>
NO <sub>x</sub>	3,921	50,000	No

## 8. Federal Major Modification

As discussed in Section VII.C.5 above, the facility is not a Major Source for VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions; therefore, the project cannot constitute a Federal Major Modification for VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions. The facility is a major source for CO emissions. However, there is no Federal Major Modification threshold for CO emissions; therefore, even though this facility is a major source for CO emissions, it cannot trigger a Federal Major Modification for CO emissions. Additionally, because the facility is not a major source for PM<sub>10</sub> (140,000 lb/year) it is not a major source for PM<sub>2.5</sub> (200,000 lb/year). The facility is a Major Source for NO<sub>x</sub> emissions; therefore, it can trigger a Federal Major Modification for NO<sub>x</sub> emissions.

A Federal Major Modification is triggered if the project meets the definition of Major Modification listed in the current version of 40 CFR 51.165. In the latest version of 40 CFR 51.165, Major Modification (current) is defined as *any physical change in or change in the method of operation of a major stationary source that would result in:*

- (1) *A significant increase in emissions of a regulated NSR pollutant; and*
- (2) *A significant net emissions increase of that pollutant from the major stationary source.*

Pursuant to paragraph (a)(2)(ii)(C) of 40 CFR 51.165, a significant modification of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions and the baseline actual emissions for each existing emissions unit equals or exceeds the significance thresholds.

NEI = Projected Actual Emissions – Baseline Actual Emissions

Pursuant to the CFR projected actual emissions may be set equal to the emission unit's potential to emit. For the purposes of calculating the worst case Net Emissions Increase for this project, Fresno/Clovis WWTP has requested that the projected actual NO<sub>x</sub> emissions from the digester gas treatment system within this project be set equal to the digester gas treatment system's post-project potential to emit.

Baseline actual emissions are defined in the current version of 40 CFR 51.165 as the rate of emissions of a regulated NSR Pollutant as determined in paragraphs (a)(1)(xxxv)(A)(D) of 40 CFR 51.165.

For any existing emissions unit that is not an electric utility steam generating unit, baseline actual emissions means the average rate at which the emissions unit actually emitted the pollutant during any consecutive 24-month period **selected by the owner or operator** within the 10-year period immediately preceding either the date the owner or operator begins actual construction or the date a complete permit application is received by the reviewing authority, whichever is earlier.

As discussed above, for the purposes of this project, the baseline NO<sub>x</sub> emissions for District Rule 2201 purposes from this gas treatment system were determined to be zero. As a worst case, the baseline actual NO<sub>x</sub> emissions for the federal major modification calculations will also be set equal to zero.

Fresno/Clovis WWTP has also indicated that they do not see any reason why they would not actually operate the maximum number of hours the permit will allow. Therefore, the projected actual emissions for this facility will be set equal to each units post project potential to emit.

<b>Net Emissions Increase</b>					
<b>Pollutant</b>	<b>Projected Actual Emissions (lb/year)</b>	<b>Baseline Actual Emissions (lb/year)</b>	<b>Net Emissions Increase (lb/year)</b>	<b>Federal Major Modification Threshold (lb/year)</b>	<b>Federal Major Modification?</b>
<b>NO<sub>x</sub></b>	<b>3,921</b>	<b>0</b>	<b>3,921</b>	<b>0</b>	<b>Yes</b>

As shown above, this project triggers a Federal Major Modification for NO<sub>x</sub> emissions.

## **VIII. COMPLIANCE:**

### ***Rule 2201 New and Modified Stationary Source Review Rule***

#### **A. BACT:**

##### **1. BACT Applicability**

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following\*:

- 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 AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

\*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**

Fresno/Clovis WWTP is proposing to install a new digester gas treatment system with a waste gas fired combustion device. The post project PE values from the 7.46 MMBtu/hr combustion device are greater than 2.0 lb/day for NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions. However, the combustion device is intrinsic to the operation of the gas treatment system and is controlling and burning the waste gas produced from the system such that it is not vented directly to the atmosphere. Therefore, the combustion device will be considered a control device and will not be considered an emission unit for the purposes of this project. Therefore, BACT for new emission unit purposes is not triggered and no further discussion is required.

**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.

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

As discussed in Section I above, there are no modified emissions units for BACT purposes associated with this project; therefore BACT is not triggered.

**d. SB 288/Federal Major Modification**

As discussed in Section VII.C.7 above, this project does constitute a Federal Major Modification for NO<sub>x</sub> emissions; therefore BACT is triggered for NO<sub>x</sub> for all emissions units in the project for which there is an emission increase. However, as discussed above, the only increase in emissions associated with this project is from the John Zink ZBRID combustion device serving the digester gas treatment system. The new combustion device is a control device and is not being considered an emissions unit for the purposes of this project. Therefore, there are no emission units within this project and BACT for Federal Major Modification purposes will not be required. No further discussion is required.

**B. Offsets:**

**1. Offset Applicability:**

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post-project Stationary Source Potential to Emit (SSPE2) equals to or exceeds emissions of 20,000 lbs/year for NO<sub>x</sub> and VOC, 200,000 lbs/year for CO, 54,750 lbs/year for SO<sub>x</sub> and 29,200 lbs/year for PM<sub>10</sub>. As seen in the table below, the facility's SSPE2 is greater than the offset thresholds for NO<sub>x</sub> and CO emissions. Therefore, offset calculations are necessary.

<b>Offset Determination</b>					
	<b>NO<sub>x</sub></b> (lb/year)	<b>CO</b> (lb/year)	<b>VOC</b> (lb/year)	<b>PM<sub>10</sub></b> (lb/year)	<b>SO<sub>x</sub></b> (lb/year)
Post-project SSPE (SSPE2)	127,601	606,022	11,125	27,467	49,513
Offset Threshold	20,000	200,000	20,000	29,200	54,750
Offsets Required?	Yes	Yes	No	No	No

## 2. Quantity of Offsets Required:

Per District Rule 2201, Section 4.6.8, for existing facilities, the installation or modification of an emission control technique performed solely for the purpose of compliance with the requirements of District, State or Federal air pollution control laws, regulations, or orders shall be exempt from offset requirements for all air pollutants, provided all of the following conditions are met:

- There shall be no increase in the physical or operational design of the existing facility, except for those changes to the design needed for the installation or modification of the emission control technique itself;
- There shall be no increase in the permitted rating or permitted operating schedule of the permitted unit;
- There shall be no increase in emissions from the stationary source that will cause or contribute to any violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas; and
- The project shall not result in an increase in permitted emissions or potential to emit of more than 25 tons per year of NO<sub>x</sub>, or 25 tons per year of VOC, or 15 tons per year of SO<sub>x</sub>, or 15 tons per year of PM<sub>10</sub>, or 50 tons per year of CO.

As discussed above, Fresno/Clovis WWTP is proposing to install a digester gas treatment system that will treat the digester gas that is currently being burned in the two turbines operated at this facility. The turbines will be required to comply with the Tier 3 NO<sub>x</sub> emission limits of Rule 4703 by October 1, 2011. The facility is proposing to meet the NO<sub>x</sub> emission limits by installing selective catalytic reduction systems on each turbine in the near future. Since these turbines are fired on digester gas, under their current system, the new SCR system would not function effectively and the catalyst material would get fouled quickly and need replacement. The digester gas treatment system is being installed to remove the parts of the digester gas the impact the catalyst material of the SCR system. Therefore, the installation of the digester gas treatment system will be considered a part of the same stationary source project to bring the turbines in to compliance with the requirements of Rule 4703.

The modification does not result in an increase in the permitted rating of either turbine and the applicant is not proposing to increase their physical or operational design. As shown above, the installation of the digester gas treatment system results in an increase in NO<sub>x</sub>, CO, VOC, PM<sub>10</sub> and SO<sub>x</sub> emissions. However, the increases do not result in a violation of a National Ambient Air Quality Standard, Prevention of Significant Deterioration increment, or Air Quality Related Value in Class I areas. Therefore, the proposed modification meets all of the criteria listed above and is exempt from the offset requirements of this rule. No further discussion is required.

**D. Public Notification:**

**1. Applicability**

District Rule 2201, section 5.4, requires a public notification for the affected pollutants from the following types of projects:

- New Major Sources
- SB 288 Major Modification and Federal Major Modification
- New emission units with a PE > 100 lb/day of any one pollutant (IPE Notifications)
- Any project which results in the offset thresholds being surpassed (Offset Threshold Notification), and/or
- Any permitting action with a SSIPE exceeding 20,000 lb/yr for any one pollutant. (SSIPE Notice)

**a. New Major Source Notice Determination**

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

**b. SB 288 Major Modification and Federal Major Modification**

As demonstrated in Section VII.C above, this project does not constitute an SB 288 Major Modification. However, the project does result in a Federal Major Modification for NO<sub>x</sub> emissions. Therefore, public noticing for Federal Major Modification purposes is required.

**c. PE Notification**

Applications which include a new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. As seen in Section VII.C.2 above, this project does not include a new emissions unit which has daily emissions greater than 100 lb/day for any pollutant. Therefore, public noticing for PE > 100 lb/day purposes is not required.

**d. Offset Threshold**

Public notification is required if the Pre-Project Stationary Source Potential to Emit (SSPE1) is increased from a level below the offset threshold to a level exceeding the emissions offset threshold, for any pollutant.

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

<b>Offset Threshold</b>				
<b>Pollutant</b>	<b>SSPE1 (lb/year)</b>	<b>SSPE2 (lb/year)</b>	<b>Offset Threshold</b>	<b>Public Notice Required?</b>
NO <sub>x</sub>	123,680	127,601	20,000 lb/year	No
CO	592,952	606,022	200,000 lb/year	No
VOC	5,363	11,125	20,000 lb/year	No
PM <sub>10</sub>	26,421	27,467	29,200 lb/year	No
SO <sub>x</sub>	37,097	49,513	54,750 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

**e. SSIPE Notification**

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. SSIPE = SSPE2 – SSPE1. The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

<b>SSIPE Notification</b>					
<b>Pollutant</b>	<b>SSPE2 (lb/year)</b>	<b>SSPE1 (lb/year)</b>	<b>SSIPE (lb/year)</b>	<b>SSIPE Public Notice Threshold</b>	<b>Public Notice Required?</b>
NO <sub>x</sub>	127,601	123,680	3,921	20,000 lb/year	No
CO	606,022	592,952	13,070	20,000 lb/year	No
VOC	11,125	5,363	5,762	20,000 lb/year	No
PM <sub>10</sub>	27,467	26,421	1,046	20,000 lb/year	No
SO <sub>x</sub>	49,513	37,097	12,416	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

## **2. Public Notice Requirements**

As discussed above, public noticing is required for this project for federal major modification purposes. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

### **E. Daily Emission Limits:**

Daily emissions limitations (DELs) and other enforceable conditions are required by Section 3.15 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.15.1 and 3.15.2, 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.

The following conditions will ensure continued compliance with the DEL requirements of this rule:

- Emission rates from the combustion device shall not exceed any of the following limits: NO<sub>x</sub> – 0.06 lb/MMBtu; CO – 0.20 lb/MMBtu; 20 ppmv VOC @ 3% O<sub>2</sub> (as hexane) or 0.084 lb-VOC/MMBtu; or PM<sub>10</sub> - 0.016 lb/MMBtu. [District Rule 2201]
- The H<sub>2</sub>S content of the digester gas processed through this gas treatment system shall not exceed 200 ppmv. [District Rule 2201]

### **F. Alternative Siting Analysis:**

District Rule 2201, Section 4.15.1 requires an alternative siting analysis for any project which constitutes a New Major Source or a Federal Major Modification. As shown above, this project triggers a Federal Major Modification. Therefore, an alternative siting analysis must be performed.

The purpose of an Alternative Siting Analysis is to evaluate the environmental impacts of a project, and how location and sizing might affect that environmental impact. The proposed project deals with the installation of a digester gas treatment system at an existing waste water processing facility that is located in a rural area of Fresno County.

In addition to the anaerobic digesters and the digester gas treatment system, the operation of a waste water treatment requires a large number support equipment, services and structures such as raw material receiving basins, headworks, piping, and filtering units, warehouses, laboratories, and administration buildings.

Since the current project only involves the installation of a digester gas treatment system and there will not be any other changes to facets of the facility and how it operates, the existing site will result in the least possible impact from this project. Alternative sites would involve the relocation and/or construction of various support structures and facilities on a much greater scale, and would therefore result in a much greater impact.

**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 Sections VIII-Rule 2201-C.1.a and VIII-Rule 2201-C.1.b, this project does constitute a Federal Major Modification, therefore this requirement is applicable. Fresno/Clovis WWTP has provided a compliance certification for this project and it has been included in Attachment B.

In addition, there are no other major source facilities owned or operated by the City of Fresno and/or Fresno/Clovis WWTP. Therefore, since this facility is in compliance, it will be assumed that all facilities in the state of California are in compliance as well.

**H. Air Quality Impact Analysis:**

Section 4.14.2 of this Rule requires that an air quality impact analysis (AQIA) be conducted for the purpose of determining whether the operation of the proposed equipment will cause or make worse a violation of an air quality standard. The Technical Services Division of the SJVAPCD conducted the required analysis. Refer to Attachment G of this document for the AQIA summary sheet.

The proposed location is in an attainment area for NO<sub>x</sub>, CO, and SO<sub>x</sub>. As shown by the table below, the proposed equipment will not cause a violation of an air quality standard for NO<sub>x</sub>, CO, or SO<sub>x</sub>.

<b>AAQA Results Summary</b>					
<b>Pollutant</b>	<b>1 hr Average</b>	<b>3 hr Average</b>	<b>8 hr Average</b>	<b>24 hr Average</b>	<b>Annual Average</b>
CO	Pass	N/A	Pass	N/A	N/A
NO <sub>x</sub>	Pass	N/A	N/A	N/A	Pass
SO <sub>x</sub>	Pass	Pass	N/A	Pass	Pass

The proposed location is in a non-attainment area for PM<sub>10</sub>. The increase in the ambient PM<sub>10</sub> concentration due to the proposed equipment is shown on the table titled Calculated Contribution. The levels of significance, from 40 CFR Part 51.165 (b)(2), are shown on the table titled Significance Levels.

<b>Significance Levels</b>					
Pollutant	Significance Levels ( $\mu\text{g}/\text{m}^3$ ) - 40 CFR Part 51.165 (b)(2)				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM <sub>10</sub>	1.0	5	N/A	N/A	N/A

<b>Calculated Contribution</b>					
Pollutant	Calculated Contributions ( $\mu\text{g}/\text{m}^3$ )				
	Annual Avg.	24 hr Avg.	8 hr Avg.	3 hr Avg.	1 hr Avg.
PM <sub>10</sub>	0.0432	0.07344	N/A	N/A	N/A

As shown, the calculated contribution of PM<sub>10</sub> will not exceed the EPA significance level. This project is not expected to cause or make worse a violation of an air quality standard.

**H. Compliance Assurance:**

**1. Source Testing**

**Emission Limits from Combustion Device:**

There are no applicable rules that require source testing for the proposed gas conditioning system and its associated combustion device. In addition, the District's source testing policy, APR 1705 – Source Testing Frequency, does not contain specific source testing requirements for this class and category of operation. However, Section I.D states that source testing can be required based on the reliability of the emission factors for the proposed unit. Since the proposed combustion device is not a common unit permitted by the District, initial source testing for NO<sub>x</sub>, CO and VOC emissions will be required to ensure that the unit will be in compliance with the emission factors provided by the applicant.

- Initial source testing of the NO<sub>x</sub>, CO and VOC emissions from the exhaust of the combustion device shall be performed within 60 days of initial startup. [District Rule 2201]

In addition, since this unit is a major source for NO<sub>x</sub> and CO emissions, in order to ensure ongoing compliance with the emission factors and Title V requirements for this unit, source testing for these pollutants will be required at least once every five years.

- Source testing of the NO<sub>x</sub> and CO emissions from the exhaust of the combustion device shall be performed at least once every five years. [District Rules 2201 and 2520, 9.3.2]

- NO<sub>x</sub> emissions for source test purposes shall be determined using EPA Method 19. [District Rules 2201 and 2520, 9.3.2]
- CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 2201 and 2520, 9.3.2]
- VOC emissions for source test purposes shall be determined using EPA Method 18 or 25. [District Rule 2201]

*Fuel Hydrogen Sulfide Content:*

The applicant has agreed to limit the hydrogen sulfide content of the gas entering the gas treatment system to no more than 200 ppmv. The following H<sub>2</sub>S testing requirements were taken from similar biogas fired equipment operated at Beef Packers (FID C-3463) in Fresno, CA. For consistency, the testing requirements from that permit will be included on this new ATC to ensure continued compliance:

- The H<sub>2</sub>S content of the digester gas processed through the gas treatment system shall not exceed 200 ppmv. [District Rule 2201]
- Testing to demonstrate compliance with the raw digester gas H<sub>2</sub>S content limit shall be conducted quarterly. Once eight (8) consecutive quarterly test show compliance, the H<sub>2</sub>S content testing frequency may be reduce to once every calendar year. If an annual test shows violation of the H<sub>2</sub>S content limit, then quarterly testing shall resume and continue until eight (8) consecutive tests show compliance. Once compliance is shown on eight (8) consecutive quarterly tests, then testing may return to once every calendar year. [District Rule 2201]
- Testing to measure the H<sub>2</sub>S content of the fuel shall be conducted using either EPA Method 15, ASTM Method D1072, D3031, D4084, D3246, D5504, D6228 or with the use of the Testo 350 XL portable analyzer. [District Rule 2201]

## **2. Monitoring**

In order to ensure the combustion device is operating properly at all times, Fresno/Clovis WWTP will be required to maintain the combustion temperature above 1,400 degrees Fahrenheit and have the device equipped with a continuous temperature monitoring and recording device. The following conditions will be included on the ATC and PTO to ensure continued compliance:

- The combustion zone of the combustion device shall be maintained at a minimum of 1,400 degrees Fahrenheit. [District Rule 2520, 9.3.2]

- The combustion device shall be equipped with a continuous temperature monitoring and recording device, in operation at all times. [District Rule 2520, 9.3.2]
- The combustion device shall be equipped with a non-resettable, totalizing mass or volumetric fuel flow meter to measure the amount of waste gas and raw digester gas combusted in the unit. [District Rule 2201]

### **3. Recordkeeping**

The permittee will be required to maintain records of the combustion device operating temperature and the amounts of gas combusted in the unit. The following conditions will be included on the ATC and PTO to ensure continued compliance:

- The permittee shall maintain accurate daily records of the thermal oxidizer combustion temperature. [District Rule 2520, 9.3.2]
- The permittee shall maintain records of: (1) daily amount of waste gas and/or raw digester gas consumed by the combustion device, in standard cubic feet; (2) copy of annual source test reports; and (3) copies of all annual reports submitted to the District. [District Rules 2201 and 2520, 9.4.2]

### **4. Reporting**

No reporting is required to demonstrate compliance with District Rule 2201.

#### ***Rule 2520 Federally Mandated Operating Permits***

This facility is subject to this Rule, and has received their Title V Operating Permit. Section 3.29 defines a significant permit modification as a “permit amendment that does not qualify as a minor permit modification or administrative amendment.”

Section 3.20.5 states that a minor permit modification is a permit modification that is not a federal major modification, as defined in Rule 2201<sup>(1)</sup>. As discussed above, this project triggers a federal major modification for NO<sub>x</sub> emissions. As a result, the proposed project constitutes a Significant Modification to the Title V Permit pursuant to Section 3.29.

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<sup>(1)</sup> District Rule 2520, Section 3.20.5 actually states that a project shall not constitute a Title I modification, as defined in Rule 2201. In previous versions of Rule 2201, the term Title I modification was replaced with Federal Major Modification. However, at that time, the terminology in Rule 2520 was not updated to reflect the new Rule 2201 terms. Therefore, even though Rule 2520 references that a project triggering a Title I modification does not qualify as a Title V minor modification, it will be replaced with the term Federal Major Modification for the purposes of this project.

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 the final permit is issued. The following conditions will be included on the ATC to ensure continued compliance:

- 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 NSR Rule]
- 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***

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. However, no subparts from 40 CFR Part 60 are applicable to digester gas treatment systems or flares. Therefore, no further discussion is required.

#### ***Rule 4002 National Emissions Standards for Hazardous Air Pollutants (NESHAP)***

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. However, no subparts from 40 CFR Part 63 are applicable to digester gas treatment systems or a combustion device of this class and category of operation. Therefore, no further discussion is required.

#### ***Rule 4101 Visible Emissions***

Per Section 5.0, 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). It is expected that as long as this gas treatment system is maintained and operated properly, that there will not be any visible emissions. The following condition will be included on the ATC and PTO to ensure continued compliance:

- 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**

Section 4.0 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 as required by permit conditions. Therefore, compliance with this rule is expected.

**California Health & Safety Code 41700 (Health Risk Analysis)**

A Health Risk Assessment (HRA) is required for any increase in hourly or annual emissions of hazardous air pollutants (HAPs). HAPs are limited to substances included on the list in CH&SC 44321 and that have an OEHHA approved health risk value. The installation of the permit units for the power plant results in increases in emissions of HAPs.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (included in Attachment A), the total facility prioritization score including this project was greater than one. Therefore, a health risk assessment was required to determine the short-term acute and long-term chronic exposure from this project.

The health risks for this project are shown below:

<b>Screen HRA Summary</b>				
	<b>Acute Hazard Index</b>	<b>Chronic Hazard Index</b>	<b>70 yr Cancer Risk</b>	<b>T-BACT Required?</b>
C-535-26-0	0.00	0.00	0.0013 per million (10 <sup>-6</sup> )	No

**Discussion of Toxics BACT (TBACT)**

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.

**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.

F-Factor for Digester Gas: 8,578 dscf/MMBtu (natural gas F-Factor used as a worst case value for calculation purposes assuming F-Factor for digester gas is typically always higher: approximately 9,000 dscf/MMBtu)

PM<sub>10</sub> Emission Factor: 0.016 lb-PM<sub>10</sub>/MMBtu  
 Percentage of PM as PM<sub>10</sub> in Exhaust: 100%  
 Exhaust Oxygen (O<sub>2</sub>) Concentration: 3%  
 Excess Air Correction to F Factor =  $\frac{20.9}{(20.9 - 3)} = 1.17$

$$GL = \left( \frac{0.016 \text{ lb-PM}}{\text{MMBtu}} \times \frac{7,000 \text{ grain}}{\text{lb-PM}} \right) / \left( \frac{8,578 \text{ ft}^3}{\text{MMBtu}} \times 1.17 \right)$$

$$GL = 0.011 \text{ grain/dscf} < 0.1 \text{ grain/dscf}$$

The following condition will be included on the ATC and PTO to ensure continued compliance:

- Particulate matter emissions from the exhaust of the combustion device 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. Section 3.1 defines fuel burning equipment as any furnace, boiler, apparatus, stack, etc. used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. The combustion device being installed within this project is a direct-fired unit where the burner flame comes in direct contact with the gases being burned and is therefore not subject to this rule. No further discussion is required.

**Rule 4311 Flares**

The purpose of this rule is to limit the emissions of volatile organic compounds (VOC), oxides of nitrogen (NO<sub>x</sub>) sulfur oxides (SO<sub>x</sub>) from the operation of flares. Section 3.11 defines a flare as a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or temperature control.

Per Section 3.11, a flare is a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or for temperature control.

Pursuant to information provided by the applicant (see Attachment C) and the District's determination, the proposed John Zink ZBRID combustion device is equipped with devices for temperature control due to the low Btu heat content of the waste gas burned in the flare. The temperature control device is used to determine how much additional raw digester supplemental gas is required to be burned in the device such that the operating temperature is maintained and the waste gas is destroyed. Therefore, the combustion device does not meet the definition of a flare and the requirements of this rule are not applicable to this unit. No further discussion is required.

### **Rule 4801 Sulfur Compounds**

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: 0.2 % by volume calculated as SO<sub>2</sub>, on a dry basis averaged over 15 consecutive minutes.

Using the ideal gas equation and the emission factors presented in Section VII, the sulfur compound emissions are calculated as follows:

$$\text{Volume SO}_2 = \frac{n RT}{P}$$

With:

N = moles SO<sub>2</sub>

T (Standard Temperature) = 60°F = 520°R

P (Standard Pressure) = 14.7 psi

$$R (\text{Universal Gas Constant}) = \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}}$$

F-Factor for Digester Gas: 8,578 dscf/MMBtu (natural gas F-Factor used as a worst case value for calculation purposes assuming F-Factor for digester gas is typically always higher: approximately 9,000 dscf/MMBtu)

$$\frac{0.19 \text{ lb} - \text{SO}_x}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8,578 \text{ dscf}} \times \frac{1 \text{ lb} \cdot \text{mol}}{64 \text{ lb}} \times \frac{10.73 \text{ psi} \cdot \text{ft}^3}{\text{lb} \cdot \text{mol} \cdot ^\circ\text{R}} \times \frac{520^\circ\text{R}}{14.7 \text{ psi}} \times \frac{1,000,000 \cdot \text{parts}}{\text{million}} = 131 \frac{\text{parts}}{\text{million}}$$

$$\text{Sulfur Concentration} = 131 \frac{\text{parts}}{\text{million}} < 2,000 \text{ ppmv (or 0.2\%)}$$

Compliance with the rule is expected.

### **Code of Federal Regulations, Title 40, Part 64, Compliance Assurance Monitoring**

The Compliance Assurance Monitoring requirements of 40 CFR 64 apply to any unit that meets the following three criteria:

- 1) the unit must have an emission limit for the pollutant;
- 2) the unit must have add-on controls for the pollutant; these are devices such as flue gas recirculation (FGR), baghouses, and catalytic oxidizers; and
- 3) the unit must have a pre-control potential to emit of greater than the major source thresholds for any criteria pollutant.

The proposed digester gas treatment system is cleaning the digester gas prior to it being combusted in the facility's gas turbines, boiler or flare. The system itself does not generate any criteria pollutant emissions. The only emissions generated from the system are from the 7.46 MMBtu/hr John Zink ZBRID combustion device. The system itself does not generate any criteria pollutants. Therefore, the pre-controlled emissions from the system are not greater than the major source thresholds for any criteria pollutant and the CAM requirements of 40 CFR 64 are not applicable to the proposed permit unit.

### **California Environmental Quality Act (CEQA)**

The California Environmental Quality Act (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 San Joaquin Valley Unified Air Pollution Control District (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.
- 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.

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 for the project. Consistent with CEQA Guidelines §15301, §15302, and §15303, a Notice of Exemption was prepared and adopted by the City.

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).

The District's engineering evaluation of the project (this document) demonstrates that compliance with District rules and permit conditions would reduce Stationary Source emissions from the project to levels below the District's thresholds of significance for criteria pollutants. Thus, the District concludes that through a combination of project design elements and permit conditions, project specific stationary source emissions will be reduced to less than significant levels. The District has determined that no additional findings are required (CEQA Guidelines §15096(h)).

**California Health & Safety Code, Section 42301.6 (School Notice)**

As discussed in Section III of this evaluation, 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 Health & Safety Code, Section 44300 (Air Toxic "Hot Spots")**

Section 44300 of the California Health and Safety Code requires submittal of an air toxics "Hot Spot" information and assessment report for sources with criteria pollutant emissions greater than 10 tons per year. However, Section 44344.5 (b) states that a new facility shall not be required to submit such a report if all of the following conditions are met:

1. The facility is subject to a district permit program established pursuant to Section 42300.
2. The district conducts an assessment of the potential emissions or their associated risks, and finds that the emissions will not result in a significant risk.
3. The district issues a permit authorizing construction or operation of the new facility.

A health risk screening assessment was performed for the proposed project. The acute and chronic hazard indices are less than 1.0 and the cancer risk is less than ten (10) in a million, which are the thresholds of significance for toxic air contaminants. This project qualifies for exemption per the above exemption criteria.

**IX. RECOMMENDATION:**

Pending a successful EPA 45-day COC comment period and 30 day public comment period, issue Authority to Construct C-535-26-0 subject to the permit conditions on the attached draft Authority to Construct in Attachment D.

**X. BILLING INFORMATION:**

<b>Annual Permit Fees</b>			
<b>Permit Number</b>	<b>Fee Schedule</b>	<b>Fee Description</b>	<b>Annual Fee</b>
C-535-26-0	3020-02-G	7.46 MMBtu/hr	\$815

**Attachments:**

- A: Health Risk Assessment and Ambient Air Quality Analysis Summaries**
- B: Fresno/Clovis WWTP Statewide Compliance Certification**
- C: John Zink's Non-Flare Determination Justification**
- D: Draft Authority to Construct C-535-26-0**

# **ATTACHMENT A**

*Health Risk Assessment and Ambient Air Quality Analysis Summaries*

# San Joaquin Valley Air Pollution Control District Risk Management Review

To: Dustin Brown – Permit Services  
 From: Cheryl Lawler – Technical Services  
 Date: June 14, 2011  
 Facility Name: Fresno/Clovis WWTP  
 Location: 5607 W. Jensen Avenue, Fresno  
 Application #(s): C-535-26-0  
 Project #: C-1110245

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## A. RMR SUMMARY

<b>RMR Summary</b>			
<b>Categories</b>	<b>Digester Gas Treatment System (Unit 26-0)</b>	<b>Project Totals</b>	<b>Facility Totals</b>
<b>Prioritization Score</b>	0.00	0.00	>1
<b>Acute Hazard Index</b>	0.00	0.00	0.00
<b>Chronic Hazard Index</b>	0.00	0.00	0.00
<b>Maximum Individual Cancer Risk</b>	<b>1.30E-09</b>	1.30E-09	1.01E-07
<b>T-BACT Required?</b>	<b>No</b>		
<b>Special Permit Conditions?</b>	<b>No</b>		

## B. RMR REPORT

### I. Project Description

Technical Services received a request on June 8, 2011, to perform a Risk Management Review (RMR) and Ambient Air Quality Analysis (AAQA) for the installation of a digester gas treatment system consisting of a chiller, a compressor, a hydrogen sulfide removal unit, a membrane processing unit, a 7.46 MMBtu/hr direct-fired enclosed flare, and activated carbon adsorption beds.

### II. Analysis

For the Risk Management Review, toxic emissions from the project were calculated using San Diego APCD emission factors for digester gas for flares. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905-1, March 2, 2001), risks from the proposed project were prioritized using the procedures in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEART's database. The prioritization score was less than 1.0 (see RMR Summary Table); however, the facilitywide cumulative prioritization scores already totaled to greater than one.

Therefore, a refined Health Risk Assessment was required and performed for the project. AERMOD was used with flare source parameters outlined below and concatenated 5-year meteorological data from Fresno to determine maximum dispersion factors at the nearest residential and business receptors. The dispersion factors were input into the HARP model to calculate the Chronic and Acute Hazard Indices and the Carcinogenic Risk.

The following parameters were used for the review:

Analysis Parameters			
Source Type	Flare	Closest Receptor (m)	1524
Release Height (m)	12.19	Closest Receptor Type	Business
Effective Stack Diameter (m)	0.48	Project Location Type	Rural
Gas Exit Temperature (K)	1144	Stack Gas Velocity (m/s)	20

Technical Services also performed modeling for criteria pollutants CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>, as well as the RMR. Emission rates used for criteria pollutant modeling were 1.49 lb/hr CO, 0.45 lb/hr NO<sub>x</sub>, 1.41 lb/hr SO<sub>x</sub>, 0.13 lb/hr PM<sub>10</sub>, and 0.13 PM<sub>2.5</sub>.

The results from the Criteria Pollutant Modeling are as follows:

**Criteria Pollutant Modeling Results\***  
Values are in µg/m<sup>3</sup>

Steam Generator	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO <sub>x</sub>	Pass <sup>2</sup>	X	X	X	Pass
SO <sub>x</sub>	Pass	Pass	X	Pass	Pass
PM <sub>10</sub>	X	X	X	Pass <sup>1</sup>	Pass <sup>1</sup>
PM <sub>2.5</sub>	X	X	X	Pass <sup>3</sup>	Pass <sup>3</sup>

\*Results were taken from the attached PSD spreadsheet.

<sup>1</sup>The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

<sup>2</sup>The project was compared to the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard that became effective on April 12, 2010, using the District's approved procedures.

<sup>3</sup>For this case as per District procedure, minor PM<sub>2.5</sub> sources are modeled only for primary PM<sub>2.5</sub> concentrations, and these concentrations are compared to the 24-hour SIL of 1.2 µg/m<sup>3</sup> and the annual SIL of 0.3 µg/m<sup>3</sup>.

### III. Conclusions

The criteria modeling runs indicate the emissions from the proposed equipment will not cause or significantly contribute to a violation of a State or National AAQS.

The Acute and Chronic Hazard Indices are below 1.0; and the Cancer Risk associated with the operation of the project is **1.30E-09**, which is less than the 1 in a million threshold. In accordance with the District's Risk Management Policy, the project is approved **without** Toxic Best Available Control Technology (T-BACT).

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.

**AAQA for Fresno/Clovis WWTP ( C-535-26-0 )**  
**All Values are in ug/m<sup>3</sup>**

	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
FLARE	8.020E-01	1.154E-01	3.541E+00	1.520E+00	3.350E+00	2.519E+00	7.965E-01	4.862E-01	7.344E-02	4.315E-02
Background	1.151E+02	2.678E+01	3.029E+03	2.097E+03	1.598E+02	1.332E+02	7.193E+01	2.664E+01	9.900E+01	4.700E+01

**Facility Totals**

1.159E+02   2.690E+01   3.033E+03   2.099E+03   1.632E+02   1.357E+02   7.273E+01   2.713E+01   9.907E+01   4.704E+01

**AAQS**

188.68   56   23000   10000   195   1300   105   80   50   30

Pass   Pass   Pass   Pass   Pass   Pass   Pass   Pass   ~~Fail~~   ~~Fail~~

*Both Pass EPA's  
Significance Level*

**EPA's Significance Level (ug/m<sup>3</sup>)**

NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
0.0	1.0	2000.0	500.0	0.0	25.0	5.0	1.0	5.0	1.0

*PM2.5 (STL) 1.2   0.3*

*Pass   Pass*

## AAQA Emission (g/sec)

<i>Device</i>	<b>NOx 1 Hour</b>	<b>NOx Annual</b>	<b>CO 1 Hour</b>	<b>CO 8 Hour</b>	<b>SOx 1 Hour</b>	<b>SOx 3 Hour</b>	<b>SOx 24 Hour</b>	<b>SOx Annual</b>	<b>PM 24 Hour</b>	<b>PM Annual</b>
FLARE	5.67E-02	5.62E-02	1.88E-01	1.88E-01	1.78E-01	1.78E-01	1.78E-01	1.77E-01	1.64E-02	1.57E-02

## **ATTACHMENT B**

*Fresno/Clovis WWTP Statewide Compliance Certification*



**Department of Public Utilities**

Wastewater Management Division  
5607 West Jensen Avenue  
Fresno, California 93706-9458  
559-621-5100 – FAX 559-498-1700  
www.fresno.gov

Received

JUN 09 2011

SJVUAPCD



Providing Life's Essential Services

June 9, 2011

Dave Warner, Director of Permit Services  
San Joaquin Valley Unified Air Pollution District  
1990 E. Gettysburg Ave.  
Fresno, CA. 93726

**RE: Project # C-1110245  
Fresno/Clovis Regional Wastewater Reclamation Facility Certification of Compliance**

Mr. Warner:

Pursuant to San Joaquin Valley Air Pollution control District Rule 2201 Section 4.15.2, Compliance the Fresno/Clovis regional wastewater Reclamation Facility (RWRF) respectfully submits this *Letter of Certification* as it pertains to the City of Fresno California "Major Source facility.

I hereby certify that the RWRF in the State of California is in compliance or is on a schedule for compliance with all applicable emissions limitations and standards (supporting documentation as per item 1 of attached). This certification shall speak as to the date of its execution.

Thank you for your time and consideration regarding this certification. If you have any questions regarding this matter, please contact Environmental Control Officer Raul Campos at 559-621-5132.

Respectfully

A handwritten signature in black ink, appearing to read "Stephen A. Hogg".

Stephen A. Hogg  
Public Utilities Assistant Director - Wastewater

## **ATTACHMENT C**

*John Zink's Non-Flare Determination Justification*

JUL 05 2011

Permits Srvc  
SJVAPCD

June 29, 2011

Dustin Brown  
San Joaquin Valley Air Pollution Control District  
1990 E. Gettysburg Avenue  
Fresno, CA 93726

Subject: Project Number C1110245  
Facility Number C-535

Dear Mr. Brown:

As requested by SCS Engineers (SCS) and the City of Fresno Department of Public Works (City), John Zink is providing this letter to you regarding the John Zink ZBRID waste gas combustion device proposed for use in the subject project at the Fresno-Clovis Regional Waste Water Reclamation Facility (RWRf or Facility).

The purpose of this letter is to specifically address the applicability of the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) Rule 4311 (Flare Rule or Rule) to the ZBRID device, and generally provide construction and operational details documenting how the ZBRID differs from a conventional flare. In addition, John Zink will clarify the maximum volatile organic compound (VOC) emissions that we guarantee for the ZBRID combustion device.

Applicability of District Flare Rule:

Part 3.11 of the Flare Rule defines a flare as follows:

*"a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix or for temperature control."*

The ZBRID has the objective of oxidizing VOCs and other pollutants in the waste gas stream of the Digester Gas Conditioning System proposed for the Facility. The primary design difference between the John Zink standard enclosed flare (ZTOF) and the ZBRID is that the ZBRID was designed to oxidize the waste gas stream while minimizing the amount of supplemental fuel needed for proper combustion of the waste gas stream; whereas standard enclosed flares such as a typical ZTOF are designed to combust pure digester gas with methane contents of 30%-70% CH<sub>4</sub>. For particular applications where the methane fails below 30% or when the waste gas is considered to have a low BTU quality, as is the case for this project, different design measures and/or supplemental fuel may be required to maintain combustion and meet emissions standards. The ZBRID was designed to minimize the amount of supplemental fuel required and has various design considerations to accomplish this. Included among the ZBRID design components are a separate burner manifold for the supplemental fuel and a temperature control valve that modulates based on operating temperature so that it is optimizing and limiting the amount of supplemental fuel used.

Based on part 3.11 of the Flare Rule 4311 definition of a flare, the ZBRID being supplied by John Zink for the Fresno RWRf Digester Gas Conditioning System does not meet these criteria.

Part 3.36 of the Flare Rule defines a thermal oxidizer as follows:

*“an enclosed or partially enclosed combustion device, other than a flare, that is used to oxidize combustible gases.”*

Based on part 3.36 of the Flare Rule 4311 definition of a thermal oxidizer, the ZBRID being supplied by John Zink for the Fresno RWRf Digester Gas Conditioning System does meet these criteria.

Additional details documenting how the ZBRID differs from a conventional flare:

As previously described, the ZBRID was designed to minimize the amount of supplemental fuel needed for proper combustion. Typical enclosed flares are designed to combust pure digester gas with methane contents of 30%-70% CH<sub>4</sub>. For particular applications where the methane is too low for combustion or when the waste gas is considered to have a low BTU quality, different design measures and/or supplemental fuel may be required to maintain combustion and meet emissions standards. The ZBRID was designed to minimize the amount of supplemental fuel required and has various design considerations to accomplish this. Based on these design factors, the ZBRID that is being supplied for the Fresno Digester Conditioning System is not considered a conventional enclosed flare.

Attached are three drawings, two are of the ZBRID and one is of a standard enclosed flare of the same size, 5' diameter x 40' tall. These drawings demonstrate the differences in the two devices, which include the following:

1. Refractory. The standard flare has 2" of blanket refractory throughout the stack. The ZBRID contains castable refractory in the lower portion of the stack (noted as the core burner chamber) to increase radiant heat and to keep the core portion of the stack at high temperatures to maintain combustion. This refractory is needed for the ZBRID because the primary gas being burned is low-BTU gas, therefore having a lower heating value.

2. Burner Manifolds. With standard flares, there is only the main burner manifold that has multiple burners (2 burners for a standard 5x40) burning only digester gas. The ZBRID has two manifolds. The manifold that is shown at the bottom of the stack is the supplemental fuel manifold. This is a smaller line, single burner, designed to inject supplemental fuel as needed to maintain operating temperature. This line also has a temperature control valve that modulates based on operating temperature so that you are optimizing and limiting the amount of supplemental fuel used. The main gas that the ZBRID is designed to burn is the low BTU stream (low methane content). This manifold is what is shown as the outer ring around the flare stack. It has multiple injector nozzles with isolation valves. It is also injected higher in the stack than the supplemental fuel burner so that it does not quench the core flame.

VOC maximum emission rate:

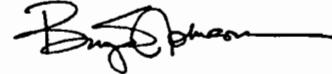
The technical specifications that John Zink provided for the ZBRID for this project include a guarantee of 98 percent destruction of pollutants (including VOCs) in the waste gas stream. John Zink understands that the maximum VOC emissions presented in the application submitted by SCS to the District for this project indicated a maximum VOC concentration of 20 parts per million by volume (ppmv) as hexane at 3 percent oxygen in the ZBRID exhaust stream. The new source performance standards (NSPS) for Municipal Solid Waste Landfills (40 Code of Federal Regulations, Part 40 Subpart WWW) requires flares to comply with either the 20 ppmv limit or the 98 percent destruction efficiency limit. It is John Zink's understanding that the City wishes to have these same alternative compliance options for VOCs for the ZBRID, and guarantees the ZBRID will comply with either or both of these two VOC emission limits.

We trust the information provided in this letter is sufficient for the District to make a determination that part 3.11 of the Flare Rule 4311 does not apply to the John Zink ZBRID, and that the ZBRID can meet the VOC emission standard discussed in the previous paragraph.

If you have any questions or require any additional information please feel free to contact me at (918) 234-2961 or Michael O'Connor of SCS at (707) 546-9461.

Sincerely,

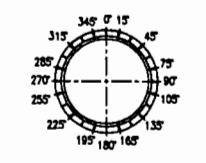
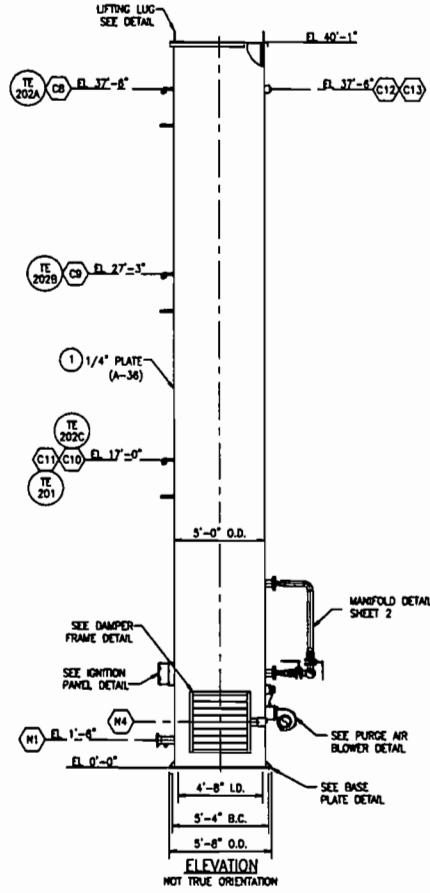
**John Zink Company, LLC**



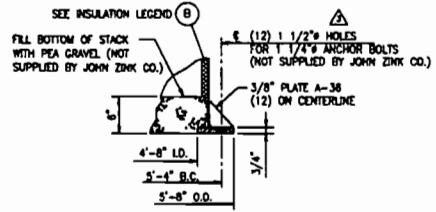
Brandy Johnson  
Sr. Applications Engineer  
Vapor Control/Biogas Group

Enclosures

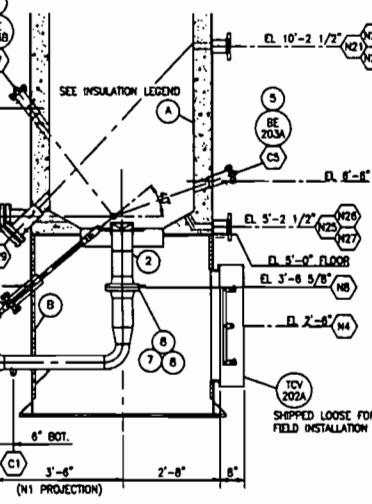
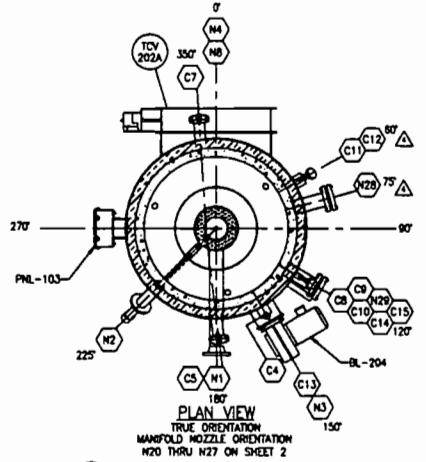
Cc: Jim Swaney, SJVAPCD  
Raul Campos, City of Fresno  
Michael Leonard, John Zink Company  
Michael O'Connor, SCS Engineers  
Arnold Ramirez, SCS Energy



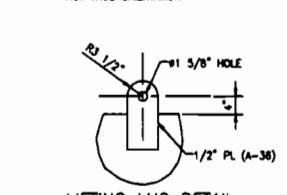
FOUNDATION BOLT PATTERN



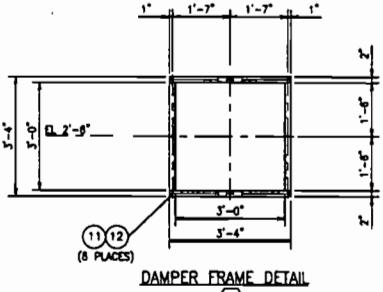
BASE PLATE DETAIL



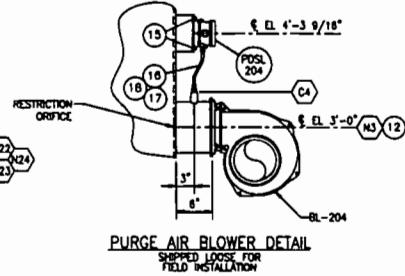
PARTIAL SECTIONAL ELEVATION



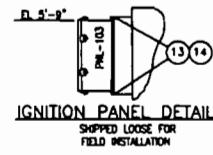
LIFTING LUG DETAIL  
(2 REQ'D. LOCATED AT 90° AND 270°)  
(NOTE: CUT OFF LUGS AFTER STACK ERECTION)



DAMPER FRAME DETAIL



PURGE AIR BLOWER DETAIL



IGNITION PANEL DETAIL

DESIGN DATA

WINDLOAD (PER ASCE 7-95, EXP. C) 110 M.P.H.

SEISMIC (PER UBC-1994) ZONE 4

SHEAR @ BASE 4.2 K

MOMENT @ BASE 94.3 K-FT

DEADLOAD 13.8 K

SHELL DESIGN TEMPERATURE 500 F

CORROSION ALLOWANCE 0.0

PARTS LIST

ITEM	QTY	DESCRIPTION	MK: NO	MATERIAL
1	1	ENCLOSED ZIBO FLARE	D-701-1	
2	1	8" FLARE TIP ASSEMBLY	D-711-1	
3	1	PILOT ASSEMBLY	ST11812-1	
4	2	3 1/2" SIGHT PORT	D-SI-1275-1	
5	2	SWIVEL SCANNER MOUNT ASSEMBLY	ST11065-1	
6	1	GASKET: 6" 150# RF x 1/16" THK	GB-150-R	NON-ASB
7	8	BOLT, STUD: 3/4" x 4" LG (PLATED)	SB-6-4	A-193-B7
8	18	MUT, NYI HD: 3/4-10NC (PLATED)	SN-8	A-194-2H
9	4	BOLT, HEX HD: 5/8" x 2 1/2" LG (PLATED)	HB-5-2 1/2	A-307
10	4	MUT, REG HD: 5/8-11NC (PLATED)	HN-5	A-307
11	8	BOLT, HEX HD: 3/8" x 1 1/4" LG (PLATED)	HB-3-1 1/4	A-307
12	12	MUT, REG HD: 3/8-16NC (PLATED)	HN-3	A-307
13	4	BOLT, HEX HD: 1/4" x 1" LG (PLATED)	HB-2-1	A-307
14	4	MUT, REG HD: 1/4-20NC (PLATED)	HN-2	A-307
15	2	SCREW, HEX HD W/GE: #10-24NC x 3/4" LG (PLATED)	HCS-#10-3/4	
16	1	3/8" COPPER TUBING x 1'-0" LG		COPPER
17	1	MALE CONNECTOR, 1/8" FPT x 3/8" TUBING		BRASS
18	1	MALE ELBOW CONNECTOR, 1/2" FPT x 3/8" TUBING		BRASS
19	1 GAL.	ZINC GLAD O FLUX (889V212/889V15/889011 TOUCH-UP)		PAINT
20	1	MANIFOLD INLET SECTION	D-708-1	304 SS
21	1	MANIFOLD SECTION	D-708-2	304 SS
22	1	MANIFOLD SECTION	D-708-3	304 SS
23	3	PIPE SPOOL	D-708-1	304 SS
24	4	PIPE SPOOL	D-710-1	304 SS
25	3	PIPE SUPPORTS	B-712-1	A-30
26	14	GASKET: 3" 150# RF 1/16" THK DOME 860	G-3-150-R	NON-ASB
27	7	GASKET: 4" 150# RF 1/16" THK DOME 860	G-4-150-R	NON-ASB

NOZZLE LEGEND

MK	QTY	DESCRIPTION
N1	1	GAS CONNECTION: 4" 150# F.F.
N2	1	PILOT MTC CONN: 3/8" PLATE FLG W/ 3" 150# DRILLING
N3	1	BLOWER - 8" CONN 10" O.D. x 3/8" PL W/ (4) 3/8" STUDS ON 8 1/8" B.C.
N4	1	DAMPER CONN - SEE DETAIL
N5	1	FLARE TIP CONN - 8" 150# RF
N20	1	WASTE GAS INLET CONN - 8" 150# RF
N21-24	4	WASTE GAS CONN - 4" 150# RF
N25-27	3	WASTE GAS CONN - 4" 150# RF
N28-29	2	SIGHT PORT - 3 1/2" FLANGED
C1	1	DRAIN - 1" FNPT WITH PLUG
C2	1	PILOT GAS CONN - 1/2" FNPT
C3	1	PILOT CONDUIT CONN - 1/2" FNPT
C4	1	PURGE AIR PRESSURE CONN - 1/2" FNPT
C5,C7	2	SCANNER CONN - 1/2" FNPT
C8-11	4	THEROCOUPLE CONN - 1" FNPT
C12-13	2	SAMPLE PORT 4" FNPT WITH PLUG
C14-15	2	THEROCOUPLE CONN - 1" FNPT WITH PLUG

LIFTING NOTES

A: MAIN CRANE AT TOP REQUIRES SPREADER BAR, (NOT SUPPLIED BY JOHN ZINK CO.)

B: CHOCK STACK AT APPROX. 5'-0" EL WITH TAILING CRANE

C: LIFTING LUGS DESIGNED FOR 13 1/2 TON CROSBY ANCHOR SHOCKLE AND VERTICAL SLINGS.

INSULATION LEGEND

A: CASTABLE GREDULITE 45-2 PLUS, 6" THICK.

B: (1) OVERLAPPING LAYER OF 1" THICK 6 LB DENSITY, 2300 F. ON INCONEL PWS AND KEEPERS.

C: (1) OVERLAPPING LAYER OF 1" THICK 6 LB DENSITY, 2300 F. BACKED WITH (1) LAYER, 2" THICK 6 LB DENSITY, 2300 F. ON INCONEL PWS AND KEEPERS.

GENERAL NOTES

1. TAG NUMBERS TO BE PRECEDED BY JOHN ZINK SALES ORDER NUMBER.

2. FLARE ASSEMBLY IS NOT TO BE USED AS AN ANCHOR POINT FOR CUSTOMER PIPING.

3. PRE-TENSION ANCHOR BOLTS BY THE 'TURN OF THE MUT' METHOD/ASC.

4. BOLT HOLES TO STRADDLE NORMAL CENTER LINES UNLESS NOTED.

5. FRESH EXTENSION CARBON STEEL, INSIDE OF SHORT, BOTTOM OF FLOOR PLATE, AND MANIFOLD: SANDBLAST PER SSPC-SP-8 AND PRIME WITH SHERWIN WILLIAMS ZINC CLAD 1 PLUS (889V212/889V15/889011) (3-4 MILS D.F.T.)

NO.	REVISION DESCRIPTION	BY	CHK.	APP.	DATE	DATE	DATE	DATE	DATE
4	REUSE LOCATION OF #28 PER DIAL.	OPC	ML	ML	08-21-11	SLD	ML	08-21-11	
3	REUSE PER DIAL.	OPC	ML	ML	03-31-11	P.A.	ML	08-01-11	
2	REUSE LOCATION PER DIAL.	OPC	ML	ML	03-30-11	DL	SAW	03-01-11	
1	REUSED FOR ENGINEERING	SAW	SAW	ML	03-11-11	DL	SAW	03-01-11	

**JOHN ZINK**  
JOHN ZINK COMPANY LLC  
PARTS AND SERVICE, CALL 1-800-755-0253 FAX (916) 234-1988

ENCLOSED ZIBO FLARE

5'-0" O.D. x 40' H.

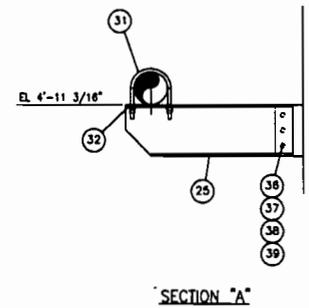
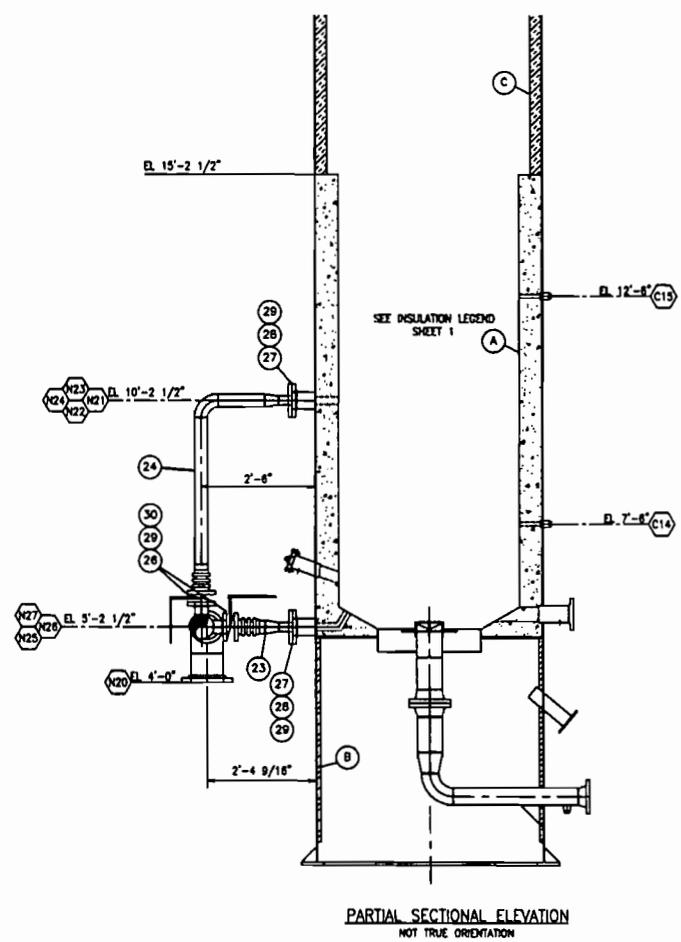
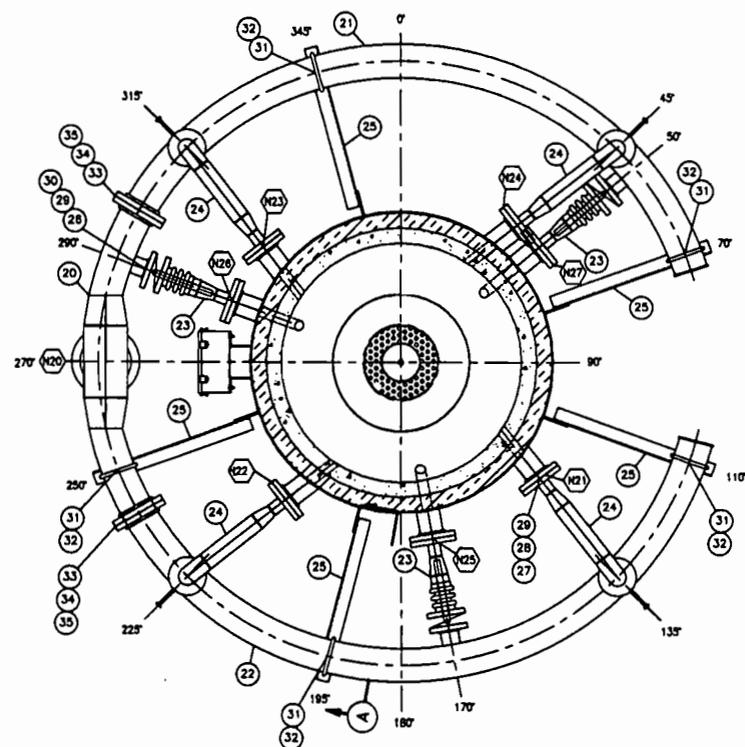
DATE: \_\_\_\_\_

SCALE: \_\_\_\_\_

1 OF 2

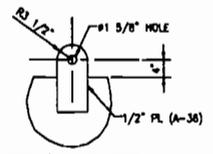
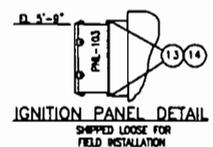
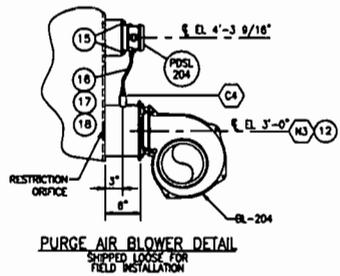
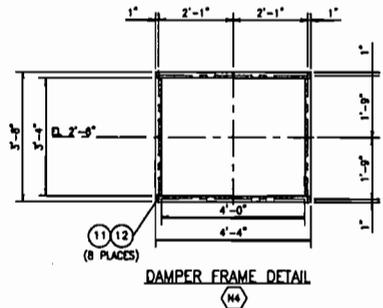
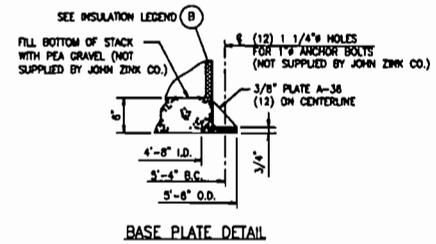
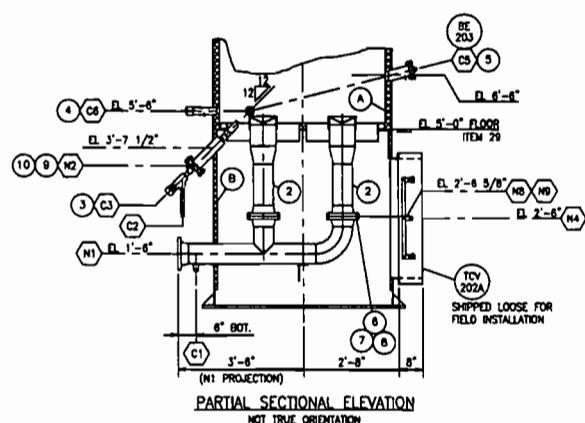
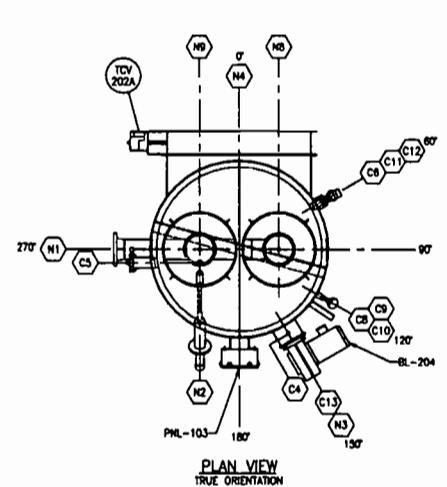
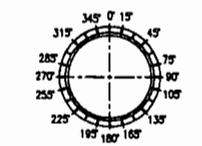
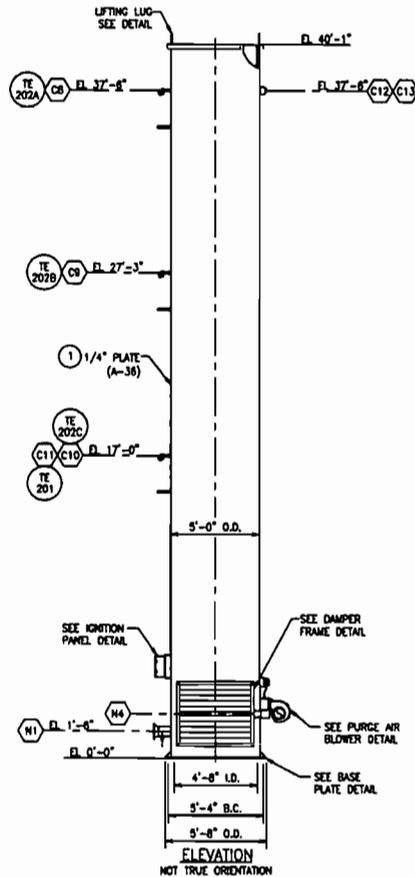
PARTS LIST CONTINUED FROM SHEET 1

ITEM	QTY	DESCRIPTION	MK: NO	MATERIAL
28	56	BOLT, STUD: 5/8-NC x 4" LG (ZINC PLATED)	SB-5-4	A-183-87
29	168	NUT, NYF HEX: 5/8-11NC (ZINC PLATED)	H99-5	A-194-26
30	28	BOLT, STUD: 5/8-NC x 8" LG (ZINC PLATED)	SB-5-8	A-183-87
31	5	U-BOLT, 5/8-NC FOR 8" PIPE (ZINC PLATED)	UB-5-8	A-307
32	10	WASHER, FLAT: 5/8" MED (ZINC PLATED)	W-5	A-589
33	2	GASKET: 8" 150# RF 1/16" THK DONEX 680	G-8-150-R	NON-ASB
34	16	BOLT, STUD: 3/4-NC x 4" LG (ZINC PLATED)	SB-6-4	A-183-87
35	32	NUT, NYF HEX: 3/4-10NC (ZINC PLATED)	H99-6	A-194-26
36	15	BOLT, HEX HD: 3/4-NC x 2 1/2" LG (ZINC PLATED)	H6-6-2 1/2	A-307
37	15	NUT, REG HEX: 3/4"-10NC (ZINC PLATED)	H9-6	A-307
38	30	WASHER, FLAT: 3/4" MED (ZINC PLATED)	W-6	A-589
39	15	WASHER, LOCK: 3/4" MED (ZINC PLATED)	LW-6	A-589



FOR: BCS ENERGY		USER: CLOVIS WASTEWATER TREATMENT PLANT		ADDRESS: FRESNO, CA	
P.O. NO. 08-01511		S.A. NO. 07-011278		ENCLOSED ZERO FLARE ASSEMBLY	
DR: SNW	DATE: 03-01-11	CHK: SNW	DATE: 03-01-11	SCALE: 1" = 4" O.D. x 40" H.	
APP: SA	DATE: 03-01-11	DATE:	DATE:	SHEET: 2 OF 2	

File Name: c:\users\j...p\12578\parting\johnzink\12578.dwg Plot Date: 3/7/2011 3:52 PM



PARTS LIST				
ITEM	QTY	DESCRIPTION	MFG. NO.	MATERIAL
1	1	ENCLOSED 2TOP FLARE	D-701-1	
2	2	6" Ø FLARE TIP ASSEMBLY	ST11903-1	
3	1	PILOT ASSEMBLY	ST11914-1	
4	1	2" SIGHT PORT	CA-ST-0800-1	
5	1	SWIVEL SCANNER MOUNT ASSEMBLY	ST11063-1	
6	2	GASKET: 6" 150# RF x 1/16" THK	GB-150-R	NON-ASB
7	18	BOLT, STUD: 3/4" x 4" LG (PLATED)	SB-6-4	A-183-B7
8	32	NUT, HXY HEX: 3/4-10NC (PLATED)	SN-6	A-194-2H
9	4	BOLT, HEX HD: 5/8" x 2 1/2" LG (PLATED)	HB-5-2 1/2	A-307
10	4	NUT, REG HEX: 5/8-11NC (PLATED)	HN-5	A-307
11	8	BOLT, HEX HD: 3/8" x 1 1/4" LG (PLATED)	HB-3-1 1/4	A-307
12	13	NUT, REG HEX: 3/8-10NC (PLATED)	HN-3	A-307
13	4	BOLT, HEX HD: 1/4" x 1" LG (PLATED)	HB-2-1	A-307
14	4	NUT, REG HEX: 1/4-20NC (PLATED)	HN-2	A-307
15	2	SCREW, HEX HD MADE #10-24NC x 3/4" LG (PLATED)	HCS-#10-3/4	A-307
16	1	3/8" COPPER TUBING x 1'-0" LG		COPPER
17	1	MALE CONNECTOR, 1/8" NPT x 3/8" TUBING		BRASS
18	1	MALE ELBOW CONNECTOR, 1/2" NPT x 3/8" TUBING		BRASS
19	1	GAL. ZINC CLAD II PLUS #889V212/889V215/889D11 (TOUCH-UP)		PAINT

NOZZLE LEGEND		
MFG	QTY	DESCRIPTION
N1	1	GAS CONNECTION: 6" 150# F.F.
H2	1	PILOT MFG CORR: 3/8" PLATE FLO W/ 3" 150# DRILLING
H3	1	BLOWER - 8" CORR 10" O.D. x 3/8" PL W/ (4) 3/8" STUDS ON 9 1/8" B.C.
H4	1	DAMPER CORR - SEE DETAIL
HB-9	2	FLARE TIP CORR - 6" 150# RF
C1	1	DRAIN - 1" FNPT WITH PLUG
C2	1	PILOT GAS CORR - 1/2" FNPT
C3	1	PILOT CONDUIT CORR - 1/2" FNPT
C4	1	PURGE AIR PRESSURE CORR - 1/2" FNPT
C5	1	SCANNER CORR - 1/2" NPT
CB	1	SIGHT PORT - 2" NPT
CB-11	4	THERMOCOUPLE CORR - 1" FNPT
CI2-13	2	SAMPLE PORT 4" FNPT WITH PLUG

DESIGN DATA	
WINDLOAD (PER ASCE 7-95, EXP. C)	110 M.P.H.
SEISMIC (PER UBC-1994)	ZONE 4
SHEAR @ BASE	8.0 K
MOMENT @ BASE	145.0 K-FT
DEADLOAD	10.5 K
SHELL DESIGN TEMPERATURE	500 F
CORROSION ALLOWANCE	0.0

**LIFTING NOTES**

A: MAIN CRANE AT TOP REQUIRES SPREADER BAR (NOT SUPPLIED BY JOHN ZINK CO.)

B: CHOKER STACK AT APPROX. 5'-0" EL WITH TAILING CRANE

C: LIFTING LUGS DESIGNED FOR 13 1/2 TON CROSSY ANCHOR SHACKLE AND VERTICAL SLINGS.

**INSULATION LEGEND**

A: (1) OVERLAPPING LAYER OF 1" THICK 6 LB DENSITY, 2300 F. BACKED WITH (1) LAYER, 1" THICK 6 LB DENSITY, 2300 F. ON INCONEL PINS AND KEEPERS.

B: (1) OVERLAPPING LAYER OF 1" THICK 6 LB DENSITY, 2300 F. ON INCONEL PINS AND KEEPERS.

**GENERAL NOTES**

- TAG NUMBERS TO BE PRECEDED BY JOHN ZINK SALES ORDER NUMBER.
- FLARE ASSEMBLY IS NOT TO BE USED AS AN ANCHOR POINT FOR CUSTOMER PIPING.
- PRE-TENSION ANCHOR BOLTS BY THE "TURN OF THE NUT" METHOD/ASC.
- BOLT HOLES TO STRADDLE NORMAL CENTER LINES UNLESS NOTED.
- FINISH EXTERIOR CARBON STEEL, INSIDE OF SIGHT, BOTTOM OF FLOOR PLATE, AND HANGTOLD, SANDBLAST PER SSPC-SP-8 AND PRIME WITH SHERWIN WILLIAMS ZINC CLAD II PLUS #889V212/889V215/889D11 (3-4 WLS D.F.T.)

FOR CUSTOMER		 <b>JOHN ZINK COMPANY LLC</b> PARTS AND SERVICE, CALL 1-800-786-4252 FAX (916) 834-1888
CUSTOMER		
JOBITE JOB SITE		ENCLOSED 2TOP FLARE
P.O. NO. REQUEST		5'-0" O.D. x 40' PL.
DR. 001	DNCD: 09-02-00	CERTIFIED
DL 001	DNCD: 09-02-00	Drawing NUMBER
DL 001	DNCD: 09-02-00	0-F-9100000-301
DL 001	DNCD: 09-02-00	SCALE
DL 001	DNCD: 09-02-00	1 of 1

## **ATTACHMENT D**

*Draft Authority to Construct C-535-26-0*

San Joaquin Valley  
Air Pollution Control District

**AUTHORITY TO CONSTRUCT**

**ISSUANCE DATE: DRAFT**

**PERMIT NO:** C-535-26-0

**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:**

DIGESTER GAS TREATMENT SYSTEM CONSISTING OF A CHILLER, COMPRESSOR, HYDROGEN SULFIDE REMOVAL UNIT, MEMBRANE PROCESSING UNIT, 7.46 MMBTU/HR JOHN ZINK MODEL ZBRID WASTE GAS/DIGESTER GAS-FIRED COMBUSTION DEVICE AND ACTIVATED CARBON ADSORPTION BEDS

**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 NSR Rule] 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. Particulate matter emissions from the exhaust of the combustion device shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201] Federally Enforceable Through Title V Permit
6. 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]

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.

Seyed Sadredin, Executive Director APCO

DAVID WARNER, Director of Permit Services

C-535-26-0: Jul 20 2011 9:11AM - BROWND : Joint Inspection NOT Required

7. Emission rates from the combustion device shall not exceed any of the following limits: NO<sub>x</sub> - 0.06 lb/MMBtu; CO - 0.20 lb/MMBtu; 20 ppmv VOC @ 3% O<sub>2</sub> (as hexane) or 0.084 lb-VOC/MMBtu; or PM<sub>10</sub> - 0.016 lb/MMBtu. [District Rule 2201] Federally Enforceable Through Title V Permit
8. The H<sub>2</sub>S content of the digester gas processed through this gas treatment system shall not exceed 200 ppmv. [District Rule 2201] Federally Enforceable Through Title V Permit
9. Initial source testing of the NO<sub>x</sub>, CO and VOC emissions from the exhaust of the combustion device shall be performed within 60 days of initial startup. [District Rule 2201] Federally Enforceable Through Title V Permit
10. Source testing of the NO<sub>x</sub> and CO emissions from the exhaust of the combustion device shall be performed at least once every five years. [District Rules 2201 and 2520, 9.3.2] Federally Enforceable Through Title V Permit
11. Testing to demonstrate compliance with the raw digester gas H<sub>2</sub>S content limit shall be conducted quarterly. Once eight (8) consecutive quarterly test show compliance, the H<sub>2</sub>S content testing frequency may be reduce to once every calendar year. If an annual test shows violation of the H<sub>2</sub>S content limit, then quarterly testing shall resume and continue until eight (8) consecutive tests show compliance. Once compliance is shown on eight (8) consecutive quarterly tests, then testing may return to once every calendar year. [District Rule 2201] Federally Enforceable Through Title V Permit
12. 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 and 4311, 6.4.2] Federally Enforceable Through Title V Permit
13. NO<sub>x</sub> emissions for source test purposes shall be determined using EPA Method 19. [District Rules 2201 and 2520, 9.3.2] Federally Enforceable Through Title V Permit
14. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 2201 and 2520, 9.3.2] Federally Enforceable Through Title V Permit
15. VOC emissions for source test purposes shall be determined using EPA Method 18 or 25. [District Rule 2201] Federally Enforceable Through Title V Permit
16. Testing to measure the H<sub>2</sub>S content of the fuel shall be conducted using either EPA Method 15, ASTM Method D1072, D3031, D4084, D3246, D5504, D6228 or with the use of the Testo 350 XL portable analyzer. [District Rule 2201] Federally Enforceable Through Title V Permit
17. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081] Federally Enforceable Through Title V Permit
18. The combustion zone of the combustion device shall be maintained at a minimum of 1,400 degrees Fahrenheit. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
19. The combustion device shall be equipped with a continuous temperature monitoring and recording device, in operation at all times. [District Rule 2520, 9.3.2] Federally Enforceable Through Title V Permit
20. The permittee shall maintain accurate daily records of the thermal oxidizer combustion temperature. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
21. The permittee shall maintain records of: (1) daily amount of waste gas and/or raw digester gas consumed by the combustion device, in standard cubic feet; (2) copy of annual source test reports; and (3) copies of all annual reports submitted to the District. [District Rules 2201 and 2520, 9.4.2] Federally Enforceable Through Title V Permit
22. 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 2201 and 2520, 9.4.2] Federally Enforceable Through Title V Permit

DRAFT