May 12, 2020

Elizabeth Bisbey-Kuehn
New Mexico Environment Department
Air Quality Bureau
525 Camino de los Marquez, Suite 1
Santa Fe, New Mexico 87505-1816

Re: Application to Modify Title V Operating Permit Number P046-R3
Harvest Four Corners, LLC – El Cedro Compressor Station

Dear Ms. Bisbey-Kuehn,

On behalf of Harvest Four Corners, LLC (HFC), Cirrus Consulting, LLC submits the enclosed application to modify the Title V operating permit for the El Cedro Compressor Station.

Thank you for your help. If you have questions or need any additional information, please contact Kijun Hong of HFC at (505) 632-4475.

Sincerely,

CIRRUS CONSULTING, LLC

James W. Newby

James W. Newby

Enclosure
El Cedro Compressor Station Title V Operating Permit Application

c: Kijun Hong, HFC

Cirrus Consulting, LLC
979 Manchester Road
Kaysville, Utah 84037

Phone: (801) 544-5275
jnewby@cirrusllc.com

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NEW MEXICO 20.2.70 NMAC APPLICATION TO MODIFY PERMIT NUMBER P046-R3

EL CEDRO COMPRESSOR STATION

Submitted By:

HARVEST FOUR CORNERS, LLC
1755 Arroyo Drive
Bloomfield, New Mexico 87413

Prepared By:

CIRRUS CONSULTING, LLC
951 Diestel Road
Salt Lake City, Utah 84105
(801) 484-4412

May 2020

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Introduction

The Harvest Four Corners, LLC (HFC) El Cedro Compressor Station currently operates under a construction permit, 0340-M14-R2 dated September 17, 2019 and a Title V operating permit, P046-R3, dated April 19, 2019.

Under the Title V permit, the station is currently permitted to operate the following equipment/sources:

- Ten 4-Stroke Lean Burn (4SLB) Waukesha 7042GL natural gas-fired compressor engines (Units 1-10);
- Two Solar Mars 90-T12000S natural gas-fired turbines (Units 15 & 16);
- One 4-Stroke Rich Burn (4SRB) Waukesha 7042G natural gas-fired generator engine (Unit 17);
- One 4SRB Waukesha 7042GSI natural gas-fired generator engine (Unit 18);
- One 4SRB Waukesha F2895GSI natural gas-fired standby emergency generator engine (Unit 19);
- One BS&B, Inc. natural gas-fired fuel gas heater (Unit 20) rated at 0.5 million British thermal units per hour (MMBtu/hr);
- One Pesco natural gas-fired fuel gas heater (Unit 28) rated at 0.7 MMBtu/hr;
- Truck loading/unloading rack (Unit 38);
- Startup, shutdown, and maintenance (SSM) emissions (Unit SSM) from the turbines, compressors and piping associated with the station;
- Malfunction (Unit M1) emissions;
- Two pig receivers (Units PR1 & PR2);
- Two 200 barrel (bbl) produced water storage tanks (Units T501 & T91025);
- Two 500 bbl condensate storage tanks (Units T91019 & T91028);
- One 300 bbl produced water storage tank (Unit T91024); and
- Two 300 bbl condensate storage tanks (Units T91020 & T91021).

This application is required because the following modifications have been added to the construction permit. Within one year of implementing these modifications, a Title V permit application is required to incorporate these same changes.

- Permit the option to operate either a Waukesha L7042GSI generator engine (Unit 18) or a Waukesha F2895GSI generator engine (Unit 18a); and
- Permit the installation of a 120 bbl below-grade produced water storage tank (Unit BGT-1).

In March of 2020, a construction permit application was submitted to the New Mexico Air Quality Bureau (NMAQB) for the following additional modifications:

- Increase permitted facility total condensate throughput to the storage tanks (Units T91019, T91020, T91021 & T91028) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;

- Decrease permitted facility total unstabilized condensate throughput to the storage tanks (Units T91019, T91020, T91021 & T91028) from 325,920 to 42,000 gallons per rolling 12-month period;
- Increase condensate truck loading (Unit 38) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;
- Increase permitted facility total produced water throughput to the storage tanks (Units T501, T91024 & T91025) from 705,600 to 2,822,400 gallons per rolling 12-month period;
- Adjust permitted emissions from the condensate storage tanks, produced water storage tanks, and condensate truck loading as required to account for the increase in condensate and produced water throughput;
- Add produced water truck loading (Unit 46); and
- Increase facility total pig receiver (Units PR1 & PR2) emissions.

It is not likely a construction permit approving these new modifications will be issued before this Title V application is due. For that reason, and to avoid the necessity of revising this application after the construction permit is issued, these additional modifications have been incorporated into this Title V application.

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Mail Application To:		**For Department use only:**
New Mexico Environment Department Air Quality Bureau Permits Section 525 Camino de los Marquez, Suite 1 Santa Fe, New Mexico, 87505 Phone: (505) 476-4300 Fax: (505) 476-4375 www.env.nm.gov/aqb		AIRS No.:

Universal Air Quality Permit Application

Use this application for NOI, NSR, or Title V sources.

Use this application for: the initial application, modifications, technical revisions, and renewals. For technical revisions, complete Sections, 1-A, 1-B, 2-E, 3, 9 and any other sections that are relevant to the requested action; coordination with the Air Quality Bureau permit staff prior to submittal is encouraged to clarify submittal requirements and to determine if more or less than these sections of the application are needed. Use this application for streamline permits as well. See Section 1-I for submittal instructions for other permits.

This application is submitted as (check all that apply): ☐ Request for a No Permit Required Determination (no fee)
☐ **Updating** an application currently under NMED review. Include this page and all pages that are being updated (no fee required).
Construction Status: ☐ Not Constructed ☑ Existing Permitted (or NOI) Facility ☐ Existing Non-permitted (or NOI) Facility
Minor Source: ☐ a NOI 20.2.73 NMAC ☐ 20.2.72 NMAC application or revision ☐ 20.2.72.300 NMAC Streamline application
Title V Source: ☐ Title V (new) ☐ Title V renewal ☐ TV minor mod. ☐ TV significant mod. TV Acid Rain: ☐ New ☐ Renewal
PSD Major Source: ☐ PSD major source (new) ☑ minor modification to a PSD source ☐ a PSD major modification

Acknowledgements:

☑ I acknowledge that a pre-application meeting is available to me upon request. ☐ Title V Operating, Title IV Acid Rain, and NPR applications have no fees.

☐ $500 NSR application Filing Fee enclosed OR ☐ The full permit fee associated with 10 fee points (required w/ streamline applications).

☐ Check No.: **XXXX** in the amount of **XXXX**.

☑ I acknowledge the required submittal format for the hard copy application is printed double sided 'head-to-toe', 2-hole punched (except the Sect. 2 landscape tables is printed 'head-to-head'), numbered tab separators. Incl. a copy of the check on a separate page.

☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance program (SBEAP) and qualifies for 50% of the normal application and permit fees. Enclosed is a check for 50% of the normal application fee which will be verified with the Small Business Certification Form for your company.

☐ This facility qualifies to receive assistance from the Small Business Environmental Assistance Program (SBEAP) but does not qualify for 50% of the normal application and permit fees. To see if you qualify for SBEAP assistance and for the small business certification form go to https://www.env.nm.gov/aqb/sbap/small_business_criteria.html).

Citation: Please provide the **low level citation** under which this application is being submitted: **20.2.70.300.B(2) NMAC**
(e.g. application for a new minor source would be 20.2.72.200.A NMAC, one example for a Technical Permit Revision is 20.2.72.219.B.1.b NMAC, a Title V acid rain application would be: 20.2.70.200.C NMAC)

Section 1 – Facility Information

Section 1-A: Company Information

		AI # if known (see 1st 3 to 5 #s of permit IDEA ID No.): **1002**	Updating Permit/NOI #: **P046-R3**
1	Facility Name: **El Cedro Compressor Station**	Plant primary SIC Code (4 digits): **1389**	
		Plant NAIC code (6 digits): **213112**	
a	Facility Street Address (If no facility street address, provide directions from a prominent landmark): **See directions in Section 1-D4**		
2	Plant Operator Company Name: **Harvest Four Corners, LLC**	Phone/Fax: **(505) 632-4600 / (505) 632-4782**	
a	Plant Operator Address: **1755 Arroyo Drive, Bloomfield, New Mexico 87413**		

b	Plant Operator's New Mexico Corporate ID or Tax ID: **76-0451075**	
3	Plant Owner(s) name(s): **Same as #2 above**	Phone/Fax: **Same as #2 above**
a	Plant Owner(s) Mailing Address(s): **Same as #2a above**	
4	Bill To (Company): **Same as #2 above**	Phone/Fax: **Same as #2 above**
a	Mailing Address: **Same as #2a above**	E-mail: **N/A**
5	☐ Preparer: ☑ Consultant: **James Newby, Cirrus Consulting, LLC**	Phone/Fax: **(801) 294-3024**
a	Mailing Address: **979 Manchester Road, Kaysville, Utah 84037**	E-mail: **jnewby@cirrusllc.com**
6	Plant Operator Contact: **Kijun Hong**	Phone/Fax: **(505) 632-4807 / (505) 632-4782**
a	Address: **Same as #2a above**	E-mail: **khong@harvestmidstream.com**
7	Air Permit Contact: **Same as #6 above**	Title: **Environmental Specialist**
a	E-mail: **Same as #6a above**	Phone/Fax: **Same as #6 above**
b	Mailing Address: **Same as #2a above**	
c	The designated Air permit Contact will receive all official correspondence (i.e. letters, permits) from the Air Quality Bureau.	

Section 1-B: Current Facility Status

1.a	Has this facility already been constructed? ☑ Yes ☐ No	1.b If yes to question 1.a, is it currently operating in New Mexico? ☑ Yes ☐ No
2	If yes to question 1.a, was the existing facility subject to a Notice of Intent (NOI) (20.2.73 NMAC) before submittal of this application? ☐ Yes ☑ No	If yes to question 1.a, was the existing facility subject to a construction permit (20.2.72 NMAC) before submittal of this application? ☑ Yes ☐ No
3	Is the facility currently shut down? ☐ Yes ☑ No	If yes, give month and year of shut down (MM/YY): **N/A**
4	Was this facility constructed before 8/31/1972 and continuously operated since 1972? ☐ Yes ☑ No	
5	If Yes to question 3, has this facility been modified (see 20.2.72.7.P NMAC) or the capacity increased since 8/31/1972? ☐ Yes ☐ No ☑ N/A	
6	Does this facility have a Title V operating permit (20.2.70 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **P046-R3**
7	Has this facility been issued a No Permit Required (NPR)? ☐ Yes ☑ No	If yes, the NPR No. is: **N/A**
8	Has this facility been issued a Notice of Intent (NOI)? ☐ Yes ☑ No	If yes, the NOI No. is: **N/A**
9	Does this facility have a construction permit (20.2.72/20.2.74 NMAC)? ☑ Yes ☐ No	If yes, the permit No. is: **PSD-0340-M14-R2**
10	Is this facility registered under a General permit (GCP-1, GCP-2, etc.)? ☐ Yes ☑ No	If yes, the register No. is: **N/A**

Section 1-C: Facility Input Capacity & Production Rate

1	What is the facility's maximum input capacity, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: **17 MMCF[(a)]**	Daily: **408 MMCF[(a)]**	Annually: **148,920 MMCF[(a)]**
b	Proposed	Hourly: **17 MMCF[(a)]**	Daily: **408 MMCF[(a)]**	Annually: **148,920 MMCF[(a)]**
2	What is the facility's maximum production rate, specify units (reference here and list capacities in Section 20, if more room is required)			
a	Current	Hourly: **N/A**	Daily: **N/A**	Annually: **N/A**
b	Proposed	Hourly: **N/A**	Daily: **N/A**	Annually: **N/A**

[(a)] **The station capacity is a direct function of available horsepower. The throughput is therefore dependent on atmospheric temperature and pressure, gas temperature and pressure, relative humidity and gas quality, was well as other factors. The "throughput" expressed above is a nominal quantity (with a 15 percent safety factor), neither an absolute maximum, nor an average. Actual throughput will vary from the nominal amount.**

Section 1-D: Facility Location Information

1	Section: **31**	Range: **5W**	Township: **29N**	County: **Rio Arriba**	Elevation (ft): **6,450**
2	UTM Zone: ☐ 12 or ☑ 13			Datum: ☐ NAD 27 ☐ NAD 83 ☑ WGS 84	
a	UTM E (in meters, to nearest 10 meters): **285,405**			UTM N (in meters, to nearest 10 meters): **4,063,080**	
b	**AND** Latitude (deg., min., sec.): **36° 41' 21.0"**			Longitude (deg., min., sec.): **-107° 24' 06.8"**	
3	Name and zip code of nearest New Mexico town: **Navajo Dam, New Mexico 87419**				
4	Detailed Driving Instructions from nearest NM town (attach a road map if necessary): **From Bloomfield drive east on Highway 64 to mile marker 100.5, facility is on the left.**				
5	The facility is **approximately 18** miles **east southeast** of **Navajo Dam, New Mexico**.				
6	Status of land at facility (check one): ☑ Private ☐ Indian/Pueblo ☐ Federal BLM ☐ Federal Forest Service ☐ Other (specify)				
7	List all municipalities, Indian tribes, and counties within a ten (10) mile radius (20.2.72.203.B.2 NMAC) of the property on which the facility is proposed to be constructed or operated: **No municipalities, Jicarilla Apache Indian Reservation, Rio Arriba County**				
8	**20.2.72** NMAC applications **only**: Will the property on which the facility is proposed to be constructed or operated be closer than 50 km (31 miles) to other states, Bernalillo County, or a Class I area (see www.env.nm.gov/aqb/modeling/class1areas.html)? ☐ Yes ☐ No (20.2.72.206.A.7 NMAC) If yes, list all with corresponding distances in kilometers: **N/A**				
9	Name nearest Class I area: **Weminuche Wilderness Area**				
10	Shortest distance (in km) from facility boundary to the boundary of the nearest Class I area (to the nearest 10 meters): **73.75 km**				
11	Distance (meters) from the perimeter of the Area of Operations (AO is defined as the plant site inclusive of all disturbed lands, including mining overburden removal areas) to nearest residence, school or occupied structure: **≈500 m**				
12	Method(s) used to delineate the Restricted Area: **Fence** "**Restricted Area**" is an area to which public entry is effectively precluded. Effective barriers include continuous fencing, continuous walls, or other continuous barriers approved by the Department, such as rugged physical terrain with steep grade that would require special equipment to traverse. If a large property is completely enclosed by fencing, a restricted area within the property may be identified with signage only. Public roads cannot be part of a Restricted Area.				
13	Does the owner/operator intend to operate this source as a portable stationary source as defined in 20.2.72.7.X NMAC? ☐ Yes ☑ No A portable stationary source is not a mobile source, such as an automobile, but a source that can be installed permanently at one location or that can be re-installed at various locations, such as a hot mix asphalt plant that is moved to different job sites.				
14	Will this facility operate in conjunction with other air regulated parties on the same property? ☐ Yes ☑ No If yes, what is the name and permit number (if known) of the other facility? **N/A**				

Section 1-E: Proposed Operating Schedule (The 1-E.1 & 1-E.2 operating schedules may become conditions in the permit.)

1	Facility **maximum** operating ($\frac{\text{hours}}{\text{day}}$): **24**	($\frac{\text{days}}{\text{week}}$): **7**	($\frac{\text{weeks}}{\text{year}}$): **52**	($\frac{\text{hours}}{\text{year}}$): **8,760**	
2	Facility's maximum daily operating schedule (if less than 24 $\frac{\text{hours}}{\text{day}}$)? Start: **N/A**	☐AM ☐PM	End: **N/A**	☐AM ☐PM	
3	Month and year of anticipated start of construction: **N/A**				
4	Month and year of anticipated construction completion: **N/A**				
5	Month and year of anticipated startup of new or modified facility: **N/A**				
6	Will this facility operate at this site for more than one year? ☑ Yes ☐ No				

Section 1-F: Other Facility Information

1	Are there any current Notice of Violations (NOV), compliance orders, or any other compliance or enforcement issues related to this facility? ☐ Yes ☑ No If yes, specify: **N/A**		
a	If yes, NOV date or description of issue: **N/A**		NOV Tracking No: **N/A**
b	Is this application in response to any issue listed in 1-F, 1 or 1a above? ☐ Yes ☑ No If Yes, provide the 1c & 1d info below:		
c	Document Title: **N/A**	Date: **N/A**	Requirement # (or page # and paragraph #): **N/A**
d	Provide the required text to be inserted in this permit: **N/A**		
2	Is air quality dispersion modeling or modeling waiver being submitted with this application? ☐ Yes ☑ No		
3	Does this facility require an "Air Toxics" permit under 20.2.72.400 NMAC & 20.2.72.502, Tables A and/or B? ☐ Yes ☑ No		
4	Will this facility be a source of federal Hazardous Air Pollutants (HAP)? ☑ Yes ☐ No		
a	If Yes, what type of source? ☑ **Major** (☑ ≥10 tpy of any single HAP **OR** ☑ ≥25 tpy of any combination of HAPS) **OR** ☐ **Minor** (☐ <10 tpy of any single HAP **AND** ☐ <25 tpy of any combination of HAPS)		
5	Is any unit exempt under 20.2.72.202.B.3 NMAC? ☐ Yes ☑ No		
a	If yes, include the name of company providing commercial electric power to the facility: **N/A** Commercial power is purchased from a commercial utility company, which specifically does not include power generated on site for the sole purpose of the user.		

Section 1-G: Streamline Application **(This section applies to 20.2.72.300 NMAC Streamline applications only)**

1	☐ I have filled out Section 18, "Addendum for Streamline Applications."	☑ N/A (This is not a Streamline application.)

Section 1-H: Current Title V Information - Required for all applications from TV Sources

(Title V-source required information for all applications submitted pursuant to 20.2.72 NMAC (Minor Construction Permits), or 20.2.74/20.2.79 NMAC (Major PSD/NNSR applications), and/or 20.2.70 NMAC (Title V))

1	Responsible Official (R.O.) (20.2.70.300.D.2 NMAC): **Travis Jones**	Phone: **(713) 289-2630**
a	R.O. Title: **EH&S Manager**	R.O. e-mail: **trjones@harvestmidstream.com**
b	R. O. Address: **1111 Travis Street, Houston, Texas 77002**	
2	Alternate Responsible Official (20.2.70.300.D.2 NMAC): **TBD**	Phone: **TBD**
a	A. R.O. Title: **TBD**	A. R.O. e-mail: **TBD**
b	A. R. O. Address: **TBD**	
3	Company's Corporate or Partnership Relationship to any other Air Quality Permittee (List the names of any companies that have operating (20.2.70 NMAC) permits and with whom the applicant for this permit has a corporate or partnership relationship): **N/A**	
4	Name of Parent Company ("Parent Company" means the primary name of the organization that owns the company to be permitted wholly or in part.): **Hilcorp Energy Company**	
a	Address of Parent Company: **1111 Travis Street, Houston, Texas 77002**	
5	Names of Subsidiary Companies ("Subsidiary Companies" means organizations, branches, divisions or subsidiaries, which are owned, wholly or in part, by the company to be permitted.): **N/A**	
6	Telephone numbers & names of the owners' agents and site contacts familiar with plant operations: **N/A**	
7	Affected Programs to include Other States, local air pollution control programs (i.e. Bernalillo) and Indian tribes: Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B)? If yes, state which ones and provide the distances in kilometers: **Yes, Colorado (≈ 32.2 km), Jicarilla Apache Indian Reservation (≈ 16.1 km), Southern Ute Indian Reservation (≈ 32.2 km), Navajo Indian Reservation (≈ 75.6 km), and Ute Mountain Indian Reservation (≈ 77.2 km)**	

Section 1-I – Submittal Requirements

Each 20.2.73 NMAC (**NOI**), a 20.2.70 NMAC (**Title V**), a 20.2.72 NMAC (**NSR** minor source), or 20.2.74 NMAC (**PSD**) application package shall consist of the following:

Hard Copy Submittal Requirements:

1) One hard copy **original signed and notarized application package printed double sided 'head-to-toe' 2-hole punched** as we bind the document on top, not on the side; except Section 2 (landscape tables), which should be head-to-head. Please use **numbered tab separators** in the hard copy submittal(s) as this facilitates the review process. For NOI submittals only, hard copies of UA1, Tables 2A, 2D & 2F, Section 3 and the signed Certification Page are required. Please include a copy of the check on a separate page.

2) If the application is for a minor NSR, PSD, NNSR, or Title V application, include one working hard **copy** for Department use. This copy should be printed in book form, 3-hole punched, and **must be double sided**. Note that this is in addition to the head-to-to 2-hole punched copy required in 1) above. Minor NSR Technical Permit revisions (20.2.72.219.B NMAC) only need to fill out Sections 1-A, 1-B, 3, and should fill out those portions of other Section(s) relevant to the technical permit revision. TV Minor Modifications need only fill out Sections 1-A, 1-B, 1-H, 3, and those portions of other Section(s) relevant to the minor modification. NMED may require additional portions of the application to be submitted, as needed.

3) The entire NOI or Permit application package, including the full modeling study, should be submitted electronically. Electronic files for applications for NOIs, any type of General Construction Permit (GCP), or technical revisions to NSRs must be submitted with compact disk (CD) or digital versatile disc (DVD). For these permit application submittals, two CD copies are required (in sleeves, not crystal cases, please), with additional CD copies as specified below. NOI applications require only a single CD submittal. Electronic files for other New Source Review (construction) permits/permit modifications or Title V permits/permit modifications can be submitted on CD/DVD or sent through AQB's secure file transfer service.

Electronic files sent by (check one):

☑ CD/DVD attached to paper application

☐ secure electronic transfer. Air Permit Contact Name____________________________

Email______________________________

Phone number_______________________

a. If the file transfer service is chosen by the applicant, after receipt of the application, the Bureau will email the applicant with instructions for submitting the electronic files through a secure file transfer service. Submission of the electronic files through the file transfer service needs to be completed within 3 business days after the invitation is received, so the applicant should ensure that the files are ready when sending the hard copy of the application. The applicant will not need a password to complete the transfer. **Do not use the file transfer service for NOIs, any type of GCP, or technical revisions to NSR permits.**

4) Optionally, the applicant may submit the files with the application on compact disk (CD) or digital versatile disc (DVD) following the instructions above and the instructions in 5 for applications subject to PSD review.

5) If **air dispersion modeling** is required by the application type, include the **NMED Modeling Waiver** and/or electronic air dispersion modeling report, input, and output files. The dispersion modeling ***summary report only*** should be submitted as hard copy(ies) unless otherwise indicated by the Bureau.

6) If the applicant submits the electronic files on CD and the application is subject to PSD review under 20.2.74 NMAC (PSD) or NNSR under 20.2.79 NMC include,
   a. one additional CD copy for US EPA,
   b. one additional CD copy for each federal land manager affected (NPS, USFS, FWS, USDI) and,
   c. one additional CD copy for each affected regulatory agency other than the Air Quality Bureau.

   If the application is submitted electronically through the secure file transfer service, these extra CDs do not need to be submitted.

Electronic Submittal Requirements [in addition to the required hard copy(ies)]:

1) All required electronic documents shall be submitted as 2 separate CDs or submitted through the AQB secure file transfer service. Submit a single PDF document of the entire application as submitted and the individual documents comprising the application.

2) The documents should also be submitted in Microsoft Office compatible file format (Word, Excel, etc.) allowing us to access the text and formulas in the documents (copy & paste). Any documents that cannot be submitted in a Microsoft Office compatible format shall be saved as a PDF file from within the electronic document that created the file. If you are unable to provide

Microsoft office compatible electronic files or internally generated PDF files of files (items that were not created electronically: i.e. brochures, maps, graphics, etc,), submit these items in hard copy format. We must be able to review the formulas and inputs that calculated the emissions.

3) It is preferred that this application form be submitted as 4 electronic files (3 MSWord docs: Universal Application section 1 [UA1], Universal Application section 3-19 [UA3], and Universal Application 4, the modeling report [UA4]) and 1 Excel file of the tables (Universal Application section 2 [UA2]). Please include as many of the 3-19 Sections as practical in a single MS Word electronic document. Create separate electronic file(s) if a single file becomes too large or if portions must be saved in a file format other than MS Word.

4) The electronic file names shall be a maximum of 25 characters long (including spaces, if any). The format of the electronic Universal Application shall be in the format: "A-3423-FacilityName". The "A" distinguishes the file as an application submittal, as opposed to other documents the Department itself puts into the database. Thus, all electronic application submittals should begin with "A-". Modifications to existing facilities should use the core permit number (i.e. '3423') the Department assigned to the facility as the next 4 digits. Use 'XXXX' for new facility applications. The format of any separate electronic submittals (additional submittals such as non-Word attachments, re-submittals, application updates) and Section document shall be in the format: "A-3423-9-description", where "9" stands for the section # (in this case Section 9-Public Notice). Please refrain, as much as possible, from submitting any scanned documents as this file format is extremely large, which uses up too much storage capacity in our database. Please take the time to fill out the header information throughout all submittals as this will identify any loose pages, including the Application Date (date submitted) & Revision number (0 for original, 1, 2, etc.; which will help keep track of subsequent partial update(s) to the original submittal. Do not use special symbols (#, @, etc.) in file names. The footer information should not be modified by the applicant.

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Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
1	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-10461/7 (Package # X00387)	1,232 hp	1,142 hp	12/16/1991 12/16/1991	N/A 1	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
2	Reciprocating Engine (Compressor)	Waukesha	L7042GL	400911 (Package # X00388)	1,232 hp	1,142 hp	4/19/1989 4/19/1989	N/A 2	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
3	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-61028/3 (Package # X00389)	1,232 hp	1,142 hp	4/22/1998 4/22/1998	N/A 3	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
4	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-12095/2 (Package # X00390)	1,232 hp	1,142 hp	7/25/1996 7/25/1996	N/A 4	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
5	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-11657/3 (Package # X00391)	1,232 hp	1,142 hp	3/8/1995 3/8/1995	N/A 5	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
6	Reciprocating Engine (Compressor)	Waukesha	L7042GL	402862 (Package # X00392)	1,232 hp	1,142 hp	12/4/1990 12/4/1990	N/A 6	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
7	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-10607/8 (Package # X00393)	1,232 hp	1,142 hp	6/3/1992 6/3/1992	N/A 7	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
8	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-61146/1 (Package # X00394)	1,232 hp	1,142 hp	2/22/1991 2/22/1991	N/A 8	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
9	Reciprocating Engine (Compressor)	Waukesha	L7042GL	C-12588/3 (Package # X00068)	1,232 hp	1,142 hp	7/24/1998 7/24/1998	N/A 9	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
10	Reciprocating Engine (Compressor)	Waukesha	L7042GL	TBD - not installed	1,232 hp	1,142 hp	TBD - not installed TBD - not installed	N/A 10	20200254	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SLB	N/A
15	Turbine (Compressor)	Solar	MARS 90-T12000S	OHC12-M0031 (Package # MC81315)	12,579 hp	11,647 hp	11/15/1996 11/15/1996	N/A 15	20200209	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
16	Turbine (Compressor)	Solar	MARS 90-T12000S	OHD13-M8920 (Package # MC81316)	12,579 hp	11,647 hp	7/11/1995 7/11/1995	N/A 16	20200209	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
17	Reciprocating Engine (Generator #2)	Waukesha	L7042G	308280/C	1,025 hp	873 hp	5/1/1994 5/1/1994	N/A 17	20100253	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
18	Reciprocating Engine (Generator #1)	Waukesha	L7042GSI	C-12779/2	1,480 hp	1,467 hp	4/16/1999 4/16/1999	N/A 18	20100253	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
or 18a	Reciprocating Engine (Generator #4)	Waukesha	F2895GSI	83247	607 hp	562 hp	12/19/84 05/20/19	N/A 18a	20100253	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] Date of Construction/ Reconstruction[2]	Controlled by Unit # Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
19	Reciprocating Engine (Generator #4)	Waukesha	F2895GSI	361831	754 hp	699 hp	3/30/1981 3/30/1981	N/A 19	20100253	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	4SRB	N/A
20	Fuel Gas Heater	BS&B Inc.		13634	0.5 MMBtu/hr	0.5 MMBtu/hr	1991 1994	N/A 20	31000404	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
28	Fuel Gas Heater	Pesco		404851	0.7 MMBtu/hr	0.7 MMBtu/hr	2002 	N/A 28	31000404	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
38	Truck Loading (Condensate)							N/A N/A	31088811	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
SSM	Startup, Shutdown & Maintenance							N/A N/A	31000203	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
F1	Equipment Leaks							N/A N/A	31088811	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
M1	Malfunctions							N/A N/A	31000299	☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced	N/A	N/A
PR1	G-12 Pig Receiver							N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
PR2	11-S Pig Receiver							N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T501	Produced Water Storage Tank	NATCO		9Y24701-01	200 bbl	200 bbl	10/2007 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91019	Condensate Storage Tank	American Tank & Steel Corp.		8364	500 bbl	500 bbl	1981 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91020	Condensate Storage Tank	American Tank & Steel Corp.		3263	300 bbl	300 bbl	05/1969 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91021	Condensate Storage Tank	American Tank & Steel Corp.		3265	300 bbl	300 bbl	05/1969 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91024	Produced Water Storage Tank	Continental Tank Co.		5229	300 bbl	300 bbl	5/1957 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
T91025	Produced Water Storage Tank	NATCO		8Y91701-04	200 bbl	200 bbl	5/2007 Prior to 08/23/2011	N/A N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A

Table 2-A: Regulated Emission Sources

Unit and stack numbering must correspond throughout the application package. If applying for a NOI under 20.2.73 NMAC, equipment exemptions under 2.72.202 NMAC do not apply.

Unit Number[1]	Source Description	Make	Model #	Serial #	Manufact-urer's Rated Capacity[3] (Specify Units)	Requested Permitted Capacity[3] (Specify Units)	Date of Manufacture[2] / Date of Construction/ Reconstruction[2]	Controlled by Unit # / Emissions vented to Stack #	Source Classi-fication Code (SCC)	For Each Piece of Equipment, Check One	RICE Ignition Type (CI, SI, 4SLB, 4SRB, 2SLB)[4]	Replacing Unit No.
T91028	Condensate Storage Tank	NATCO		8J54101-03	500 bbl	500 bbl	01/24/2008	N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
							Prior to 08/23/2011	N/A				
BGT-1	Below Grade Produced Water Storage Tank				120 bbl	120 bbl	2019	N/A	31000299	☐ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☑ **To Be Modified** ☐ To be Replaced	N/A	N/A
							2019	N/A				

[1] Unit numbers must correspond to unit numbers in the previous permit unless a complete cross reference table of all units in both permits is provided.

[2] Specify dates required to determine regulatory applicability.

[3] To properly account for power conversion efficiencies, generator set rated capacity shall be reported as the rated capacity of the engine in horsepower, not the kilowatt capacity of the generator set.

[4] "4SLB" means four stroke lean burn engine, "4SRB" means four stroke rich burn engine, "2SLB" means two stroke lean burn engine, "CI" means compression ignition, and "SI" means spark ignition

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. Serial No.	Max Capacity Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
37	Stabilizer Reboiler	Exotherm Corp.	UNIFLUX 4332	0.8 MMBtu/hr	20.2.72.202.B(5) #1a & #1b		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
39	Water Tank Heater			0.25 MMBtu/hr	20.2.72.202.B(5) #1a & #1b		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
40	Tech Shop Heater			0.125 MMBtu/hr	20.2.72.202.B(1)(a) #1a, #1b & 3		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
41	Maintenance Shop Heater			0.125 MMBtu/hr	20.2.72.202.B(1)(a) #1a, #1b & 3		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
42	Maintenance Shop Heater			0.125 MMBtu/hr	20.2.72.202.B(1)(a) #1a, #1b & 3		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
43	Maintenance Shop Heater			0.125 MMBtu/hr	20.2.72.202.B(1)(a) #1a, #1b & 3		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
44	Generator Building Heater			0.125 MMBtu/hr	20.2.72.202.B(1)(a) #1a, #1b & 3		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
45	Tech Shop Heater			0.25 MMBtu/hr	20.2.72.202.B(1)(a) #1a, #1b & 3		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
46	Produced Water Truck Loading				20.2.72.202.B(1)(a) #1a, #1b & 3		☐ Existing (unchanged) ☐ To be Removed ☑ **New/Additional** ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T1-T10	Lubrication Oil Storage Tanks (RICE day tanks)			500 gal	20.2.72.202.B(2) #1a, #1b & 5		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T15	Lubrication Oil Storage Tank (for RICE)			100 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T16	Used Oil Storage Tank (for RICE)			165 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T17	Waste Water Storage Tank			300 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ **Existing (unchanged)** ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No.	Max Capacity	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5)	Date of Manufacture /Reconstruction[2]	For Each Piece of Equipment, Check Onc
			Serial No.	Capacity Units	Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Installation /Construction[2]	
T19	Used Oil Storage Tank			500	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T20	Gasoline Storage Tank			500	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal			
T21	Diesel Storage Tank			300	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T22	Lubrication Oil Storage Tank (for turbines)			150	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a, #1b & 5		
T23	Lubrication Oil Storage Tank (turbine day tank)			800	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T24	Lubrication Oil Storage Tank (generator engine day tank)			600	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a, #1b & 5		
T28	Waste Water Overflow Storage Tank			165	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a, #1b & 5		
T30	Waste Water Storage Tank (for RICE)			165	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a, #1b & 5		
T32	Storage Tank			300	Out-of-Service		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	For Information Only		
T33	De-ionized Water Storage Tank			500	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	For Information Only		
T34	De-ionized Water Storage Tank			300	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	For Information Only		
T35	Methanol Storage Tank			1,100	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				gal	#1a & #1b		
T36	Methanol Storage Tank			300	20.2.72.202.B(5)		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
				bbl	#1a & #1b		

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T37	Storage Tank			500 gal	Out-of-Service For Information Only		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T38	Glycol Storage Tank			300 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T40	Storage Tank			300 bbl	Out-of-Service For Information Only		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T41	Utility Water Storage Tank			500 bbl	Not An Emissions Source For Information Only		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T42	Used Oil Filter Storage Tank			100 gal	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T43	Used Oil Filter Storage Tank			500 gal	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T44	Used Oil Storage Tank (for generator engines)			882 gal	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T46 & T47	Media Heat Release Storage Tanks			120 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T48	Heat Media Relief Storage Tank			200 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T49	Emulsion Breaker Storage Tank			65 gal	20.2.72.202.B(5) #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T50 & T51	De-ionized Water Storage Tank (for turbines)			8,000 gal	Not An Emissions Source For Information Only		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T52	Corrosion Inhibitor Storage Tank			325 gal	20.2.72.202.B(5) #1a & #1b		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T53	Used Oil Storage Tank			50 bbl	20.2.72.202.B(2) #1a, #1b & 5		☑ Existing (unchanged) ☐ To be Removed ☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

Table 2-B: Insignificant Activities[1] (20.2.70 NMAC) OR Exempted Equipment (20.2.72 NMAC)

All 20.2.70 NMAC (Title V) applications must list all Insignificant Activities in this table. All 20.2.72 NMAC applications must list Exempted Equipment in this table. If equipment listed on this table is exempt under 20.2.72.202.B.5, include emissions calculations and emissions totals for 202.B.5 "similar functions" units, operations, and activities in Section 6, Calculations. Equipment and activities exempted under 20.2.72.202 NMAC may not necessarily be Insignificant under 20.2.70 NMAC (and vice versa). Unit & stack numbering must be consistent throughout the application package. Per Exemptions Policy 02-012.00 (see http://www.env.nm.gov/aqb/permit/aqb_pol.html), 20.2.72.202.B NMAC Exemptions do not apply, but 20.2.72.202.A NMAC exemptions do apply to NOI facilities under 20.2.73 NMAC. List 20.2.72.301.D.4 NMAC Auxiliary Equipment for Streamline applications in Table 2-A. The List of Insignificant Activities (for TV) can be found online at http://www.env.nm.gov/aqb/forms/InsignificantListTitleV.pdf . TV sources may elect to enter both TV Insignificant Activities and Part 72 Exemptions on this form.

Unit Number	Source Description	Manufacturer	Model No. / Serial No.	Max Capacity / Capacity Units	List Specific 20.2.72.202 NMAC Exemption (e.g. 20.2.72.202.B.5) / Insignificant Activity citation (e.g. IA List Item #1.a)	Date of Manufacture /Reconstruction[2] / Date of Installation /Construction[2]	For Each Piece of Equipment, Check Onc
T54	Antifreeze Storage Tank			500	20.2.72.202.B(2)		☑ Existing (unchanged) ☐ To be Removed
				gal	#1a, #1b & 5		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced
T55	Soap Storage Tank			500	Not An Emissions Source		☑ Existing (unchanged) ☐ To be Removed
				gal	For Information Only		☐ New/Additional ☐ Replacement Unit ☐ To Be Modified ☐ To be Replaced

[1] Insignificant activities exempted due to size or production rate are defined in 20.2.70.300.D.6, 20.2.70.7.Q NMAC, and the NMED/AQB List of Insignificant Activities, dated September 15, 2008. Emissions from these insignificant activities do not need to be reported, unless specifically requested.

[2] Specify date(s) required to determine regulatory applicability.

Table 2-C: Emissions Control Equipment

Unit and stack numbering must correspond throughout the application package. Only list control equipment for TAPs if the TAP's maximum uncontrolled emissions rate is over its respective threshold as listed in 20.2.72 NMAC, Subpart V, Tables A and B. In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions.

Control Equipment Unit No.	Control Equipment Description	Date Installed	Controlled Pollutant(s)	Controlling Emissions for Unit Number(s)[1]	Efficiency (% Control by Weight)	Method used to Estimate Efficiency
17	Air/fuel ratio controller & non-selective catalytic converter	5/1/1994	NOX, CO & VOC	17	93, 85 & 20	Manufacturer's Data
18	Air/fuel ratio controller & non-selective catalytic converter	Before 05/94	NOX, CO & VOC	18	93, 85 & 20	Manufacturer's Data
or 18a	Air/fuel ratio controller & non-selective catalytic converter	05/20/19	NOX, CO & VOC	18a	96, 78 & 33	Manufacturer's Data

[1] List each control device on a separate line. For each control device, list all emission units controlled by the control device.

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
2	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
3	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
4	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
5	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
6	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
7	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
8	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
9	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
10	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
15	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
16	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
17	30.79	134.87	25.02	109.58	4.81E-01	2.11	3.90E-03	1.71E-02	1.29E-01	5.65E-01	1.29E-01	5.65E-01	1.29E-01	5.65E-01	-	-	-	-
18	51.74	226.63	42.04	184.13	8.08E-01	3.54	6.75E-03	2.96E-02	2.23E-01	9.76E-01	2.23E-01	9.76E-01	2.23E-01	9.76E-01	-	-	-	-
or 18a	16.12	70.61	11.16	48.88	3.72E-01	1.63	2.66E-03	1.17E-02	8.78E-02	3.85E-01	8.78E-02	3.85E-01	8.78E-02	3.85E-01	-	-	-	-
19	33.89	148.43	49.29	215.90	5.39E-01	2.36	3.20E-03	1.40E-02	1.06E-01	4.63E-01	1.06E-01	4.63E-01	1.06E-01	4.63E-01	-	-	-	-
20	5.56E-02	2.43E-01	4.67E-02	2.04E-01	3.06E-03	1.34E-02	3.33E-04	1.46E-03	4.22E-03	1.85E-02	4.22E-03	1.85E-02	4.22E-03	1.85E-02	-	-	2.78E-07	1.22E-06
28	7.78E-02	3.41E-01	6.53E-02	2.86E-01	4.28E-03	1.87E-02	4.67E-04	2.04E-03	5.9E-03	2.6E-02	5.91E-03	2.59E-02	5.91E-03	2.59E-02	-	-	3.89E-07	1.70E-06
38	-	-	-	-	14.97	11.51	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	Unspecified	33.07	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.33	10.20	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	Unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	Unspecified	9.63E-01	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	Unspecified	9.02	-	-	-	-	-	-	-	-	-	-	-	-
T501	-	-	-	-	Unspecified	8.80	-	-	-	-	-	-	-	-	-	-	-	-
T91019	-	-	-	-	1.82	26.08	-	-	-	-	-	-	-	-	-	-	-	-
T91020	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-

Table 2-D: Maximum Emissions (under normal operating conditions)

☐ **This Table was intentionally left blank because it would be identical to Table 2-E.**

Maximum Emissions are the emissions at maximum capacity and prior to (in the absence of) pollution control, emission-reducing process equipment, or any other emission reduction. Calculate the hourly emissions using the worst case hourly emissions for each pollutant. For each pollutant, calculate the annual emissions as if the facility were operating at maximum plant capacity without pollution controls for 8760 hours per year, unless otherwise approved by the Department. List Hazardous Air Pollutants (HAP) & Toxic Air Pollutants (TAPs) in Table 2-I. Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
T91021	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
T91024	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
T91025	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
T91028	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
BGT-1	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
Total #1	181.21	794.06	204.72	896.84	52.30	255.12	6.65E-01	2.91	2.46	10.77	2.46	10.77	2.46	10.77	-	-	1.83E-04	8.03E-04
Total #2	145.59	638.05	173.84	761.59	51.86	253.20	6.61E-01	2.89	2.32	10.18	2.32	10.18	2.32	10.18	-	-	1.83E-04	8.03E-04

[1]**Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but PM is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E^{-4}).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
2	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
3	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
4	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
5	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
6	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
7	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
8	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
9	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
10	3.78	16.54	6.67	29.21	2.52	11.02	4.85E-03	2.13E-02	8.24E-02	3.61E-01	8.24E-02	3.61E-01	8.24E-02	3.61E-01	-	-	-	-
15	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
16	13.45	59.10	10.78	47.30	3.09	13.60	3.01E-01	1.32	5.84E-01	2.56	5.84E-01	2.56	5.84E-01	2.56	-	-	9.13E-05	4.00E-04
17	2.12	9.27	3.85	16.86	3.85E-01	1.69	3.90E-03	1.71E-02	1.29E-01	5.65E-01	1.29E-01	5.65E-01	1.29E-01	5.65E-01	-	-	-	-
18	3.56	15.58	6.47	28.33	6.47E-01	2.83	6.75E-03	2.96E-02	2.23E-01	9.76E-01	2.23E-01	9.76E-01	2.23E-01	9.76E-01	-	-	-	-
or 18a	6.20E-01	2.72	2.48	10.86	2.48E-01	1.09	2.66E-03	1.17E-02	8.78E-02	3.85E-01	8.78E-02	3.85E-01	8.78E-02	3.85E-01	-	-	-	-
19	33.89	8.47	49.29	12.32	5.39E-01	1.35E-01	3.20E-03	8.00E-04	1.06E-01	2.64E-02	1.06E-01	2.64E-02	1.06E-01	2.64E-02	-	-	-	-
20	5.56E-02	2.43E-01	4.67E-02	2.04E-01	3.06E-03	1.34E-02	3.33E-04	1.46E-03	4.22E-03	1.85E-02	4.22E-03	1.85E-02	4.22E-03	1.85E-02	-	-	2.78E-07	1.22E-06
28	7.78E-02	3.41E-01	6.53E-02	2.86E-01	4.28E-03	1.87E-02	4.67E-04	2.04E-03	5.91E-03	2.59E-02	5.91E-03	2.59E-02	5.91E-03	2.59E-02	-	-	3.89E-07	1.70E-06
38	-	-	-	-	14.97	11.51	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	Unspecified	33.07	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	2.33	10.20	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	Unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	Unspecified	9.63E-01	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	Unspecified	9.02	-	-	-	-	-	-	-	-	-	-	-	-
T501	-	-	-	-	Unspecified	8.80	-	-	-	-	-	-	-	-	-	-	-	-
T91019	-	-	-	-	1.82	26.08	-	-	-	-	-	-	-	-	-	-	-	-
T91020	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
T91021	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
T91024	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-

Table 2-E: Requested Allowable Emissions

Unit & stack numbering must be consistent throughout the application package. Fill all cells in this table with the emission numbers or a "-" symbol. A "-" symbol indicates that emissions of this pollutant are not expected. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or $1.41E^{-4}$).

Unit No.	NOx		CO		VOC		SOx		PM[1]		PM10[1]		PM2.5[1]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
T91025	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
T91028	-	-	-	-	Unspecified	w/T91019	-	-	-	-	-	-	-	-	-	-	-	-
BGT-1	-	-	-	-	Unspecified	w/T501	-	-	-	-	-	-	-	-	-	-	-	-
Total #1	104.35	317.46	147.98	444.73	52.04	251.76	6.65E-01	2.90	2.46	10.34	2.46	10.34	2.46	10.34	-	-	1.83E-04	8.03E-04
Total #2	101.41	304.60	143.99	427.27	51.64	250.01	6.61E-01	2.88	2.32	9.74	2.32	9.74	2.32	9.74	-	-	1.83E-04	8.03E-04

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
or 18a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SSM	-	-	-	-	Unspecified	33.07	-	-	-	-	-	-	-	-	-	-	-	-
F1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
M1	-	-	-	-	Unspecified	10.00	-	-	-	-	-	-	-	-	-	-	-	-
PR1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PR2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T501	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2-F: Additional Emissions during Startup, Shutdown, and Routine Maintenance (SSM)

☐ This table is intentionally left blank since all emissions at this facility due to routine or predictable startup, shutdown, or scehduled maintenance are no higher than those listed in Table 2-E and a malfunction emission limit is not already permitted or requested. If you are required to report GHG emissions as described in Section 6a, include any GHG emissions during Startup, Shutdown, and/or Scheduled Maintenance (SSM) in Table 2-P. Provide an explanations of SSM emissions in Section 6 and 6a.

All applications for facilities that have emissions during routine our predictable startup, shutdown or scheduled maintenance (SSM)[1], including NOI applications, must include in this table the Maximum Emissions during routine or predictable startup, shutdown and scheduled maintenance (20.2.7 NMAC, 20.2.72.203.A.3 NMAC, 20.2.73.200.D.2 NMAC). In Section 6 and 6a, provide emissions calculations for all SSM emissions reported in this table. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (https://www.env.nm.gov/aqb/permit/aqb_pol.html) for more detailed instructions. Numbers shall be expressed to at least 2 decimal points (e.g. 0.41, 1.41, or 1.41E-4).

Unit No.	NOx		CO		VOC		SOx		PM[2]		PM10[2]		PM2.5[2]		H_2S		Lead	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
T91020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
T91028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BGT-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	Unspecified	43.07	-	-	-	-	-	-	-	-	-	-	-	-

[1] **For instance**, if the short term steady-state Table 2-E emissions are 5 lb/hr and the SSM rate is 12 lb/hr, enter 7 lb/hr in this table. If the annual steady-state Table 2-E emissions are 21.9 TPY, and the number of scheduled SSM events result in annual emissions of 31.9 TPY, enter 10.0 TPY in the table below.

[2] **Condensable Particulate Matter:** Include condensable particulate matter emissions for PM10 and PM2.5 if the source is a combustion source. Do not include condensable particulate matter for PM unless PM is set equal to PM10 and PM2.5. Particulate matter (PM) is not subject to an ambient air quality standard, but it is a regulated air pollutant under PSD (20.2.74 NMAC) and Title V (20.2.70 NMAC).

Table 2-G: Stack Exit and Fugitive Emission Rates for Special Stacks

☑ I have elected to leave this table blank because this facility does not have any stacks/vents that split emissions from a single source or combine emissions from more than one source listed in table 2-A. Additionally, the emission rates of all stacks match the Requested allowable emission rates stated in Table 2-E.

Use this table to list stack emissions (requested allowable) from split and combined stacks. List Toxic Air Pollutants (TAPs) and Hazardous Air Pollutants (HAPs) in Table 2-I. List all fugitives that are associated with the normal, routine, and non-emergency operation of the facility. Unit and stack numbering must correspond throughout the application package. Refer to Table 2-E for instructions on use of the "-" symbol and on significant figures.

Stack No.	Serving Unit Number(s) from Table 2-A	NOx		CO		VOC		SOx		PM		PM10		PM2.5		☐ H_2S or ☐ Lead	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
Totals:																	

Table 2-H: Stack Exit Conditions

Unit and stack numbering must correspond throughout the application package. Include the stack exit conditions for each unit that emits from a stack, including blowdown venting parameters and tank emissions. If the facility has multiple operating scenarios, complete a separate Table 2-H for each scenario and, for each, type scenario name here:

Stack Number	Serving Unit Number(s) from Table 2-A	Orientation (H-Horizontal V=Vertical)	Rain Caps (Yes or No)	Height Above Ground (ft)	Temp. (F)	Flow Rate		Moisture by Volume (%)	Velocity (ft/sec)	Inside Diameter (ft)
						(acfs)	(dscfs)			
1	1	V	No	19.67	667	101			289	0.67
2	2	V	No	19.67	667	101			289	0.67
3	3	V	No	19.67	667	101			289	0.67
4	4	V	No	19.67	667	101			289	0.67
5	5	V	No	19.67	667	101			289	0.67
6	6	V	No	19.67	667	101			289	0.67
7	7	V	No	19.67	667	101			289	0.67
8	8	V	No	19.67	667	101			289	0.67
9	9	V	No	19.67	667	101			289	0.67
10	10	V	No	19.67	667	101			289	0.67
15	15	V	No	41.50	845	3097			161	4.95
16	16	V	No	41.50	845	3097			161	4.95
17	17	V	No	16.60	1053	73			69	1.17
18	18a	V	No	19.08	1125	116			108	1.17
or 18a	or 18b	V	No	19.08	1070	44			80.1	0.83
19	19	V	No	20.00	1110	55			278	0.50
20	20	V	No	16.67	600	1			6	0.50
28	28	V	No	14.25	600	2			6	0.67

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A “-” symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Acetaldehyde ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
1	1	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
2	2	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
3	3	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
4	4	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
5	5	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
6	6	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
7	7	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
8	8	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
9	9	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
10	10	0.4	2.0	-	-	-	0.1	0.4	1.9	-	-	-	-						
15	15	1.1	4.7	0.4	1.9	-	0.1	0.4	1.9	-	0.2	-	-						
16	16	1.1	4.7	0.4	1.9	-	0.1	0.4	1.9	-	0.2	-	-						
17	17	0.1	0.5	-	-	-	0.1	0.1	0.3	-	-	-	-						
18	18	0.2	0.9	-	-	0.1	0.3	0.1	0.5	-	-	-	0.1						
or 18a	or 18a	0.1	0.3	-	-	-	0.1	0.0	0.2	-	-	-	-						
19	19	2.2	0.5	-	-	0.6	0.1	1.1	0.3	-	-	0.2	-						
20	20	-	-	-	-	-	-	-	-	-	-	-	-						
28	28	-	-	-	-	-	-	-	-	-	-	-	-						
38	38	3.8	3.0	-	-	-	-	-	-	-	-	-	-						
SSM	SSM	-	0.9	-	-	-	-	-	-	-	-	-	-						
F1	F1	0.1	0.3	-	-	-	-	-	-	-	-	-	-						
M1	M1	-	0.3	-	-	-	-	-	-	-	-	-	-						
PR1	PR1	-	-	-	-	-	-	-	-	-	-	-	-						
PR2	PR2	-	0.3	-	-	-	-	-	-	-	-	-	-						
T501	T501	-	1.5	-	-	-	0.2	-	-	-	0.7	-	0.3						
T91019	T91019	0.5	3.4	-	-	0.1	0.3	-	-	0.4	2.9	0.0	0.2						

Table 2-I: Stack Exit and Fugitive Emission Rates for HAPs and TAPs

In the table below, report the Potential to Emit for each HAP from each regulated emission unit listed in Table 2-A, only if the entire facility emits the HAP at a rate greater than or equal to one (1) ton per year For each such emission unit, HAPs shall be reported to the nearest 0.1 tpy. Each facility-wide Individual HAP total and the facility-wide Total HAPs shall be the sum of all HAP sources calculated to the nearest 0.1 ton per year. Per 20.2.72.403.A.1 NMAC, facilities not exempt [see 20.2.72.402.C NMAC] from TAP permitting shall report each TAP that has an uncontrolled emission rate in excess of its pounds per hour screening level specified in 20.2.72.502 NMAC. TAPs shall be reported using one more significant figure than the number of significant figures shown in the pound per hour threshold corresponding to the substance. Use the HAP nomenclature as it appears in Section 112 (b) of the 1990 CAAA and the TAP nomenclature as it listed in 20.2.72.502 NMAC. Include tank-flashing emissions estimates of HAPs in this table. For each HAP or TAP listed, fill all cells in this table with the emission numbers or a "-" symbol. A “-” symbol indicates that emissions of this pollutant are not expected or the pollutant is emitted in a quantity less than the threshold amounts described above.

Stack No.	Unit No.(s)	Total HAPs		Acetaldehyde ☑ HAP or ☐ TAP		Benzene ☑ HAP or ☐ TAP		Formaldehyde ☑ HAP or ☐ TAP		n-Hexane ☑ HAP or ☐ TAP		Toluene ☑ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP		Provide Pollutant Name Here ☐ HAP or ☐ TAP	
		lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr
T91020	T91020	-	w/T91019	-	-	-	w/T91019	-	-	-	w/T91019	-	w/T91019						
T91021	T91021	-	w/T91019	-	-	-	w/T91019	-	-	-	w/T91019	-	w/T91019						
T91024	T91024	-	w/T501	-	-	-	w/T501	-	-	-	w/T501	-	w/T501						
T91025	T91025	-	w/T501	-	-	-	w/T501	-	-	-	w/T501	-	w/T501						
T91028	T91028	-	w/T91019	-	-	-	w/T91019	-	-	-	w/T91019	-	w/T91019						
BGT-1	BGT-1	-	w/T501	-	-	-	w/T501	-	-	-	w/T501	-	w/T501						
Total #1		13.5	40.6	0.9	3.9	1.4	2.3	6.4	23.4	3.6	7.6	0.6	1.5						
Total #2		13.3	40.0	0.9	3.9	1.3	2.1	6.3	23.1	3.6	7.6	0.6	1.4						

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Table 2-J: Fuel

Specify fuel characteristics and usage. Unit and stack numbering must correspond throughout the application package.

Unit No.	Fuel Type (low sulfur Diesel, ultra low sulfur diesel, Natural Gas, Coal, …)	Fuel Source: purchased commercial, pipeline quality natural gas, residue gas, raw/field natural gas, process gas (e.g. SRU tail gas) or other	Specify Units				
			Lower Heating Value	Hourly Usage	Annual Usage	% Sulfur	% Ash
1	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
2	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
3	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
4	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
5	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
6	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
7	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
8	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
9	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
10	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	9.2 MCF	80.3 MMCF	NA	NA
15	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	98.3 MCF	860.9 MMCF	NA	NA
16	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	98.3 MCF	860.9 MMCF	NA	NA
17	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	7.4 MCF	64.6 MMCF	NA	NA
18	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	12.8 MCF	111.8 MMCF	NA	NA
or 18a	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	5.0 MCF	44.0 MMCF	NA	NA
19	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	6.0 MCF	3.0 MMCF	NA	NA
20	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	556 CF	4.9 MMCF	NA	NA
28	Natural Gas	Pipeline Quality Natural Gas	900 Btu/scf	778 CF	6.8 MMCF	NA	NA

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
T1-T10	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T15	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T16	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T17	31000299	Waste Water	99% H_2O & 1% Hydrocarbon	Exempt/Insignificant Source					
T19	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T20	31000299	Gasoline	Gasoline	Exempt					
T21	31000299	Diesel	Diesel	Exempt/Insignificant Source					
T22	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T23	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T24	31000299	Lubrication Oil	Lubrication Oil	Exempt/Insignificant Source					
T28	31000299	Waste Water	99% H_2O & 1% Hydrocarbon	Exempt/Insignificant Source					
T30	31000299	Waste Water	99% H_2O & 1% Hydrocarbon	Exempt/Insignificant Source					
T32	31000299	Out-of-Service	Out-of-Service	Out-of-Service - For Information Only					
T33	31000299	De-ionized Water	De-ionized Water	Not An Emissions Source - For Information Only					
T34	31000299	De-ionized Water	De-ionized Water	Not An Emissions Source - For Information Only					
T35	31000299	Methanol	Methanol	Exempt/Insignificant Source					
T36	31000299	Methanol	Methanol	Exempt/Insignificant Source					
T37	31000299	Out-of-Service	Out-of-Service	Out-of-Service - For Information Only					
T38	31000299	Glycol	Glycol	Exempt/Insignificant Source					
T40	31000299	Out-of-Service	Out-of-Service	Out-of-Service - For Information Only					
T41	31000299	Water	Water	Not An Emissions Source - For Information Only					
T42	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T43	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T44	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T46 & T47	31000299	Glycol	50% H_2O & 50% Glycol	Exempt/Insignificant Source					
T48	31000299	Glycol	50% H_2O & 50% Glycol	Exempt/Insignificant Source					
T49	31000299	Emulsion Breaker	Sulfatron DN-100	Exempt/Insignificant Source					

Table 2-K: Liquid Data for Tanks Listed in Table 2-L

For each tank, list the liquid(s) to be stored in each tank. If it is expected that a tank may store a variety of hydrocarbon liquids, enter "mixed hydrocarbons" in the Composition column for that tank and enter the corresponding data of the most volatile liquid to be stored in the tank. If tank is to be used for storage of different materials, list all the materials in the "All Calculations" attachment, run the newest version of TANKS on each, and use the material with the highest emission rate to determine maximum uncontrolled and requested allowable emissions rate. The permit will specify the most volatile category of liquids that may be stored in each tank. Include appropriate tank-flashing modeling input data. Use additional sheets if necessary. Unit and stack numbering must correspond throughout the application package.

Tank No.	SCC Code	Material Name	Composition	Liquid Density (lb/gal)	Vapor Molecular Weight (lb/lb*mol)	Average Storage Conditions		Max Storage Conditions	
						Temperature (°F)	True Vapor Pressure (psia)	Temperature (°F)	True Vapor Pressure (psia)
T50 & T51	31000299	De-ionized Water	De-ionized Water	Not An Emissions Source - For Information Only					
T52	31000299	Corrosion Inhibitor	CG049 Corrosion Inhibitor	Exempt/Insignificant Source					
T53	31000299	Used Oil	Used Oil	Exempt/Insignificant Source					
T54	31000299	Antifreeze	50% EG & 50% H2O	Exempt/Insignificant Source					
T55	31000299	Soap	Soap	Not An Emissions Source - For Information Only					
T501	31000299	Produced Water	99% H2O & 1% Hydrocarbon						
T91019	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
T91020	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
T91021	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
T91024	31000299	Produced Water	99% H2O & 1% Hydrocarbon						
T91025	31000299	Produced Water	99% H2O & 1% Hydrocarbon						
T91028	31000299	Condensate	Condensate	5.77	83.36	67.36	1.44	80.79	1.99
BGT-1	31000299	Produced Water	99% H2O & 1% Hydrocarbon						

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
T1-T10		Lubrication Oil		FX	12		Exempt/Insignificant Source						
T15		Lubrication Oil		FX	100		Exempt/Insignificant Source						
T16		Used Oil		FX	165		Exempt/Insignificant Source						
T17		Waste Water		FX	300		Exempt/Insignificant Source						
T19		Used Oil		FX	12		Exempt/Insignificant Source						
T20		Gasoline		FX	21		Exempt						
T21		Diesel		FX	7		Exempt/Insignificant Source						
T22		Lubrication Oil		FX	150		Exempt/Insignificant Source						
T23		Lubrication Oil		FX	19		Exempt/Insignificant Source						
T24		Lubrication Oil		FX	14		Exempt/Insignificant Source						
T28		Waste Water		FX	165		Exempt/Insignificant Source						
T30		Waste Water		FX	165		Exempt/Insignificant Source						
T32		Amine		FX	300		Out-of-Service - For Information Only						
T33		De-ionized Water		FX	500		Not An Emissions Source - For Information Only						
T34		De-ionized Water		FX	300		Not An Emissions Source - For Information Only						
T35		Methanol		FX	26		Exempt/Insignificant Source						
T36		Methanol		FX	300		Exempt/Insignificant Source						
T37		Out-of-Service		FX	12		Out-of-Service - For Information Only						
T38		Glycol		FX	300		Exempt/Insignificant Source						
T40		Out-of-Service		FX	300		Out-of-Service - For Information Only						
T41		Water		FX	500		Not An Emissions Source - For Information Only						
T42		Used Oil		FX	2		Exempt/Insignificant Source						
T43		Used Oil		FX	12		Exempt/Insignificant Source						
T44		Used Oil		FX	21		Exempt/Insignificant Source						
T46 & T47		Glycol		FX	120		Exempt/Insignificant Source						
T48		Glycol		FX	200		Exempt/Insignificant Source						
T49		Emulsion Breaker		FX	2		Exempt/Insignificant Source						
T50 & T51		De-ionized Water		FX	190		Not An Emissions Source - For Information Only						
T52		Corrosion Inhibitor		FX	8		Exempt/Insignificant Source						

Table 2-L: Tank Data

Include appropriate tank-flashing modeling input data. Use an addendum to this table for unlisted data categories. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary. See reference Table 2-L2. Note: 1.00 bbl = 10.159 M3 = 42.0 gal

Tank No.	Date Installed	Materials Stored	Seal Type (refer to Table 2-LR below)	Roof Type (refer to Table 2-LR below)	Capacity		Diameter (M)	Vapor Space (M)	Color (from Table VI-C)		Paint Condition (from Table VI-C)	Annual Throughput (gal/yr)	Turn-overs (per year)
					(bbl)	(M^3)			Roof	Shell			
T53		Used Oil		FX	50		Exempt/Insignificant Source						
T54		Antifreeze		FX	12		Exempt/Insignificant Source						
T55		Soap		FX	12		Not An Emissions Source - For Information Only						
T501		Produced Water		FX	200							643,200	76.57
T91019		Condensate		FX	500		4.72	2.79	MG	MG	Good	4,567,895	231.15
T91020		Condensate		FX	300		3.66	2.48	MG	MG	Good	2,737,760	231.14
T91021		Condensate		FX	300		3.66	2.48	MG	MG	Good	2,737,760	231.14
T91024		Produced Water		FX	300							964,800	76.57
T91025		Produced Water		FX	200							643,200	76.57
T91028		Condensate		FX	500		4.11	4.01	MG	MG	Good	3,516,586	234.59
BGT-1		Produced Water		N/A	120							571,200	113.3

Table 2-L2: Liquid Storage Tank Data Codes Reference Table

Roof Type	Seal Type, Welded Tank Seal Type		Seal Type, Riveted Tank Seal Type		Roof, Shell Color	Paint Condition
	Mechanical Shoe Seal	Liquid-mounted resilient seal	Vapor-mounted resilient seal	Seal Type		
FX: Fixed Roof					**WH**: White	Good
IF: Internal Floating Roof	**A**: Primary only	**A**: Primary only	**A**: Primary only	**A**: Mechanical shoe, primary only	**AS**: Aluminum (specular)	Poor
EF: External Floating Roof	**B**: Shoe-mounted secondary	**B**: Weather shield	**B**: Weather shield	**B**: Shoe-mounted secondary	**AD**: Aluminum (diffuse)	
P: Pressure	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**C**: Rim-mounted secondary	**LG**: Light Gray	
					MG: Medium Gray	
					BL: Black	
					OT: Other (specify)	

Note: 1.00 bbl = 0.159 M^3 = 42.0 gal

Table 2-M: Materials Processed and Produced (Use additional sheets as necessary.)

Material Processed				Material Produced			
Description	Chemical Composition	Phase (Gas, Liquid, or Solid)	Quantity (specify units)	Description	Chemical Composition	Phase	Quantity (specify units)
Low pressure natural gas	C1-C6+	Gas	148,920 MMcf/yr	High pressure natural gas	C1-C6+	Gas	148,920 MMcf/yr

The station capacity is a direct function of available horsepower. The throughput is therefore dependent on atmospheric temperature and pressure, gas temperature and pressure, relative humidity and gas quality, was well as other factors. The “throughput” expressed above is a nominal quantity (with a 15 percent safety factor), neither an absolute maximum, nor an average. Actual throughput will vary from the nominal amount.

Table 2-N: CEM Equipment

Enter Continuous Emissions Measurement (CEM) Data in this table. If CEM data will be used as part of a federally enforceable permit condition, or used to satisfy the requirements of a state or federal regulation, include a copy of the CEM's manufacturer specification sheet in the Information Used to Determine Emissions attachment. Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Stack No.	Pollutant(s)	Manufacturer	Model No.	Serial No.	Sample Frequency	Averaging Time	Range	Sensitivity	Accuracy
N/A									

Table 2-O: Parametric Emissions Measurement Equipment

Unit and stack numbering must correspond throughout the application package. Use additional sheets if necessary.

Unit No.	Parameter/Pollutant Measured	Location of Measurement	Unit of Measure	Acceptable Range	Frequency of Maintenance	Nature of Maintenance	Method of Recording	Averaging Time
17 & 18 or 18a	Pressure Drop	Across catalyst	Inches H2O	± 2" from tested pressure	As per manufacturer	As per manufacturer	Manual	NA
17 & 18 or 18a	Temperature	Inlet to catalyst	°F	750 - 1250 °F	As per manufacturer	As per manufacturer	CPMS	4-hr

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
1	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
2	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
3	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
4	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
5	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
6	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
7	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
8	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
9	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
10	mass GHG	6010.45	1.13E-02	1.13E-01											6010.57	-
	CO_2e	6010.45	3.37	2.83											-	6016.64
15	mass GHG	50367.37	9.49E-02	9.49E-01											50368.41	-
	CO_2e	50367.37	28.28	23.73											-	50419.38
16	mass GHG	50367.37	9.49E-02	9.49E-01											50368.41	-
	CO_2e	50367.37	28.28	23.73											-	50419.38
17	mass GHG	4209.59	7.93E-03	7.93E-02											4209.68	-
	CO_2e	4209.59	2.36	1.98											-	4213.94

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
18	**mass GHG**	6453.57	1.22E-02	1.22E-01											6453.70	-
	CO_2e	6453.57	3.64	3.05											-	6460.26
or 18a	**mass GHG**	2573.47	4.85E-03	4.85E-02											2573.52	-
	CO_2e	2573.47	1.45	1.21											-	2576.13
19	**mass GHG**	163.75	3.09E-04	3.09E-03											163.75	-
	CO_2e	163.75	9.21E-02	7.73E-02											-	163.92
20	**mass GHG**	284.05	5.35E-04	5.35E-03											284.06	-
	CO_2e	284.05	1.59E-01	1.34E-01											-	284.34
28	**mass GHG**	397.67	7.49E-04	7.49E-03											397.68	-
	CO_2e	397.67	2.23E-01	1.87E-01											-	398.08
37	**mass GHG**	454.48	8.57E-04	8.57E-03											454.49	-
	CO_2e	454.48	2.55E-01	2.14E-01											-	454.95
38	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
39	**mass GHG**	142.02	2.68E-04	2.68E-03											142.02	-
	CO_2e	142.02	7.99E-02	6.70E-02											-	142.17
40	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
41	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
42	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
43	**mass GHG**	71.01	1.34E-04	1.34E-03											71.01	-
	CO_2e	71.01	3.99E-02	3.35E-02											-	71.08
44	**mass GHG**	71.01	1.3E-04	1.34E-03											71.01	-
	CO_2e	71.01	4.0E-02	3.35E-02											-	71.08

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
45	**mass GHG**	142.02	2.7E-04	2.7E-03											142.02	-
	CO_2e	142.02	8.0E-02	6.7E-02											-	142.17
SSM	**mass GHG**	276.46	-	1278.04											1554.50	-
	CO_2e	276.46	-	31951.00											-	32227.46
F1	**mass GHG**	7.71	-	37.93											45.64	-
	CO_2e	7.71	-	948.25											-	955.96
M1	**mass GHG**	328.07	-	1195.65											1523.72	-
	CO_2e	328.07	-	29891.25											-	30219.32
PR1	**mass GHG**	1.20E-01	-	3.52											3.64	-
	CO_2e	1.20E-01	-	88.00											-	88.12
PR2	**mass GHG**	1.04	-	20.48											21.52	-
	CO_2e	1.04	-	512.00											-	513.04
T501	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
T19019	**mass GHG**	2.72E-02	-	2.58E-01											0.29	-
	CO_2e	2.72E-02	-	6.45											-	6.48
T19020	**mass GHG**	1.63E-02	-	1.55E-01											0.17	-
	CO_2e	1.63E-02	-	3.88											-	3.89
T19021	**mass GHG**	1.63E-02	-	1.55E-01											0.17	-
	CO_2e	1.63E-02	-	3.88											-	3.89
T19024	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
T19025	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00

Table 2-P: Greenhouse Gas Emissions

Applications submitted under 20.2.70, 20.2.72, & 20.2.74 NMAC are required to complete this Table. Power plants, Title V major sources, and PSD major sources must report and calculate all GHG emissions for each unit. Applicants must report potential emission rates in short tons per year (see Section 6.a for assistance). Include GHG emissions during Startup, Shutdown, and Scheduled Maintenance in this table. For minor source facilities that are not power plants, are not Title V, or are not PSD, there are three options for reporting GHGs 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHG as a second separate unit; OR 3) check the following box ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

		CO_2 ton/yr	N_2O ton/yr	CH_4 ton/yr	SF_6 ton/yr	PFC/HFC ton/yr[2]									Total GHG Mass Basis ton/yr[4]	Total CO_2e ton/yr[5]
Unit No.	**GWPs [1]**	**1**	**298**	**25**	**22,800**	**footnote 3**										
T19028	**mass GHG**	2.09E-02	-	1.99E-01											0.22	-
	CO_2e	2.09E-02	-	4.98											-	5.00
BGT_1	**mass GHG**	-	-	-											0.00	-
	CO_2e	-	-	-											-	0.00
Total #1	**mass GHG**	174054.92	3.27E-01	2539.65											176,594.90	
	CO_2e	174054.92	97.32	63491.32												237,643.56
Total #2	**mass GHG**	170174.82	3.19E-01	2539.58											172,714.72	-
	CO_2e	170174.82	95.13	63489.48											-	233,759.43

[1] **GWP** (Global Warming Potential): Applicants must use the most current GWPs codified in Table A-1 of 40 CFR part 98. GWPs are subject to change, therefore, applicants need to check 40 CFR 98 to confirm GWP values.

[2] For **HFCs** or **PFCs** describe the specific HFC or PFC compound and use a separate column for each individual compound.

[3] For each new compound, enter the appropriate GWP for each HFC or PFC compound from Table A-1 in 40 CFR 98.

[4] Green house gas emissions on a **mass basis** is the ton per year green house gas emission before adjustment with its GWP.

[5] **CO_2e** means Carbon Dioxide Equivalent and is calculated by multiplying the TPY mass emissions of the green house gas by its GWP.

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.

Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Section 3

Application Summary

The **Application Summary** shall include a brief description of the facility and its process, the type of permit application, the applicable regulation (i.e. 20.2.72.200.A.X, or 20.2.73 NMAC) under which the application is being submitted, and any air quality permit numbers associated with this site. If this facility is to be collocated with another facility, provide details of the other facility including permit number(s). In case of a revision or modification to a facility, provide the lowest level regulatory citation (i.e. 20.2.72.219.B.1.d NMAC) under which the revision or modification is being requested. Also describe the proposed changes from the original permit, how the proposed modification will affect the facility's operations and emissions, de-bottlenecking impacts, and changes to the facility's major/minor status (both PSD & Title V).

The **Process Summary** shall include a brief description of the facility and its processes.

Startup, Shutdown, and Maintenance (SSM) routine or predictable emissions: Provide an overview of how SSM emissions are accounted for in this application. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions.

Summary

The HFC El Cedro Compressor Station currently operates under a construction permit, 0340-M14-R2 dated September 17, 2019 and a Title V operating permit, P046-R3, dated April 19, 2019.

Under the Title V permit, the station is currently permitted to operate the following equipment/sources:

- Ten 4SLB Waukesha 7042GL natural gas-fired compressor engines (Units 1-10);
- Two Solar Mars 90-T12000S natural gas-fired turbines (Units 15 & 16);
- One 4SRB Waukesha 7042G natural gas-fired generator engine (Unit 17);
- One 4SRB Waukesha 7042GSI natural gas-fired generator engine (Unit 18);
- One 4SRB Waukesha F2895GSI natural gas-fired standby emergency generator engine (Unit 19);
- One BS&B, Inc. natural gas-fired fuel gas heater (Unit 20) rated at 0.5 MMBtu/hr;
- One Pesco natural gas-fired fuel gas heater (Unit 28) rated at 0.7 MMBtu/hr;
- Truck loading/unloading rack (Unit 38);
- SSM emissions (Unit SSM) from the turbines, compressors and piping associated with the station;
- Malfunction (Unit M1) emissions;
- Two pig receivers (Units PR1 & PR2);
- Two 200 bbl produced water storage tanks (Units T501 & T91025);
- Two 500 bbl condensate storage tanks (Units T91019 & T91028);
- One 300 bbl produced water storage tank (Unit T91024); and
- Two 300 bbl condensate storage tanks (Units T91020 & T91021).

Note that the facility is equipped with a condensate stabilizer. This unit removes flash emissions from a large majority of the condensate before it is routed to the storage tanks. The flash gases are inserted into the facility gas stream.

This application is required because the following modifications have been added to the construction permit. Within one year of implementing these modifications, a Title V permit application is required to incorporate these same changes.

- Permit the option to operate either a Waukesha L7042GSI generator engine (Unit 18) or a Waukesha F2895GSI generator engine (Unit 18a); and

- Permit the installation of a 120 bbl below-grade produced water storage tank (Unit BGT-1).

In March of 2020, a construction permit application was submitted to the New Mexico Air Quality Bureau (NMAQB) for the following additional modifications:

- Increase permitted facility total condensate throughput to the storage tanks (Units T91019, T91020, T91021 & T91028) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;

- Decrease permitted facility total unstabilized condensate throughput to the storage tanks (Units T91019, T91020, T91021 & T91028) from 325,920 to 42,000 gallons per rolling 12-month period;

  Note: The stabilizer heater is being set so as to ensure the stabilizer bottoms temperature is well above that required to ensure full stabilization. For this reason, the limit of 42,000 gallons of unstabilized condensate is adequate.

- Increase condensate truck loading (Unit 38) from 3,390,000 to 13,560,000 gallons per rolling 12-month period;

- Increase permitted facility total produced water throughput to the storage tanks (Units T501, T91024 & T91025) from 705,600 to 2,822,400 gallons per rolling 12-month period;

- Adjust permitted emissions from the condensate storage tanks, produced water storage tanks, and condensate truck loading as required to account for the increase in condensate and produced water throughput;

- Add produced water truck loading (Unit 46). Note that this is an insignificant source in accordance with 20.2.72.202.B(5) (VOC emissions are less than 0.5 tons per year); and

- Increase facility total pig receiver (Units PR1 & PR2) emissions.

It is not likely a construction permit approving these new modifications will be issued before this Title V application is due. For that reason, and to avoid the necessity of revising this application after the construction permit is issued, these additional modifications have been incorporated into this Title V application.

Consistent with previous applications, HFC continues to request a cap on emissions from both the condensate and produced water storage tanks.

The applicable regulation is 20.2.70 New Mexico Administrative Code (NMAC). The lowest level regulatory citation for this application is 20.2.70.300.B(2) NMAC.

There are no modifications in this application to de-bottleneck impacts or change the facility's major/minor status (both prevention of significant deterioration [PSD] & Title V).

Startup, Shutdown and Maintenance Emissions

For the reciprocating engines, turbines, heaters, truck loading, equipment leaks (valves, connectors, seals, etc.), pig receivers, and storage tanks, it is concluded that either there are no SSM emissions in excess of those identified for steady-state operation as seen in Section 2 (Table 2-E) or the SSM emissions are not quantifiable. Discussions justifying this conclusion are provided in Section 6.

SSM emissions from blowdowns of the turbines, compressors and piping associated with the station are calculated from the quantity of gas vented during each event, the composition of the gas in the compressors, and the number of events. A safety factor is included.

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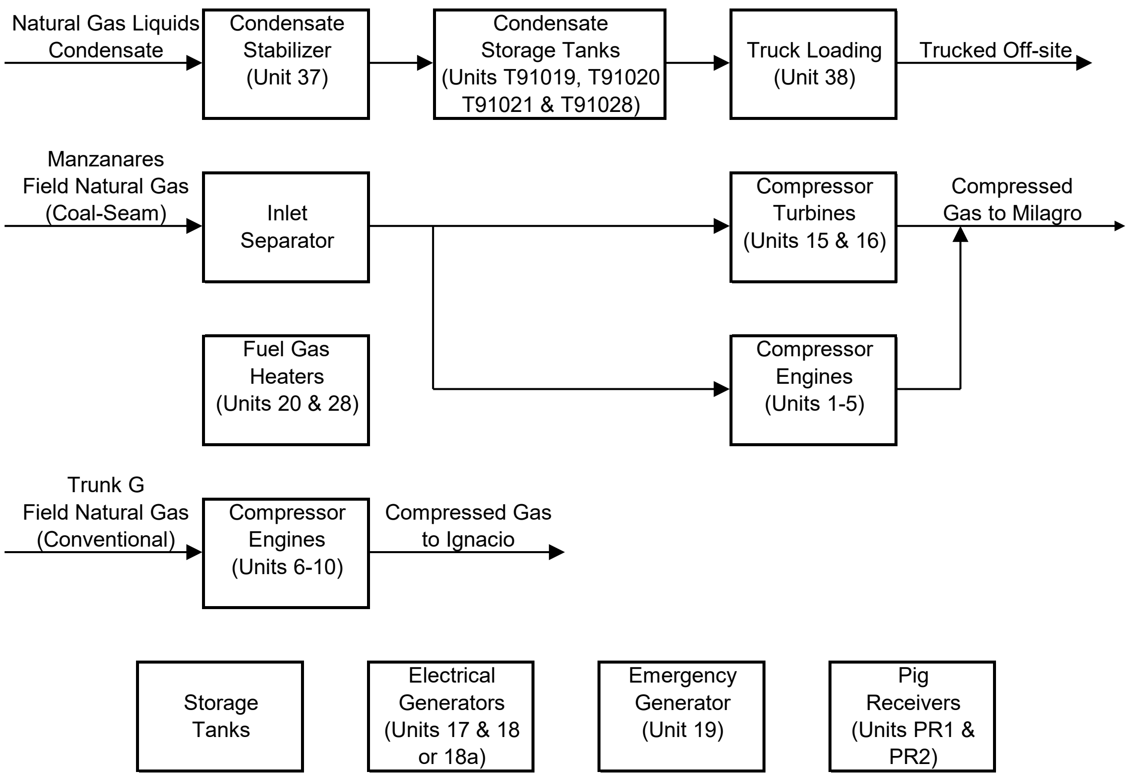
Section 4

Process Flow Sheet

A **process flow sheet** and/or block diagram indicating the individual equipment, all emission points and types of control applied to those points. The unit numbering system should be consistent throughout this application.

A process flow diagram is provided in this section. Please see the following page.

Flow Diagram



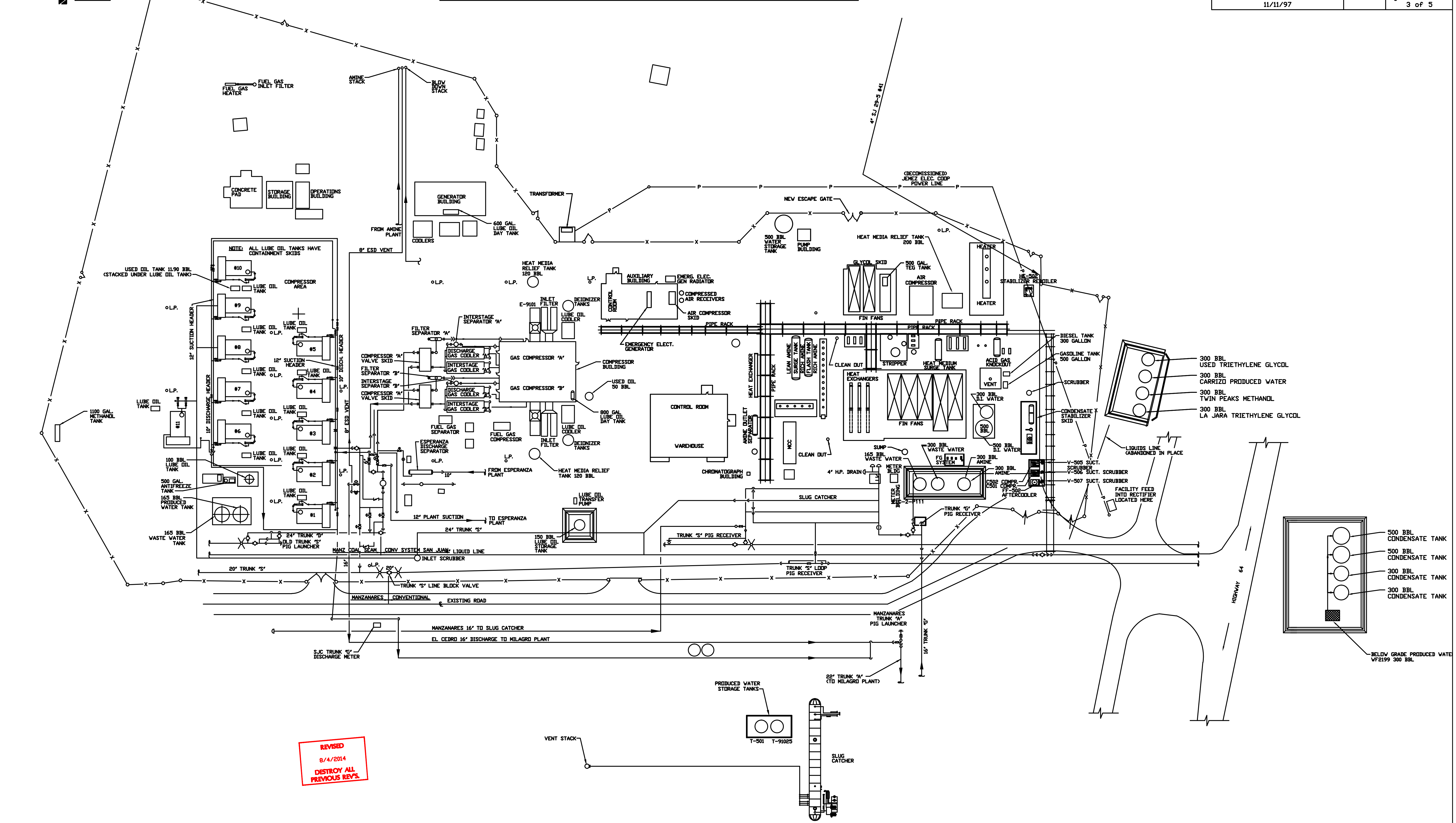
Section 5

Plot Plan Drawn To Scale

A **plot plan drawn to scale** showing emissions points, roads, structures, tanks, and fences of property owned, leased, or under direct control of the applicant. This plot plan must clearly designate the restricted area as defined in UA1, Section 1-D.12. The unit numbering system should be consistent throughout this application.

A plot plan is provided in this section. Please see the following page.

ATTACHMENT "A" PRODUCT & WASTE STORAGE LOCATIONS



NO.	DATE	BY	DESCRIPTION	W.O.NO.	CHK.	APP.
2	8/4/2014	TAG	REVISED PER FIELD REDLINES FROM J.F.			
1	11/26/97	BES	EDD DRAWING REDRAWN ON 24"x36" BORDER			E

LEGEND | REFERENCE DRAWINGS (DRAWING NO. / TITLE) | REVISIONS

DRAFTING	BY	DATE
DRAWN	BES	06/11/97
CHECKED		
APPROVED		
ENGINEERING	BY	DATE
PROJ. APPROVED		

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES

EL CEDRO GAS CONDITIONING PLANT
PLOT PLAN
SPILL PREVENTION CONTROL & COUNTERMEASURE PLAN
SAN JUAN COUNTY, NEW MEXICO

SCALE: 1"=40'-0" | W.O. NO. | DWG. NO. ELC-1-P21 | REV. 02

F1418 (5/95)

Section 6

All Calculations

Show all calculations used to determine both the hourly and annual controlled and uncontrolled emission rates. All calculations shall be performed keeping a minimum of three significant figures. Document the source of each emission factor used (if an emission rate is carried forward and not revised, then a statement to that effect is required). If identical units are being permitted and will be subject to the same operating conditions, submit calculations for only one unit and a note specifying what other units to which the calculations apply. All formulas and calculations used to calculate emissions must be submitted. The "Calculations" tab in the UA2 has been provided to allow calculations to be linked to the emissions tables. Add additional "Calc" tabs as needed. If the UA2 or other spread sheets are used, all calculation spread sheet(s) shall be submitted electronically in Microsoft Excel compatible format so that formulas and input values can be checked. Format all spread sheets and calculations such that the reviewer can follow the logic and verify the input values. Define all variables. If calculation spread sheets are not used, provide the original formulas with defined variables. Additionally, provide subsequent formulas showing the input values for each variable in the formula. All calculations, including those calculations are imbedded in the Calc tab of the UA2 portion of the application, the printed Calc tab(s), should be submitted under this section.

Tank Flashing Calculations: The information provided to the AQB shall include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., NOI, permit, or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis. If Hysis is used, all relevant input parameters shall be reported, including separator pressure, gas throughput, and all other relevant parameters necessary for flashing calculation.

SSM Calculations: It is the applicant's responsibility to provide an estimate of SSM emissions or to provide justification for not doing so. In this Section, provide emissions calculations for Startup, Shutdown, and Routine Maintenance (SSM) emissions listed in the Section 2 SSM and/or Section 22 GHG Tables and the rational for why the others are reported as zero (or left blank in the SSM/GHG Tables). Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on calculating SSM emissions. If SSM emissions are greater than those reported in the Section 2, Requested Allowables Table, modeling may be required to ensure compliance with the standards whether the application is NSR or Title V. Refer to the Modeling Section of this application for more guidance on modeling requirements.

Glycol Dehydrator Calculations: The information provided to the AQB shall include the manufacturer's maximum design recirculation rate for the glycol pump. If GRI-Glycalc is used, the full input summary report shall be included as well as a copy of the gas analysis that was used.

Road Calculations: Calculate fugitive particulate emissions and enter haul road fugitives in Tables 2-A, 2-D and 2-E for:

1. If you transport raw material, process material and/or product into or out of or within the facility and have PER emissions greater than 0.5 tpy.
2. If you transport raw material, process material and/or product into or out of the facility more frequently than one round trip per day.

Significant Figures:
A. All emissions standards are deemed to have at least two significant figures, but not more than three significant figures.
B. At least 5 significant figures shall be retained in all intermediate calculations.
C. In calculating emissions to determine compliance with an emission standard, the following rounding off procedures shall be used:

- **(1)** If the first digit to be discarded is less than the number 5, the last digit retained shall not be changed;
- **(2)** If the first digit discarded is greater than the number 5, or if it is the number 5 followed by at least one digit other than the number zero, the last figure retained shall be increased by one unit; **and**
- **(3)** If the first digit discarded is exactly the number 5, followed only by zeros, the last digit retained shall be rounded upward if it is an odd number, but no adjustment shall be made if it is an even number.
- **(4)** The final result of the calculation shall be expressed in the units of the standard.

Control Devices: In accordance with 20.2.72.203.A(3) and (8) NMAC, 20.2.70.300.D(5)(b) and (e) NMAC, and 20.2.73.200.B(7) NMAC, the permittee shall report all control devices and list each pollutant controlled by the control device regardless if the applicant takes credit for the reduction in emissions. The applicant can indicate in this section of the application if they chose to not take credit for the reduction in emission rates. For notices of intent submitted under 20.2.73 NMAC, only uncontrolled emission rates can be considered to determine applicability unless the state or federal Acts require the control. This information is necessary to determine if federally enforceable conditions are necessary for the control device, and/or if the control device produces its own regulated pollutants or increases emission rates of other pollutants.

Reciprocating Engines

The nitrogen oxides (NO_X), carbon monoxide (CO) and volatile organic compounds (VOC) emissions from the engines (Units 1-10, 17, 18, 18a & 19) were calculated from manufacturer's data. Note that the NO_X, CO, and VOC emissions from two of the rich burn engines (Units 17, 18 & 18a) were calculated from manufacturer's data consistent with BACT as established in previous permitting. The SO_2 and particulate emissions from the lean burn engines (Units 1-10) were calculated using AP-42 emission factors from Table 3.2-2. The SO_2 and particulate emissions from the rich burn engines (Units 17, 18 & 19) were calculated using AP-42 emission factors from Table 3.2-3. HAP emissions from the engines were calculated using GRI-HAPCalc 3.0. Except for the standby generator (Unit 19), emissions were calculated assuming all the units operate at full site capacity for 8,760 hours per year. Emissions from the standby generator were calculated assuming the unit operates 500 hours per year.

As there are no EPA approved test methods for measuring startup and shutdown emissions, they are not quantifiable. However, it should be noted that the engines startup with no load and a rich fuel mixture. As a result, emissions are minimized. Because the engines take only minutes to reach operating temperature, with the exceptions noted below, emissions during startup are not expected to exceed the steady-state allowable limits. Similarly, emissions during shutdown are not expected to exceed the steady-state allowable limits because fuel and air flow cease within seconds of shutdown. Emissions due to scheduled maintenance are negligible as the engines are not in operation during maintenance.

Units 17, 18 & 18a are required to be equipped with air/fuel ratio controllers and non-selective catalytic converters to control NO_X, CO and VOC emissions. As it takes several minutes for the catalysts to reach effective operating temperatures, emissions during this warm-up period likely exceed the steady-state allowable limits.

The engine emission rates presented in this application are carried forward and not revised.

Turbines

The NO_X, CO and VOC emissions from the turbines (Units 15 & 16) were calculated using manufacturer's data. The SO_2 and particulate emissions were calculated using AP-42 emission factors from Table 3.1-2a. HAP emissions from the turbines werere calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming each turbine operates at full site capacity for 8,760 hours per year.

As there are no EPA approved test methods for measuring startup and shutdown emissions, they are not quantifiable. However, it should be noted that the turbines startup with no load and a rich fuel mixture. As a result, combustion emissions are minimized. Because the turbines take only minutes to reach operating temperature, combustion emissions during startup are not expected to exceed the steady-state allowable limits. Similarly, because fuel and air flow cease within seconds of shutdown, combustion emissions during shutdown are not expected to exceed the steady-state allowable limits. Combustion emissions due to scheduled maintenance are negligible as the turbines are not in operation during maintenance.

The turbine emission rates presented in this application are carried forward and not revised.

SSM (Turbines, Compressors and Piping)

VOC and HAP emissions from blowdowns of the turbines, compressors and piping associated with the plant (Unit SSM) occur during startups and shutdowns. SSM emissions from the turbines result from the blowdown of motive gas used to drive turbine components during startups and shutdowns. SSM emissions from the compressors occur when high pressure gas is used to purge air from the compressors and associated piping prior to startups. This gas is vented to atmosphere. SSM emissions from the compressors also occur after shutdowns when high pressure gas in the compressors and associated piping is released to atmosphere as a safety precaution.

SSM emissions from blowdown of the turbines, compressors and piping associated with the plant were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The quantity of gas vented during each event was determined by HFC engineering. The composition of the gas was determined from extended gas analyses. The annual number of blowdown events were estimated based on historical operations. A safety factor was added because VOC and HAP emissions from each blowdown event are dependent on the composition of the gas in the pipeline and because the number of blowdowns in a year may vary. Experience indicates the composition of the gas is likely to vary. The use of the safety factor is also designed to ensure an adequate emissions limit, which includes emissions from other miscellaneous startup, shutdown and maintenance activities.

The SSM emissions identified in this application are routine or predictable startup/shutdown and scheduled maintenance and do not include malfunctions or upsets.

The SSM VOC emission rates presented in this application are carried forward and not revised.

Heaters & Reboiler

Criteria pollutant emissions from the heaters and condensate stabilizer reboiler (Units 20, 28, 37 & 39-45) were calculated using AP-42 emissions factors from Tables 1.4-1 and 1.4-2. HAP emissions were calculated using GRI-HAPCalc 3.0. Emissions were calculated assuming each heater and the reboiler operate at full capacity for 8,760 hours per year. Note that the condensate stabilizer reboiler (Unit 37) and the water tank heater (Unit 39) are exempt sources in accordance with 20.2.72.202.B(5) (criteria pollutant emissions are less than 0.5 tons per year). The building heaters (Units 40-45) are exempt sources in accordance with 20.2.72.202.B(1) (they are gaseous heaters rated less than 5 MMBtu/hr and are used solely for the purpose of comfort heating).

As there are no EPA approved test methods for measuring startup and shutdown emissions, they are not quantifiable. However, it should be noted that the heaters (uncontrolled) startup with less fuel input than during steady-state operation, so emissions are not expected to exceed the steady-state allowable limits. During shutdown, the fuel supply stops quickly, but air flow may not, causing the continued formation of NO_X. Even so, with no fuel, NO_X formation should be less than during steady-state operation. Emissions due to scheduled maintenance are negligible as the units are not in operation.

The heater and reboiler emission rates presented in this application are carried forward and not revised.

Truck Loading

The VOC emissions from condensate and produced water truck loading (Units 38 & 46) were calculated using the AP-42 emissions factor identified in Section 5.2-1.

The data used to calculate a condensate emission factor was obtained from the TANKS 4 output file. The condensate throughput was obtained from the VMGSim output file. HAP emissions are identified as percentages of the VOC emission rate, based on the HAP percentages predicted by TANKS 4.

Produced water truck loading is an exempt source in accordance with 20.2.72.202.B(5) (VOC emissions are less than 0.5 tons per year).

Due to the nature of the source, it is estimated that SSM emissions from truck loading are accounted for in the calculations.

Equipment Leak Emissions

Equipment leak (Unit F1) emissions were calculated using emission factors from Table 2.4 of the 1995 Protocol for Equipment Leak Emission Estimates published by the EPA. The component count was determined from the number of compressors and dehydrators permitted to operate at the station, using an equation derived by Harvest that is representative of their facilities. Emissions were calculated assuming the equipment operates 8,760 hours per year. To allow for variability in the composition of the inlet gas stream, the emission rates identified on the application forms are higher than the calculated emissions.

Due to the nature of the source, it is estimated that SSM emissions from valves, connectors, seals, etc. are accounted for in the calculations.

The equipment leak emission rates presented in this application are carried forward and not revised.

Malfunctions

Malfunction (Unit M1) emissions were set at 10.0 tons of VOC per year to account for emissions that may occur during upsets and malfunctions (including, but not limited to, unscheduled blowdowns and relief valve release). Based on the gas release rate associated with this set VOC emission rate, HAP emissions were calculated using facility gas composition. Note that these malfunction emissions include the venting of gas only, not combustion emissions.

The malfunction VOC emission rates presented in this application are carried forward and not revised.

Pig Receivers

VOC and HAP emissions from the pig receivers (Units PR1 & PR2) were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The quantity of gas vented during each event was determined by HFC engineering. The composition of the gas was determined from extended gas analyses. The annual number of blowdown events were estimated based on historical operations. A safety factor was added because VOC and HAP emissions from each blowdown event are dependent on the composition of the gas in the pipeline and because the number of blowdowns in a year may vary. Experience indicates there will be a nominal variation in the composition of the gas.

Storage Tanks

The VOC and HAP emissions from the condensate tanks (Units T-91019, T-91020, T-91021 & T-91028) were calculated using TANKS 4.0.9d for working/breathing losses and VMGSim for flash emissions. Working/breathing losses were calculated using a condensate (post flash) throughput rate of 13,560,000 gallons per year (13,518,000 gallons of stabilized condensate and 42,000 gallons of unstabilized condensate).

Flash emissions were calculated using a condensate throughput rate of 42,000 gallons per year. The 42,000 gallons of unstabilized condensate were included in the calculations to allow for transfers during pigging upsets (i.e., bypasses around the condensate stabilizer), transfers of unstabilized condensate from the condensate stabilizer when the operating temperature and pressure do not achieve levels necessary to completely stabilize the condensate, and to allow the stabilizer to be taken off-line for maintenance and repair if required.

Note: The VMGSim Index and Main Flowsheet are provided in this section. To review the Material Stream data refer to the copy of the VMGSim output file on the CD submitted with this application.

Where required, VOC and HAP emissions (working/breathing losses) from the remaining storage tanks, except produced water tanks, were calculated using TANKS 4.0.9d. The following assumptions are made for the emissions calculations:

- Residual oil #6 was used as an estimate for lubrication oil, used oil and the hydrocarbons in waste water. As the vapor pressure of residual oil #6 is less than 0.2 pounds per square inch absolute (psia), the tanks containing lubrication oil, used oil and waste water (Units T1-T10, T15-T17, T19, T22-T24, T28, T30, T42-T44 & T53) were assumed to be exempt/insignificant sources;

- The gasoline in Unit T20 was assumed to have a Reid Vapor Pressure of 13;

- Distillate fuel oil #2 was used to estimate diesel emissions. As the vapor pressure of distillate fuel oil #2 is less than 0.2 psia, the tank containing diesel (Unit T21) was assumed to be an exempt/insignificant source;

- As the vapor pressure of triethylene glycol (TEG) is less than 0.2 psia, the tanks containing TEG (Units T38 & T46-T48) were assumed to be exempt/insignificant sources;

- The composition of Surfatron DN-100 (Unit T49) was identified from the Material Safety Data Sheet (MSDS);

- The composition of CGO49 Corrosion Inhibitor (Unit 52) was identified from the MSDS; and

- The antifeeze is an inhibited ethylene glycol (EG) coolant containing 50 percent EG and 50 percent water. As the vapor pressure of EG is less than 0.2 psia, the tank containing antifreeze (Unit T54) was assumed to be an exempt source.

VOC emissions from the gasoline storage tank (Unit T20) were 607.9 pounds per year. As such, it is an exempt source.

Combined emissions from the methanol storage tanks (Units T35 & T36) were 667.3 pounds per year. As such, they are exempt/insignificant sources.

VOC emissions from the Surfatron DN-100 storage tank (Unit T49) were calculated at 12.1 pounds per year. As such, it is an exempt/insignificant source.

VOC emissions from the corrosion inhibitor storage tank (Unit T52) were calculated at 19.5 pounds per year. As such, it is an exempt/insignificant source.

Emissions from the produced water tanks (Units T501, T91024, T91025 & BGT-1) were calculated using emission factors from the Colorado Department of Public Health and Environment (CDPHE) and the Texas Commission on Environmental Quality (TCEQ).

The water tanks (Units T33, T34, T41, T50 & T51) and soap tank (Unit T55) tanks are listed in the application for information only. They do not contain VOC or HAP. There are also a number of tanks at the station that are out of service (Units T32, T37 & T40). They are listed in the application for information only.

Due to the nature of operations, the startup and shutdown emissions from the storage tanks were assumed to be accounted for in the TANKS 4.0.9d program used to calculate emissions. Emissions due to maintenance were negligible as the units will not be in operation.

As noted above, emission calculations have been prepared for exempt sources (heaters and produced water truck loading). These calculations are located at the end of this section.

Engine Exhaust Emissions Calculations

Unit Number: 1-10
Description: Waukesha L7042GL

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
1,232	hp	Nameplate hp	Mfg. data
1,142	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
1,110	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 1,500 ft)

Engine Specifications

1000	rpm	Engine rpm	Mfg. data
7040	cu in	Engine displacement	Mfg. data
128.43	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7230	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
8.25	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
9,172	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
72,310	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
80.34	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	1.50	3.78	16.54
CO	2.65	6.67	29.21
VOC	1.00	2.52	11.02

Emission factors taken from Waukesha Bulletin 7005 0107
Uncontrolled Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	5.88E-04	4.85E-03	2.13E-02
PM	9.99E-03	8.24E-02	3.61E-01
PM10	9.99E-03	8.24E-02	3.61E-01
PM2.5	9.99E-03	8.24E-02	3.61E-01

Emission factors taken from AP-42, Table 3.2-2
Particulate factors include both filterable and condensible emissions
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

667	°F	Stack exit temperature	Mfg. data
6048	acfm	Stack flowrate	Mfg. data
0.67	ft	Stack exit diameter	Harvest Four Corners, LLC
0.35	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
288.76	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
19.67	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 17
Description: Waukesha L7042G (Naturally Aspirated)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
1,025	hp	Nameplate hp	Mfg. data
873	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 1,500 ft)
873	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 3% for every 1,000 ft over 1,500 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
7040	cu in	Engine displacement	Mfg. data
81.84	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

110,683	Btu/min	Brake specific fuel consumption	Mfg. data
6.64	MMBtu/hr	Hourly fuel consumption	Btu/min x 60 min/hr / 1,000,000
7,379	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
58,175	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
64.64	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy	Controlled Emission Factors, g/hp-hr	Controlled Emission Rates, pph	tpy
NOX	16.00	30.79	134.87	1.10	2.12	9.27
CO	13.00	25.02	109.58	2.00	3.85	16.86
VOC	0.25	4.81E-01	2.11	0.20	3.85E-01	1.69

Emission factors taken from Waukesha Product Bullletin 7011B 1008
Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Emission Rates (tpy) = Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	3.90E-03	1.71E-02
PM	1.94E-02	1.29E-01	5.65E-01
PM10	1.94E-02	1.29E-01	5.65E-01
PM2.5	1.94E-02	1.29E-01	5.65E-01

Emission factors taken from AP-42, Table 3.2-3
Particulate factors include both filterable and condensible emissions
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

1,053	°F	Stack exit temperature	Mfg. data
4,395	acfm	Stack flowrate	Mfg. data
1.17	ft	Stack exit diameter	Harvest Four Corners, LLC
1.07	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
68.51	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
16.60	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 18
Description: Waukesha L7042GSI (Turbocharged)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
1,480	hp	Nameplate hp	Mfg. data
1,371	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
1,467	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 6,000 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
7040	cu in	Engine displacement	Mfg. data
137.52	psi	BMEP	Mfg. data (+[(792,000 x Mfg. Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7,829	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
11.48	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
12,759	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
100,593	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
111.77	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Controlled Emission Factors, g/hp-hr	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
NOX	16.00	51.74	226.63	1.10	3.56	15.58
CO	13.00	42.04	184.13	2.00	6.47	28.33
VOC	0.25	8.08E-01	3.54	0.20	6.47E-01	2.83

Emission factors taken from Waukesha Product Bulletin 7011 1008
Emission Rates (pph) = g/hp-hr x Mfg. Site-rated hp / 453.59 g/lb
Emission Rates (tpy) = Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	5.88E-04	6.75E-03	2.96E-02
PM	1.94E-02	2.23E-01	9.76E-01
PM10	1.94E-02	2.23E-01	9.76E-01
PM2.5	1.94E-02	2.23E-01	9.76E-01

Emission factors taken from AP-42, Table 3.2-3
Particulate factors include both filterable and condensible emissions
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

1,125	°F	Stack exit temperature	Mfg. data
6,942	acfm	Stack flowrate	Mfg. data
1.17	ft	Stack exit diameter	Harvest Four Corners, LLC
1.07	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
108.23	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
19.08	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 18a
Description: Waukesha F2895GSI (Turbocharged)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
607	hp	Nameplate hp	Mfg. data
562	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
547	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 1,500 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
2894	cu in	Engine displacement	Mfg. data
128.28	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

8,045	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
4.53	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
5,028	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
39,640	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
44.04	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy	Controlled Emission Factors, g/hp-hr	Controlled Emission Rates, pph	Controlled Emission Rates, tpy
NOX	13.00	16.12	70.61	0.50	6.20E-01	2.72
CO	9.00	11.16	48.88	2.00	2.48	10.86
VOC	0.30	3.72E-01	1.63	0.20	2.48E-01	1.09

Uncontrolled emission factors taken from Waukesha data (EN: 125515, Date: 04/01, Ref. S-8483-4)
Controlled emission factors taken from EMIT datasheet
Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Emission Rates (tpy) = Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	5.88E-04	2.66E-03	1.17E-02
PM	1.94E-02	8.78E-02	3.85E-01
PM10	1.94E-02	8.78E-02	3.85E-01
PM2.5	1.94E-02	8.78E-02	3.85E-01

Emission factors taken from AP-42, Table 3.2-3
Particulate factors include both filterable and condensible emissions
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

1,070	°F	Stack exit temperature	Mfg. data
2,621	acfm	Stack flowrate	Mfg. data
0.83	ft	Stack exit diameter	Harvest Four Corners, LLC
0.55	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
80.10	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
19.08	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 19
Description: Waukesha F2895GSI (Turbocharged)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
754	hp	Nameplate hp	Mfg. data
699	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
679	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 1,500 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
2894	cu in	Engine displacement	Mfg. data
159.34	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7,790	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
5.44	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
6,048	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
500	hr/yr	Annual operating time	Harvest Four Corners, LLC
2,721	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
3.02	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy
NOX	22.00	33.89	8.47
CO	32.00	49.29	12.32
VOC	0.35	5.39E-01	1.35E-01

Uncontrolled emission factors taken from Waukesha data (EN: 125515, Date: 04/01, Ref. S-8483-4)
Uncontrolled Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	3.20E-03	8.00E-04
PM	1.94E-02	1.06E-01	2.64E-02
PM10	1.94E-02	1.06E-01	2.64E-02
PM2.5	1.94E-02	1.06E-01	2.64E-02

Emission factors taken from AP-42, Table 3.2-3
Particulate factors include both filterable and condensible emissions
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

1,110	°F	Stack exit temperature	Mfg. data
3,275	acfm	Stack flowrate	Mfg. data
0.50	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
278.02	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
20.00	ft	Stack height	Harvest Four Corners, LLC

Engine Exhaust Emissions Calculations

Unit Number: 19
Description: Waukesha F2895GSI (Turbocharged)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
754	hp	Nameplate hp	Mfg. data
699	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (loss of 3% for every 1,000 ft over 4,000 ft)
679	hp	Mfg. Site-rated hp	Mfg. product bulletin Power Derate, S8154-6, April 2001 (loss of 2% for every 1,000 ft over 1,500 ft)

Engine Specifications

1200	rpm	Engine rpm	Mfg. data
2894	cu in	Engine displacement	Mfg. data
159.34	psi	BMEP	Mfg. data (+[(792,000 x NMAQB Site-rated hp) / (rpm * in^3)])

Fuel Consumption

7,790	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
5.44	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x NMAQB site-rated hp / 1,000,000
6,048	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
47,680	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
52.98	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Factors, g/hp-hr	Uncontrolled Emission Rates, pph	tpy
NOX	22.00	33.89	148.43
CO	32.00	49.29	215.90
VOC	0.35	5.39E-01	2.36

Uncontrolled emission factors taken from Waukesha data (EN: 125515, Date: 04/01, Ref. S-8483-4)
Uncontrolled Emission Rates (pph) = g/hp-hr x NMAQB Site-rated hp / 453.59 g/lb
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	tpy
SO2	5.88E-04	3.20E-03	1.40E-02
PM	1.94E-02	1.06E-01	4.63E-01
PM10	1.94E-02	1.06E-01	4.63E-01
PM2.5	1.94E-02	1.06E-01	4.63E-01

Emission factors taken from AP-42, Table 3.2-3
Particulate factors include both filterable and condensible emissions
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

1,110	°F	Stack exit temperature	Mfg. data
3,275	acfm	Stack flowrate	Mfg. data
0.50	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
278.02	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
20.00	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
Engines Report

Facility ID:	**EL CEDRO**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**EL CEDRO COMPRESSOR STATION**	
User Name:	**Harvest Four Corners, LLC**	
Units of Measure:	**U.S. STANDARD**	

Note:* *Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.
These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Engine Unit

Unit Name: 2895GSI#1

Hours of Operation:	8,760	Yearly
Rate Power:	562	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Rich Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor		Emission Factor Set
HAPs				
Formaldehyde	0.2271	0.04188340	g/bhp-hr	GRI Field
Methanol	0.0361	0.00666670	g/bhp-hr	GRI Field
Benzene	0.1198	0.02210000	g/bhp-hr	GRI Field
Toluene	0.0385	0.00710000	g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0092	0.00170000	g/bhp-hr	GRI Field
Naphthalene	0.0015	0.00027540	g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0003	0.00005050	g/bhp-hr	GRI Field
Acenaphthylene	0.0001	0.00001890	g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090	g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570	g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720	g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400	g/bhp-hr	GRI Field
Phenanthrene	0.0002	0.00003210	g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260	g/bhp-hr	GRI Field
Pyrene	0.0000	0.00000860	g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180	g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040	g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070	g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050	g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020	g/bhp-hr	GRI Field
Total	0.4331			

Criteria Pollutants

CO	49.2501	9.08349210	g/bhp-hr	GRI Field
NMEHC	1.4312	0.26396820	g/bhp-hr	GRI Field
NOx	40.8085	7.52654670	g/bhp-hr	GRI Field

Other Pollutants

Methane	5.3135	0.98000000	g/bhp-hr	GRI Field
Ethylene	0.6868	0.12666670	g/bhp-hr	GRI Field
Ethane	1.6627	0.30666670	g/bhp-hr	GRI Field
Propylene	0.1301	0.02400000	g/bhp-hr	GRI Field
Propane	0.5205	0.09600000	g/bhp-hr	GRI Field

Unit Name: 2895GSI#2

Hours of Operation:	8,760	Yearly
Rate Power:	699	hp
Fuel Type:	FIELD GAS	
Engine Type:	4-Stroke, Rich Burn	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor		Emission Factor Set
HAPs				
Formaldehyde	0.2824	0.04188340	g/bhp-hr	GRI Field
Methanol	0.0450	0.00666670	g/bhp-hr	GRI Field
Benzene	0.1490	0.02210000	g/bhp-hr	GRI Field
Toluene	0.0479	0.00710000	g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0115	0.00170000	g/bhp-hr	GRI Field
Naphthalene	0.0019	0.00027540	g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0003	0.00005050	g/bhp-hr	GRI Field
Acenaphthylene	0.0001	0.00001890	g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090	g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570	g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720	g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400	g/bhp-hr	GRI Field
Phenanthrene	0.0002	0.00003210	g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260	g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860	g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180	g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040	g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220	g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070	g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050	g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020	g/bhp-hr	GRI Field
Total	0.5387			

Criteria Pollutants

CO	61.2559	9.08349210	g/bhp-hr	GRI Field
NMEHC	1.7801	0.26396820	g/bhp-hr	GRI Field
NOx	50.7564	7.52654670	g/bhp-hr	GRI Field

Other Pollutants

Methane	6.6088	0.98000000 g/bhp-hr	GRI Field
Ethylene	0.8542	0.12666670 g/bhp-hr	GRI Field
Ethane	2.0681	0.30666670 g/bhp-hr	GRI Field
Propylene	0.1618	0.02400000 g/bhp-hr	GRI Field
Propane	0.6474	0.09600000 g/bhp-hr	GRI Field

Unit Name: 7042G

Hours of Operation: 8,760 Yearly

Rate Power: 873 hp

Fuel Type: FIELD GAS

Engine Type: 4-Stroke, Rich Burn

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	0.3528	0.04188340 g/bhp-hr	GRI Field
Methanol	0.0561	0.00666670 g/bhp-hr	GRI Field
Benzene	0.1861	0.02210000 g/bhp-hr	GRI Field
Toluene	0.0598	0.00710000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0143	0.00170000 g/bhp-hr	GRI Field
Naphthalene	0.0023	0.00027540 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0004	0.00005050 g/bhp-hr	GRI Field
Acenaphthylene	0.0002	0.00001890 g/bhp-hr	GRI Field
Acenaphthene	0.0001	0.00001090 g/bhp-hr	GRI Field
Dibenzofuran	0.0000	0.00000570 g/bhp-hr	GRI Field
Fluorene	0.0001	0.00001720 g/bhp-hr	GRI Field
Anthracene	0.0000	0.00000400 g/bhp-hr	GRI Field
Phenanthrene	0.0003	0.00003210 g/bhp-hr	GRI Field
Fluoranthene	0.0001	0.00001260 g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860 g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040 g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(g,h,i)perylene	0.0000	0.00000070 g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050 g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020 g/bhp-hr	GRI Field
Total	0.6727		
Criteria Pollutants			
CO	76.5042	9.08349210 g/bhp-hr	GRI Field
NMEHC	2.2232	0.26396820 g/bhp-hr	GRI Field
NOx	63.3911	7.52654670 g/bhp-hr	GRI Field
Other Pollutants			
Methane	8.2539	0.98000000 g/bhp-hr	GRI Field
Ethylene	1.0668	0.12666670 g/bhp-hr	GRI Field
Ethane	2.5828	0.30666670 g/bhp-hr	GRI Field
Propylene	0.2021	0.02400000 g/bhp-hr	GRI Field

Propane	0.8085	0.09600000 g/bhp-hr	GRI Field

Unit Name: 7042GL

Hours of Operation: 8,760 Yearly

Rate Power: 1,142 hp

Fuel Type: FIELD GAS

Engine Type: 4-Stroke, Lean Burn

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	1.8543	0.16830000 g/bhp-hr	GRI Literature
Benzene	0.0573	0.00520000 g/bhp-hr	GRI Literature
Toluene	0.0231	0.00210000 g/bhp-hr	GRI Literature
Xylenes(m,p,o)	0.0154	0.00140000 g/bhp-hr	GRI Literature
Total	1.9501		

Unit Name: 7042GSI

Hours of Operation: 8,760 Yearly

Rate Power: 1,467 hp

Fuel Type: FIELD GAS

Engine Type: 4-Stroke, Rich Burn

Emission Factor Set: FIELD > EPA > LITERATURE

Additional EF Set: -NONE-

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	0.5928	0.04188340 g/bhp-hr	GRI Field
Methanol	0.0944	0.00666670 g/bhp-hr	GRI Field
Benzene	0.3128	0.02210000 g/bhp-hr	GRI Field
Toluene	0.1005	0.00710000 g/bhp-hr	GRI Field
Xylenes(m,p,o)	0.0241	0.00170000 g/bhp-hr	GRI Field
Naphthalene	0.0039	0.00027540 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0007	0.00005050 g/bhp-hr	GRI Field
Acenaphthylene	0.0003	0.00001890 g/bhp-hr	GRI Field
Acenaphthene	0.0002	0.00001090 g/bhp-hr	GRI Field
Dibenzofuran	0.0001	0.00000570 g/bhp-hr	GRI Field
Fluorene	0.0002	0.00001720 g/bhp-hr	GRI Field
Anthracene	0.0001	0.00000400 g/bhp-hr	GRI Field
Phenanthrene	0.0005	0.00003210 g/bhp-hr	GRI Field
Fluoranthene	0.0002	0.00001260 g/bhp-hr	GRI Field
Pyrene	0.0001	0.00000860 g/bhp-hr	GRI Field
Benz(a)anthracene	0.0000	0.00000180 g/bhp-hr	GRI Field
Chrysene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(a)pyrene	0.0000	0.00000040 g/bhp-hr	GRI Field
Benzo(b)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field
Benzo(k)fluoranthene	0.0000	0.00000220 g/bhp-hr	GRI Field

Benzo(g,h,i)perylene	0.0000	0.00000070	g/bhp-hr	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.00000050	g/bhp-hr	GRI Field
Dibenz(a,h)anthracene	0.0000	0.00000020	g/bhp-hr	GRI Field
Total	1.1309			

Criteria Pollutants

CO	128.5586	9.08349210	g/bhp-hr	GRI Field
NMEHC	3.7359	0.26396820	g/bhp-hr	GRI Field
NOx	106.5232	7.52654670	g/bhp-hr	GRI Field

Other Pollutants

Methane	13.8699	0.98000000	g/bhp-hr	GRI Field
Ethylene	1.7927	0.12666670	g/bhp-hr	GRI Field
Ethane	4.3403	0.30666670	g/bhp-hr	GRI Field
Propylene	0.3397	0.02400000	g/bhp-hr	GRI Field
Propane	1.3587	0.09600000	g/bhp-hr	GRI Field

Turbine Exhaust Emissions Calculations

Unit Number: 15 & 16
Description: Solar MARS 90-T12000S (w/SoLoNOx burners)

Note: The data on this worksheet applies to each individual emissions unit identified above.

Horsepower Calculations

6,445	ft above MSL	Elevation	
12,579	hp	Nameplate hp	Mfg. data
9,868	hp	NMAQB Site-rated hp	NMAQB Procedure # 02.002-00 (Nameplate hp x [29.9 - (ft above MSL / 1000)] / 29.9)
11,647	hp	Mfg. Site-rated hp	Mfg. data

Fuel Consumption

7,594	Btu/hp-hr	Brake specific fuel consumption	Mfg. data
88.45	MMBtu/hr	Hourly fuel consumption	Btu/hp-hr x Mfg. site-rated hp / 1,000,000
98,275	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
774,799	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
860.89	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	13.45	58.92
CO	10.78	47.20
VOC	3.09	13.52

Emission rates taken from the Solar Data Sheet

Pollutants	Emission Factors, lb/MMBtu	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
SO2	3.40E-03	3.01E-01	1.32
PM	6.60E-03	5.84E-01	2.56
PM10	6.60E-03	5.84E-01	2.56
PM2.5	6.60E-03	5.84E-01	2.56

Emission factors taken from AP-42, Table 3.1-2a
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

845	°F	Stack exhaust temperature	Mfg. data
185,801	acfm	Stack flowrate	Calculated from mfg. data
4.95	ft	Stack exit diameter	Bypass stack drawing
19.24	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
160.92	fps	Stack exit velocity	acfm / ft^2 / 60 sec/min
41.50	ft	Stack height	Bypass stack drawing

GRI-HAPCalc® 3.0
Turbine Report

Facility ID:	**EL CEDRO**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**EL CEDRO COMPRESSOR STATION**	
User Name:	**Williams Four Corners LLC**	
Units of Measure:	**U.S. STANDARD**	

***Note:** Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.*
These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

Turbine Unit

Unit Name: 90-T12000S

Hours of Operation:	8,760	Yearly
Rate Power:	11647	hp
Fuel Type:	NATURAL GAS	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
Formaldehyde	1.9031	0.01693680 g/bhp-hr	GRI Field
Acetaldehyde	1.9479	0.01733570 g/bhp-hr	GRI Field
1,3-Butadiene	0.0069	0.00006160 g/bhp-hr	GRI Field
Acrolein	0.0292	0.00026000 g/bhp-hr	GRI Field
Propional	0.0972	0.00086500 g/bhp-hr	GRI Field
Propylene Oxide	0.0140	0.00012480 g/bhp-hr	EPA
n-Nitrosodimethylamine	0.0001	0.00000100 g/bhp-hr	EPA
Benzene	0.0605	0.00053840 g/bhp-hr	GRI Field
Toluene	0.0462	0.00041100 g/bhp-hr	GRI Field
Ethylbenzene	0.0116	0.00010330 g/bhp-hr	EPA
Xylenes(m,p,o)	0.1398	0.00124410 g/bhp-hr	GRI Field
2,2,4-Trimethylpentane	0.1804	0.00160530 g/bhp-hr	GRI Field
n-Hexane	0.1692	0.00150580 g/bhp-hr	GRI Field
Phenol	0.0124	0.00011010 g/bhp-hr	GRI Field
n-Nitrosomorpholine	0.0001	0.00000100 g/bhp-hr	EPA
Naphthalene	0.0009	0.00000760 g/bhp-hr	GRI Field
2-Methylnaphthalene	0.0001	0.00000130 g/bhp-hr	GRI Field
Biphenyl	0.0371	0.00033050 g/bhp-hr	GRI Field
Phenanthrene	0.0001	0.00000050 g/bhp-hr	GRI Field
Chrysene	0.0001	0.00000100 g/bhp-hr	GRI Field
Beryllium	0.0000	0.00000010 g/bhp-hr	GRI Field
Phosphorous	0.0073	0.00006520 g/bhp-hr	GRI Field
Chromium	0.0009	0.00000820 g/bhp-hr	GRI Field
Chromium	0.0006	0.00000560 g/bhp-hr	EPA
Manganese	0.0020	0.00001750 g/bhp-hr	GRI Field
Nickel	0.0007	0.00000610 g/bhp-hr	GRI Field
Cobalt	0.0002	0.00000160 g/bhp-hr	GRI Field

Arsenic	0.0001	0.00000060	g/bhp-hr	GRI Field
Selenium	0.0000	0.00000030	g/bhp-hr	GRI Field
Cadmium	0.0000	0.00000020	g/bhp-hr	GRI Field
Mercury	0.0003	0.00000270	g/bhp-hr	GRI Field
Lead	0.0004	0.00000340	g/bhp-hr	GRI Field
Total	4.6694			

Criteria Pollutants

PM	3.5785	0.03184680	g/bhp-hr	EPA
CO	236.8981	2.10828420	g/bhp-hr	GRI Field
NMHC	21.7852	0.19387800	g/bhp-hr	GRI Field
NMEHC	1.3540	0.01205010	g/bhp-hr	EPA
NOx	140.6997	1.25216290	g/bhp-hr	GRI Field
SO2	0.1154	0.00102720	g/bhp-hr	GRI Field

Other Pollutants

Methane	110.9262	0.98719230	g/bhp-hr	GRI Field
Acetylene	0.8051	0.00716540	g/bhp-hr	GRI Field
Ethylene	1.5680	0.01395450	g/bhp-hr	GRI Field
Ethane	16.8642	0.15008370	g/bhp-hr	GRI Field
Propane	1.7978	0.01600000	g/bhp-hr	GRI Field
Isobutane	0.5394	0.00480000	g/bhp-hr	GRI Field
Butane	0.5843	0.00520000	g/bhp-hr	GRI Field
Trimethylamine	0.0001	0.00000070	g/bhp-hr	EPA
Cyclopentane	0.1855	0.00165110	g/bhp-hr	GRI Field
Butyrald/Isobutyraldehyde	0.1506	0.00134000	g/bhp-hr	GRI Field
n-Pentane	9.1184	0.08115000	g/bhp-hr	GRI Field
Cyclohexane	0.6881	0.00612400	g/bhp-hr	GRI Field
Methylcyclohexane	0.9923	0.00883120	g/bhp-hr	GRI Field
n-Octane	0.3583	0.00318890	g/bhp-hr	GRI Field
1,3,5-Trimethylbenzene	0.3371	0.00300000	g/bhp-hr	GRI Field
n-Nonane	0.0598	0.00053260	g/bhp-hr	GRI Field
CO2	53,193.5357	473.39811550	g/bhp-hr	EPA
Vanadium	0.0001	0.00000070	g/bhp-hr	GRI Field
Copper	0.0023	0.00002050	g/bhp-hr	GRI Field
Molybdenum	0.0023	0.00002030	g/bhp-hr	GRI Field
Barium	0.0026	0.00002290	g/bhp-hr	GRI Field

Heater Exhaust Emissions Calculations

Unit Number: 20
Description: BS&B Heater

Note: The data on this worksheet applies to each individual emissions unit identified above.

Fuel Consumption

0.50	MMBtu/hr	Capacity	Mfg. data
556	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
4,380	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
4.87	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	5.56E-02	2.43E-01
CO	84	4.67E-02	2.04E-01
VOC	5.5	3.06E-03	1.34E-02
SO2	0.6	3.33E-04	1.46E-03
PM	7.60	4.22E-03	1.85E-02
PM10	7.60	4.22E-03	1.85E-02
PM2.5	7.60	4.22E-03	1.85E-02
Lead	5.00E-04	2.78E-07	1.22E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
71.86	acfm	Stack flowrate	ft/sec x ft^2 x 60 sec/min
0.5	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimate
16.67	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 28
Description: Pesco Heater

Note: The data on this worksheet applies to each individual emissions unit identified above.

Fuel Consumption

0.70	MMBtu/hr	Capacity	Mfg. data
778	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
6,132	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
6.81	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	7.78E-02	3.41E-01
CO	84	6.53E-02	2.86E-01
VOC	5.5	4.28E-03	1.87E-02
SO2	0.6	4.67E-04	2.04E-03
PM	7.60	5.91E-03	2.59E-02
PM10	7.60	5.91E-03	2.59E-02
PM2.5	7.60	5.91E-03	2.59E-02
Lead	5.00E-04	3.89E-07	1.70E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
127.76	acfm	Stack flowrate	ft/sec x ft^2 x 60 sec/min
0.67	ft	Stack exit diameter	Harvest Four Corners, LLC
0.35	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimate
14.25	ft	Stack height	Harvest Four Corners, LLC

GRI-HAPCalc® 3.0
External Combustion Devices Report

Facility ID:	**EL CEDRO**	**Notes:**
Operation Type:	**COMPRESSOR STATION**	
Facility Name:	**EL CEDRO COMPRESSOR STATION**	
User Name:	**Williams Four Corners LLC**	
Units of Measure:	**U.S. STANDARD**	

Note: Emissions less than 5.00E-09 tons (or tonnes) per year are considered insignificant and are treated as zero.
These emissions are indicated on the report with a "0".
Emissions between 5.00E-09 and 5.00E-05 tons (or tonnes) per year are represented on the report with "0.0000".

External Combustion Devices

Unit Name: BS&B

Hours of Operation:	8,760	Yearly
Heat Input:	0.50	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	HEATER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set
HAPs			
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157 lb/MMBtu	EPA
Formaldehyde	0.0018	0.0008440090 lb/MMBtu	GRI Field
Methanol	0.0021	0.0009636360 lb/MMBtu	GRI Field
Acetaldehyde	0.0016	0.0007375920 lb/MMBtu	GRI Field
1,3-Butadiene	0.0007	0.0003423350 lb/MMBtu	GRI Field
Benzene	0.0016	0.0007480470 lb/MMBtu	GRI Field
Toluene	0.0022	0.0010163310 lb/MMBtu	GRI Field
Ethylbenzene	0.0046	0.0021128220 lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0029	0.0013205140 lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0062	0.0028417580 lb/MMBtu	GRI Field
n-Hexane	0.0031	0.0014070660 lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070 lb/MMBtu	GRI Field
Styrene	0.0046	0.0020788960 lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100 lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470 lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670 lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730 lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800 lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600 lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900 lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830 lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000870 lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170 lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000700 lb/MMBtu	GRI Field

Benzo(b)fluoranthene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.0314			

Criteria Pollutants

VOC	0.0118	0.0053921569	lb/MMBtu	EPA
PM	0.0163	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0122	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0041	0.0018627451	lb/MMBtu	EPA
CO	0.0709	0.0323636360	lb/MMBtu	GRI Field
NMHC	0.0187	0.0085294118	lb/MMBtu	EPA
NOx	0.2125	0.0970167730	lb/MMBtu	GRI Field
SO2	0.0013	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0230	0.0105212610	lb/MMBtu	GRI Field
Acetylene	0.0307	0.0140000000	lb/MMBtu	GRI Field
Ethylene	0.0021	0.0009476310	lb/MMBtu	GRI Field
Ethane	0.0058	0.0026312210	lb/MMBtu	GRI Field
Propylene	0.0051	0.0023454550	lb/MMBtu	GRI Field
Propane	0.0023	0.0010686280	lb/MMBtu	GRI Field
Isobutane	0.0032	0.0014640770	lb/MMBtu	GRI Field
Butane	0.0030	0.0013766990	lb/MMBtu	GRI Field
Cyclopentane	0.0025	0.0011304940	lb/MMBtu	GRI Field
Pentane	0.0076	0.0034671850	lb/MMBtu	GRI Field
n-Pentane	0.0031	0.0014221310	lb/MMBtu	GRI Field
Cyclohexane	0.0020	0.0009183830	lb/MMBtu	GRI Field
Methylcyclohexane	0.0048	0.0022011420	lb/MMBtu	GRI Field
n-Octane	0.0063	0.0028538830	lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.0075	0.0034224540	lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.0075	0.0034224540	lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.0075	0.0034224540	lb/MMBtu	GRI Field
n-Nonane	0.0080	0.0036604170	lb/MMBtu	GRI Field
CO2	257.6471	117.6470588235	lb/MMBtu	EPA

Unit Name: PESCO

Hours of Operation:	8,760	Yearly
Heat Input:	0.70	MMBtu/hr
Fuel Type:	NATURAL GAS	
Device Type:	HEATER	
Emission Factor Set:	FIELD > EPA > LITERATURE	
Additional EF Set:	-NONE-	

Calculated Emissions (ton/yr)

Chemical Name	Emissions	Emission Factor	Emission Factor Set

HAPs

3-Methylchloranthrene	0.0000	0.0000000018	lb/MMBtu	EPA
7,12-Dimethylbenz(a)anthracene	0.0000	0.0000000157	lb/MMBtu	EPA
Formaldehyde	0.0026	0.0008440090	lb/MMBtu	GRI Field
Methanol	0.0030	0.0009636360	lb/MMBtu	GRI Field
Acetaldehyde	0.0023	0.0007375920	lb/MMBtu	GRI Field
1,3-Butadiene	0.0010	0.0003423350	lb/MMBtu	GRI Field
Benzene	0.0023	0.0007480470	lb/MMBtu	GRI Field
Toluene	0.0031	0.0010163310	lb/MMBtu	GRI Field
Ethylbenzene	0.0065	0.0021128220	lb/MMBtu	GRI Field
Xylenes(m,p,o)	0.0040	0.0013205140	lb/MMBtu	GRI Field
2,2,4-Trimethylpentane	0.0087	0.0028417580	lb/MMBtu	GRI Field
n-Hexane	0.0043	0.0014070660	lb/MMBtu	GRI Field
Phenol	0.0000	0.0000001070	lb/MMBtu	GRI Field
Styrene	0.0064	0.0020788960	lb/MMBtu	GRI Field
Naphthalene	0.0000	0.0000005100	lb/MMBtu	GRI Field
2-Methylnaphthalene	0.0000	0.0000001470	lb/MMBtu	GRI Field
Acenaphthylene	0.0000	0.0000000670	lb/MMBtu	GRI Field
Biphenyl	0.0000	0.0000004730	lb/MMBtu	GRI Field
Acenaphthene	0.0000	0.0000000900	lb/MMBtu	GRI Field
Fluorene	0.0000	0.0000000800	lb/MMBtu	GRI Field
Anthracene	0.0000	0.0000000870	lb/MMBtu	GRI Field
Phenanthrene	0.0000	0.0000000600	lb/MMBtu	GRI Field
Fluoranthene	0.0000	0.0000000900	lb/MMBtu	GRI Field
Pyrene	0.0000	0.0000000830	lb/MMBtu	GRI Field
Benz(a)anthracene	0.0000	0.0000000870	lb/MMBtu	GRI Field
Chrysene	0.0000	0.0000001170	lb/MMBtu	GRI Field
Benzo(a)pyrene	0.0000	0.0000000700	lb/MMBtu	GRI Field
Benzo(b)fluoranthene	0.0000	0.0000001500	lb/MMBtu	GRI Field
Benzo(k)fluoranthene	0.0000	0.0000007600	lb/MMBtu	GRI Field
Benzo(g,h,i)perylene	0.0000	0.0000002600	lb/MMBtu	GRI Field
Indeno(1,2,3-c,d)pyrene	0.0000	0.0000001200	lb/MMBtu	GRI Field
Dibenz(a,h)anthracene	0.0000	0.0000001030	lb/MMBtu	GRI Field
Lead	0.0000	0.0000004902	lb/MMBtu	EPA
Total	0.0442			

Criteria Pollutants

VOC	0.0165	0.0053921569	lb/MMBtu	EPA
PM	0.0228	0.0074509804	lb/MMBtu	EPA
PM, Condensible	0.0171	0.0055882353	lb/MMBtu	EPA
PM, Filterable	0.0057	0.0018627451	lb/MMBtu	EPA
CO	0.0992	0.0323636360	lb/MMBtu	GRI Field
NMHC	0.0262	0.0085294118	lb/MMBtu	EPA
NOx	0.2975	0.0970167730	lb/MMBtu	GRI Field
SO2	0.0018	0.0005880000	lb/MMBtu	EPA

Other Pollutants

Dichlorobenzene	0.0000	0.0000011765	lb/MMBtu	EPA
Methane	0.0323	0.0105212610	lb/MMBtu	GRI Field
Acetylene	0.0429	0.0140000000	lb/MMBtu	GRI Field
Ethylene	0.0029	0.0009476310	lb/MMBtu	GRI Field
Ethane	0.0081	0.0026312210	lb/MMBtu	GRI Field
Propylene	0.0072	0.0023454550	lb/MMBtu	GRI Field
Propane	0.0033	0.0010686280	lb/MMBtu	GRI Field

Isobutane	0.0045	0.0014640770	lb/MMBtu	GRI Field
Butane	0.0042	0.0013766990	lb/MMBtu	GRI Field
Cyclopentane	0.0035	0.0011304940	lb/MMBtu	GRI Field
Pentane	0.0106	0.0034671850	lb/MMBtu	GRI Field
n-Pentane	0.0044	0.0014221310	lb/MMBtu	GRI Field
Cyclohexane	0.0028	0.0009183830	lb/MMBtu	GRI Field
Methylcyclohexane	0.0067	0.0022011420	lb/MMBtu	GRI Field
n-Octane	0.0088	0.0028538830	lb/MMBtu	GRI Field
1,2,3-Trimethylbenzene	0.0105	0.0034224540	lb/MMBtu	GRI Field
1,2,4-Trimethylbenzene	0.0105	0.0034224540	lb/MMBtu	GRI Field
1,3,5-Trimethylbenzene	0.0105	0.0034224540	lb/MMBtu	GRI Field
n-Nonane	0.0112	0.0036604170	lb/MMBtu	GRI Field
CO2	360.7059	117.6470588235	lb/MMBtu	EPA

Compressor Blowdown Emissions Calculations

Unit Number: SSM (associated with the Units 1-5 compressors)
Description: Compressor & Piping Associated With Station

Throughput

5	# of units	Number of units	Harvest Four Corners, LLC
125	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
23,000	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
14,375,000	scf/yr	Annual gas loss	# of units x events/yr/unit x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	3.174E-04	2.28
Benzene	4.118E-07	2.96E-03
Ethylbenzene	0.000E+00	0.00E+00
n-Hexane	1.136E-06	8.16E-03
Isooctane	0.000E+00	0.00E+00
Toluene	1.457E-06	1.05E-02
Xylene	5.597E-07	4.02E-03

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	8.9772	44.01	1.041E-02
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.0566	28.01	4.179E-05
Methane	89.7679	16.04	3.795E-02
Ethane	0.9558	30.07	7.575E-04
Propane	0.1715	44.09	1.993E-04
Isobutane	0.0262	58.12	4.014E-05
n-Butane	0.0266	58.12	4.075E-05
Isopentane	0.0073	72.15	1.388E-05
n-Pentane	0.0056	72.15	1.065E-05
Cyclopentane	0.0001	70.14	1.849E-07
n-Hexane	0.0005	86.17	1.136E-06
Cyclohexane	0.0003	84.16	6.655E-07
Other hexanes	0.0009	86.18	2.044E-06
Heptanes	0.0007	100.20	1.849E-06
Methylcyclohexane	0.0008	98.19	2.070E-06
Isooctane	0.0000	100.21	0.000E+00
Benzene	0.0002	78.11	4.118E-07
Toluene	0.0006	92.14	1.457E-06
Ethylbenzene	0.0000	106.17	0.000E+00
Xylenes	0.0002	106.17	5.597E-07
C8+ Heavies	0.0008	110.00	2.319E-06
Total	99.9998		
Total VOC			3.174E-04

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Compressor Blowdown Emissions Calculations

Unit Number: SSM (associated with the Units 6-10 compressors)
Description: Compressor & Piping Associated With Station

Throughput

5	# of units	Number of units	Harvest Four Corners, LLC
91	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
8,810	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
4,008,550	scf/yr	Annual gas loss	# of units x events/yr/unit x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	1.503E-02	30.13
Benzene	3.397E-05	6.81E-02
Ethylbenzene	1.679E-06	3.37E-03
n-Hexane	2.855E-04	5.72E-01
Isooctane	1.664E-05	3.34E-02
Toluene	7.577E-05	1.52E-01
Xylene	2.323E-05	4.66E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.4996	44.01	1.740E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.1786	28.01	1.319E-04
Methane	80.7532	16.04	3.414E-02
Ethane	7.4024	30.07	5.867E-03
Propane	3.5417	44.09	4.116E-03
Isobutane	0.7647	58.12	1.171E-03
n-Butane	4.6213	58.12	7.079E-03
Isopentane	0.3987	72.15	7.582E-04
n-Pentane	0.2746	72.15	5.222E-04
Cyclopentane	0.0034	70.14	6.286E-06
n-Hexane	0.1257	86.17	2.855E-04
Cyclohexane	0.0470	84.16	1.043E-04
Other hexanes	0.0853	86.18	1.938E-04
Heptanes	0.0996	100.20	2.630E-04
Methylcyclohexane	0.0892	98.19	2.309E-04
Isooctane	0.0063	100.21	1.664E-05
Benzene	0.0165	78.11	3.397E-05
Toluene	0.0312	92.14	7.577E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0083	106.17	2.323E-05
C8+ Heavies	0.0523	110.00	1.516E-04
Total	100.0002		
Total VOC			1.503E-02

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Turbine & Compressor Blowdown Emissions Calculations

Unit Number: SSM (associated with the Units 15 & 16 compressors)
Description: Turbine, Compressor & Piping Associated With Station

Throughput

2	# of units	Number of units	Harvest Four Corners, LLC
175	events/yr/unit	Blowdowns per year per unit	Harvest Four Corners, LLC
4,800	scf/event	Gas loss per blowdown (compressor)	Harvest Four Corners, LLC
7,000	scf/event	Gas loss per blowdown (turbine)	Harvest Four Corners, LLC
4,130,000	scf/yr	Annual gas loss	# of units x events/yr/unit x [scf/event (compressor) + scf/event (turbine)]

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	3.174E-04	6.55E-01
Benzene	4.118E-07	8.50E-04
Ethylbenzene	0.000E+00	0.00E+00
n-Hexane	1.136E-06	2.35E-03
Isooctane	0.000E+00	0.00E+00
Toluene	1.457E-06	3.01E-03
Xylene	5.597E-07	1.16E-03

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	8.9772	44.01	1.041E-02
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.0566	28.01	4.179E-05
Methane	89.7679	16.04	3.795E-02
Ethane	0.9558	30.07	7.575E-04
Propane	0.1715	44.09	1.993E-04
Isobutane	0.0262	58.12	4.014E-05
n-Butane	0.0266	58.12	4.075E-05
Isopentane	0.0073	72.15	1.388E-05
n-Pentane	0.0056	72.15	1.065E-05
Cyclopentane	0.0001	70.14	1.849E-07
n-Hexane	0.0005	86.17	1.136E-06
Cyclohexane	0.0003	84.16	6.655E-07
Other hexanes	0.0009	86.18	2.044E-06
Heptanes	0.0007	100.20	1.849E-06
Methylcyclohexane	0.0008	98.19	2.070E-06
Isooctane	0.0000	100.21	0.000E+00
Benzene	0.0002	78.11	4.118E-07
Toluene	0.0006	92.14	1.457E-06
Ethylbenzene	0.0000	106.17	0.000E+00
Xylenes	0.0002	106.17	5.597E-07
C8+ Heavies	0.0008	110.00	2.319E-06
Total	99.9998		
Total VOC			3.174E-04

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Equipment Leaks Emissions Calculations

Unit Number: F1 (Manzanares components)
Description: Valves, Connectors, Seals & Open-Ended Lines

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled TOC Emission Rates, pph	Uncontrolled TOC Emission Rates, tpy
Valves	630	0.0045	0.0099	6.24	27.32
Connectors	643	0.0002	0.0004	0.28	1.24
Pump Seals	0	0.0024	0.0053	0.00	0.00
Compressor Seals	52	0.0088	0.0194	1.01	4.41
Pressure Relief Valves	49	0.0088	0.0194	0.95	4.16
Open-Ended Lines	163	0.0020	0.0044	0.72	3.14
Total				**9.19**	**40.26**

Number of components based on the numbers of compressors and dehydrators at the station (see next page)
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 8,760 hr/yr / 2,000 lb/ton

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of TOC, %	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Carbon dioxide	8.9772	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.0566	28.013				
Methane	89.7679	16.043	1440.146	97.246		
Ethane	0.9558	30.070	28.741	1.941		
Propane	0.1715	44.097	7.563	0.511	0.05	2.06E-01
Isobutane	0.0262	58.123	1.523	0.103	9.45E-03	4.14E-02
n-Butane	0.0266	58.123	1.546	0.104	9.60E-03	4.20E-02
Isopentane	0.0073	72.150	0.527	0.036	3.27E-03	1.43E-02
n-Pentane	0.0056	72.150	0.404	0.027	2.51E-03	1.10E-02
Cyclopentane	0.0001	70.134	0.007	0.000	4.35E-05	1.91E-04
n-Hexane	0.0005	86.177	0.043	0.003	2.67E-04	1.17E-03
Cyclohexane	0.0003	84.161	0.025	0.002	1.57E-04	6.86E-04
Other hexanes	0.0009	86.177	0.078	0.005	4.81E-04	2.11E-03
Heptanes	0.0007	100.204	0.070	0.005	4.35E-04	1.91E-03
Methylcyclohexane	0.0008	98.188	0.079	0.005	4.88E-04	2.14E-03
Isooctane	0.0000	114.231	0.000	0.000	0.00E+00	0.00E+00
Benzene	0.0002	78.114	0.016	0.001	9.70E-05	4.25E-04
Toluene	0.0006	92.141	0.055	0.004	3.43E-04	1.50E-03
Ethylbenzene	0.0000	106.167	0.000	0.000	0.00E+00	0.00E+00
Xylenes	0.0002	106.167	0.021	0.001	1.32E-04	5.77E-04
C8+ Heavies	0.0008	114.231	0.091	0.006	5.67E-04	2.48E-03
Total	99.9998		1480.935			
Total VOC				0.813	7.48E-02	3.28E-01

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

Equipment Leaks Emissions Calculations

Unit Number: F1 (Manzanares components)
Description: Valves, Connectors, Seals & Lines

Number of Compression Units at the Facility: 7
Number of Dehydrators at the Facility: 0

Process Equipment Description	Equipment Count						Instrument Count		
	Valves	Connectors	Pump Seals	Compressor Seals	Pressure Relief Valves	Open-end	Flow	Level	Pressure
Station inlet, meter run to pulsation dampener	17	14	0	0	1	13	3	0	3
Pulsation dampener	12	8	0	0	0	2	0	4	1
Compressor suction header	7	4	0	0	0	3	0	0	1
Suction header feed to instrument gas header	3	1	0	0	0	1	0	0	0
Compressor discharge header and bypass to station discharge	6	5	0	0	0	3	0	1	1
Compressor discharge header and suction header bypass lines	4	2	0	0	0	2	0	0	1
Fuel gas header	2	2	0	0	1	2	0	0	1
Instrument gas header	2	2	0	0	1	2	0	0	0
Station discharge header	9	5	0	0	1	6	0	0	2
Fuel gas recovery header	2	2	0	0	1	2	0	0	0
Fuel gas feed and filter loop	15	9	0	0	0	1	0	4	1
Instrument gas feed and filter loop	9	11	0	0	0	3	0	0	0
Produced water storage tank	1	0	0	0	0	1	0	1	0
ESD panel	12	0	0	0	0	0	0	0	0
Starting gas header	6	2	0	0	1	3	0	0	0
Hot gas header	2	2	0	0	0	2	0	0	0
Volume bottle lop	12	4	0	24	1	2	0	0	1
Components from Compressors	308	413	0	28	42	77	0	28	63
Components from dehydrators	0	0	0	0	0	0	0	0	0
Total	429	486	0	52	49	125	3	38	75
Adjusted Total	630	643	0	52	49	163			

The following additions are included in the Adjusted Total:
- 1 valve is added for each open end line
- 2 connectors are added for each flow meter
- 2 valves, 2 connectors and 1 open end line are added for each level gauge
- 1 connector is added for each pressure gauge

The component count is based on an evaluation of the Sim Mesa Compressor Station (two stage compression)

Equipment Leaks Emissions Calculations

Unit Number: F1 (Trunk G components)
Description: Valves, Connectors, Seals & Open-Ended Lines

Steady-State Emission Rates

Equipment	Number of Components, # of sources	Emission Factors, kg/hr/source	Emission Factors, lb/hr/source	Uncontrolled TOC Emission Rates, pph	tpy
Valves	504	0.0045	0.0099	4.99	21.85
Connectors	491	0.0002	0.0004	0.22	0.95
Pump Seals	0	0.0024	0.0053	0.00	0.00
Compressor Seals	44	0.0088	0.0194	0.85	3.73
Pressure Relief Valves	37	0.0088	0.0194	0.72	3.14
Open-Ended Lines	133	0.0020	0.0044	0.59	2.56
Total				**7.36**	**32.23**

Number of components based on the numbers of compressors and dehydrators at the station (see next page)
Emission factors taken from the EPA "1995 Protocol for Equipment Leak Emission Estimates"
Emission factors (lb/hr/source) = Emission factors (kg/hr/source) x 2.2 lb/kg
Uncontrolled TOC Emission Rates (pph) = lb/hr/source x # of sources
Uncontrolled TOC Emission Rates (tpy) = Uncontrolled TOC Emission Rates (pph) x 8,760 hr/yr / 2,000 lb/ton

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of TOC, %	Uncontrolled Emission Rates, pph	tpy
Carbon dioxide	1.4996	44.010				
Hydrogen sulfide	0.0000	34.070				
Nitrogen	0.1786	28.013				
Methane	80.7532	16.043	1295.524	62.021		
Ethane	7.4024	30.070	222.590	10.656		
Propane	3.5417	44.097	156.178	7.477	0.55	2.41
Isobutane	0.7647	58.123	44.447	2.128	1.57E-01	0.69
n-Butane	4.6213	58.123	268.604	12.859	9.46E-01	4.14
Isopentane	0.3987	72.150	28.766	1.377	1.01E-01	4.44E-01
n-Pentane	0.2746	72.150	19.812	0.948	6.98E-02	3.06E-01
Cyclopentane	0.0034	70.134	0.238	0.011	8.40E-04	3.68E-03
n-Hexane	0.1257	86.177	10.832	0.519	3.82E-02	1.67E-01
Cyclohexane	0.0470	84.161	3.956	0.189	1.39E-02	6.10E-02
Other hexanes	0.0853	86.177	7.351	0.352	2.59E-02	1.13E-01
Heptanes	0.0996	100.204	9.980	0.478	3.52E-02	1.54E-01
Methylcyclohexane	0.0892	98.188	8.758	0.419	3.09E-02	1.35E-01
Isooctane	0.0063	114.231	0.720	0.034	2.54E-03	1.11E-02
Benzene	0.0165	78.114	1.289	0.062	4.54E-03	1.99E-02
Toluene	0.0312	92.141	2.875	0.138	1.01E-02	4.44E-02
Ethylbenzene	0.0006	106.167	0.064	0.003	2.24E-04	9.83E-04
Xylenes	0.0083	106.167	0.881	0.042	3.10E-03	1.36E-02
C8+ Heavies	0.0523	114.231	5.974	0.286	2.10E-02	9.22E-02
Total	100.0002		2088.840			
Total VOC				27.323	2.01	8.81

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = (% / 100) * Molecular Weights (lb/lb-mole)
Weight Percent of TOC (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Uncontrolled Emission Rates (pph) = Total Uncontrolled TOC Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = Total Uncontrolled TOC Emission Rate (tpy) x (% / 100)

Equipment Leaks Emissions Calculations

Unit Number: F1 (Trunk G components)
Description: Valves, Connectors, Seals & Lines

Number of Compression Units at the Facility: 5
Number of Dehydrators at the Facility: 0

Process Equipment Description	Equipment Count						Instrument Count		
	Valves	Connectors	Pump Seals	Compressor Seals	Pressure Relief Valves	Open-end	Flow	Level	Pressure
Station inlet, meter run to pulsation dampener	17	14	0	0	1	13	3	0	3
Pulsation dampener	12	8	0	0	0	2	0	4	1
Compressor suction header	7	4	0	0	0	3	0	0	1
Suction header feed to instrument gas header	3	1	0	0	0	1	0	0	0
Compressor discharge header and bypass to station discharge	6	5	0	0	0	3	0	1	1
Compressor discharge header and suction header bypass lines	4	2	0	0	0	2	0	0	1
Fuel gas header	2	2	0	0	1	2	0	0	1
Instrument gas header	2	2	0	0	1	2	0	0	0
Station discharge header	9	5	0	0	1	6	0	0	2
Fuel gas recovery header	2	2	0	0	1	2	0	0	0
Fuel gas feed and filter loop	15	9	0	0	0	1	0	4	1
Instrument gas feed and filter loop	9	11	0	0	0	3	0	0	0
Produced water storage tank	1	0	0	0	0	1	0	1	0
ESD panel	12	0	0	0	0	0	0	0	0
Starting gas header	6	2	0	0	1	3	0	0	0
Hot gas header	2	2	0	0	0	2	0	0	0
Volume bottle lop	12	4	0	24	1	2	0	0	1
Components from Compressors	220	295	0	20	30	55	0	20	45
Components from dehydrators	0	0	0	0	0	0	0	0	0
Total	341	368	0	44	37	103	3	30	57
Adjusted Total	504	491	0	44	37	133			

The following additions are included in the Adjusted Total:
- 1 valve is added for each open end line
- 2 connectors are added for each flow meter
- 2 valves, 2 connectors and 1 open end line are added for each level gauge
- 1 connector is added for each pressure gauge

The component count is based on an evaluation of the Sim Mesa Compressor Station (two stage compression)

Malfunction Emissions Data and Calculations

Unit Number: M1
Description: Malfunctions

Emission Rates

Pollutants	Weight Percents, %	Uncontrolled Emission Rates, tpy
VOC		10.00
Benzene	2.260E-01	2.26E-02
Ethylbenzene	1.117E-02	1.12E-03
n-Hexane	1.899E+00	1.90E-01
Isooctane	1.107E-01	1.11E-02
Toluene	5.040E-01	5.04E-02
Xylene	1.545E-01	1.54E-02

Weight percents calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = VOC Emission Rate (tpy) x (% / 100)

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent, %
Carbon dioxide	1.4996	44.01		
Hydrogen sulfide	0.0000	34.07		
Nitrogen	0.1786	28.01		
Methane	80.7532	16.04		
Ethane	7.4024	30.07		
Propane	3.5417	44.09	1.5615	2.738E+01
Isobutane	0.7647	58.12	0.4444	7.792E+00
n-Butane	4.6213	58.12	2.6859	4.709E+01
Isopentane	0.3987	72.15	0.2877	5.043E+00
n-Pentane	0.2746	72.15	0.1981	3.474E+00
Cyclopentane	0.0034	70.14	0.0024	4.181E-02
n-Hexane	0.1257	86.17	0.1083	1.899E+00
Cyclohexane	0.0470	84.16	0.0396	6.935E-01
Other hexanes	0.0853	86.18	0.0735	1.289E+00
Heptanes	0.0996	100.20	0.0998	1.750E+00
Methylcyclohexane	0.0892	98.19	0.0876	1.536E+00
Isooctane	0.0063	100.21	0.0063	1.107E-01
Benzene	0.0165	78.11	0.0129	2.260E-01
Toluene	0.0312	92.14	0.0287	5.040E-01
Ethylbenzene	0.0006	106.17	0.0006	1.117E-02
Xylenes	0.0083	106.17	0.0088	1.545E-01
C8+ Heavies	0.0523	110.00	0.0575	1.009E+00
Total	100.0002			
Total VOC			5.7037	

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = (% / 100) x Molecular Weights (lb/lb-mole)
Weight Percents (%) = 100 x Component Weights (lb/lb-mole) / Total VOC Weight (lb/lb-mole)

Pig Receiver Emissions Calculations

Unit Number: PR1
Description: G-12 Pig Receiver

Throughput

200	events/yr	Blowdowns per year	Harvest Four Corners, LLC
1,000	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
200,000	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	9.633E-03	9.63E-01
Benzene	4.941E-06	4.94E-04
Ethylbenzene	1.119E-06	1.12E-04
n-Hexane	2.464E-04	2.46E-02
Isooctane	1.004E-05	1.00E-03
Toluene	5.391E-05	5.39E-03
Xylene	1.063E-05	1.06E-03

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.0334	44.01	1.199E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.2947	28.01	2.176E-04
Methane	83.3290	16.04	3.523E-02
Ethane	8.6116	30.07	6.825E-03
Propane	3.6567	44.09	4.249E-03
Isobutane	0.7113	58.12	1.090E-03
n-Butane	1.2286	58.12	1.882E-03
Isopentane	0.3696	72.15	7.029E-04
n-Pentane	0.2568	72.15	4.884E-04
Cyclopentane	0.0042	70.14	7.765E-06
n-Hexane	0.1085	86.17	2.464E-04
Cyclohexane	0.0361	84.16	8.008E-05
Other hexanes	0.1681	86.18	3.818E-04
Heptanes	0.0745	100.20	1.968E-04
Methylcyclohexane	0.0582	98.19	1.506E-04
Isooctane	0.0038	100.21	1.004E-05
Benzene	0.0024	78.11	4.941E-06
Toluene	0.0222	92.14	5.391E-05
Ethylbenzene	0.0004	106.17	1.119E-06
Xylenes	0.0038	106.17	1.063E-05
C8+ Heavies	0.0263	110.00	7.625E-05
Total	100.0002		
Total VOC			9.633E-03

Gas stream composition obtained from Trunk L extended gas analysis dated 02/06/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Pig Receiver Emissions Calculations

Unit Number: PR2
Description: 11-S Pig Receiver

Throughput

400	events/yr	Blowdowns per year	Harvest Four Corners, LLC
3,000	scf/event	Gas loss per blowdown	Harvest Four Corners, LLC
1,200,000	scf/yr	Annual gas loss	events/yr x scf/event

Emission Rates

Pollutants	Emission Factors, lb/scf	Uncontrolled, Emission Rates, tpy
VOC	1.503E-02	9.02
Benzene	3.397E-05	2.04E-02
Ethylbenzene	1.679E-06	1.01E-03
n-Hexane	2.855E-04	1.71E-01
Isooctane	1.664E-05	9.98E-03
Toluene	7.577E-05	4.55E-02
Xylene	2.323E-05	1.39E-02

Emission factors calculated from gas composition (see table below)
Uncontrolled Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Gas Composition

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Emission Factors, lb/scf
Carbon dioxide	1.4996	44.01	1.740E-03
Hydrogen sulfide	0.0000	34.07	0.000E+00
Nitrogen	0.1786	28.01	1.319E-04
Methane	80.7532	16.04	3.414E-02
Ethane	7.4024	30.07	5.867E-03
Propane	3.5417	44.09	4.116E-03
Isobutane	0.7647	58.12	1.171E-03
n-Butane	4.6213	58.12	7.079E-03
Isopentane	0.3987	72.15	7.582E-04
n-Pentane	0.2746	72.15	5.222E-04
Cyclopentane	0.0034	70.14	6.286E-06
n-Hexane	0.1257	86.17	2.855E-04
Cyclohexane	0.0470	84.16	1.043E-04
Other hexanes	0.0853	86.18	1.938E-04
Heptanes	0.0996	100.20	2.630E-04
Methylcyclohexane	0.0892	98.19	2.309E-04
Isooctane	0.0063	100.21	1.664E-05
Benzene	0.0165	78.11	3.397E-05
Toluene	0.0312	92.14	7.577E-05
Ethylbenzene	0.0006	106.17	1.679E-06
Xylenes	0.0083	106.17	2.323E-05
C8+ Heavies	0.0523	110.00	1.516E-04
Total	100.0002		
Total VOC			1.503E-02

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Emission Factors (lb/scf) = (% / 100) x lb/lb-mole / 379.4 scf/lb-mole

Storage Tank Emissions Calculations

Unit Number: T501 & T91025
Description: Produced Water Tank

Note: The data on this worksheet applies to each individual emissions unit identified above.

Throughput

200	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
76.57	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
15,314	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	2.01
Benzene	0.007	5.36E-02
Ethylbenzene	0.0007	5.36E-03
n-Hexane	0.022	1.68E-01
Toluene	0.009	6.89E-02
Xylene	0.006	4.59E-02

VOC, Benzene, and n-Hexane emission factors are taken from the CDPHE PS Memo 09-02
(Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Ethylbenzene, toluene, and xylene emissions factors (Non-Texas) are taken from the TCEQ
Project 2010-29 (Emission Factor Determination for Produced Water Storage Tanks) report
Uncontrolled Emission Rates (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

Storage Tank Emissions Calculations

Unit Number: T91024
Description: Produced Water Tank

Note: The data on this worksheet applies to each individual emissions unit identified above.

Throughput

300	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
76.57	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
22,971	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	3.01
Benzene	0.007	8.04E-02
Ethylbenzene	0.0007	8.04E-03
n-Hexane	0.022	2.53E-01
Toluene	0.009	1.03E-01
Xylene	0.006	6.89E-02

VOC, Benzene, and n-Hexane emission factors are taken from the CDPHE PS Memo 09-02
(Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Ethylbenzene, toluene, and xylene emissions factors (Non-Texas) are taken from the TCEQ
Project 2010-29 (Emission Factor Determination for Produced Water Storage Tanks) report
Uncontrolled Emission Rates (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

Storage Tank Emissions Calculations

Unit Number: BGT-1
Description: Produced Water Tank

Note: The data on this worksheet applies to each individual emissions unit identified above.

Throughput

120	bbl/turnover	Tank capacity	Harvest Four Corners, LLC
113.33	turnover/yr	Turnovers per year	Harvest Four Corners, LLC
13,600	bbl/yr	Annual liquid throughput	bbl/turnover x turnover/yr

Emission Rates

Pollutant	Emission Factor, lb/bbl	Uncontrolled, Emission Rate, tpy
VOC	0.262	1.78
Benzene	0.007	4.76E-02
Ethylbenzene	0.0007	4.76E-03
n-Hexane	0.022	1.50E-01
Toluene	0.009	6.12E-02
Xylene	0.006	4.08E-02

VOC, Benzene, and n-Hexane emission factors are taken from the CDPHE PS Memo 09-02
(Oil & Gas Produced Water Tank Batteries - Regulatory Definitions & Permitting Guidance)
Ethylbenzene, toluene, and xylene emissions factors (Non-Texas) are taken from the TCEQ
Project 2010-29 (Emission Factor Determination for Produced Water Storage Tanks) report
Uncontrolled Emission Rates (tpy) = lb/bbl x bbl/yr / 2,000 lb/ton

Storage Tank Emissions Data and Calculations

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Emission Rates

Source/Pollutants	Working/Breathing Losses, ppy	Working/Breathing Losses, tpy	Flash Losses, tpy	Uncontrolled Emission Rates, tpy
T19019				
VOC	5,326.12	2.66	6.10	8.77
Benzene	163.09	8.15E-02	2.36E-02	1.05E-01
Ethylbenzene	0.06	3.00E-05	3.99E-04	4.29E-04
n-Hexane	1,115.95	5.58E-01	4.25E-01	9.83E-01
Isooctane	3.04	1.52E-03	0.00E+00	1.52E-03
Toluene	84.07	4.20E-02	1.90E-02	6.11E-02
Xylene	0.56	2.80E-04	2.28E-03	2.56E-03
T19020				
VOC	3,130.74	1.57	3.66	5.22
Benzene	95.87	4.79E-02	1.42E-02	6.21E-02
Ethylbenzene	0.03	1.50E-05	2.39E-04	2.54E-04
n-Hexane	655.97	3.28E-01	2.55E-01	5.83E-01
Isooctane	1.79	8.95E-04	0.00E+00	8.95E-04
Toluene	49.42	2.47E-02	1.14E-02	3.61E-02
Xylene	0.33	1.65E-04	1.37E-03	1.53E-03
T19021				
VOC	3,157.72	1.58	3.66	5.24
Benzene	95.87	4.79E-02	1.42E-02	6.21E-02
Ethylbenzene	0.03	1.50E-05	2.39E-04	2.54E-04
n-Hexane	655.97	3.28E-01	2.55E-01	5.83E-01
Isooctane	1.79	8.95E-04	0.00E+00	8.95E-04
Toluene	49.42	2.47E-02	1.14E-02	3.61E-02
Xylene	0.33	1.65E-04	1.37E-03	1.53E-03
T19028				
VOC	4,306.67	2.15	4.70	6.85
Benzene	131.87	6.59E-02	1.82E-02	8.41E-02
Ethylbenzene	0.05	2.50E-05	3.07E-04	3.32E-04
n-Hexane	902.35	4.51E-01	3.27E-01	7.78E-01
Isooctane	2.46	1.23E-03	0.00E+00	1.23E-03
Toluene	67.98	3.40E-02	1.46E-02	4.86E-02
Xylene	0.46	2.30E-04	1.75E-03	1.98E-03
Combined Total				
VOC	15,921.25	7.96	18.12	26.08
Benzene	486.70	2.43E-01	7.01E-02	3.13E-01
Ethylbenzene	0.17	8.50E-05	1.18E-03	1.27E-03
n-Hexane	3,330.24	1.67E+00	1.26E+00	2.93
Isooctane	9.08	4.54E-03	0.00E+00	4.54E-03
Toluene	250.89	1.25E-01	5.65E-02	1.82E-01
Xylene	1.68	8.40E-04	6.77E-03	7.61E-03

The plant will handle a maximum of 13,560,000 gallons of unstabilized condensate per year.

The stabilizer will capture the vapors from at least 13,559,000 gallons per year. The stabilized condensate from the stabilizer will be transferred to the condensate tanks (T91019, T91020, T91021 & T91028) for storage.

The remaining 42,000 gallons of unstabilized condensate will go directly to the same tanks. All 42,000 gallons will flash on entering the tanks and those emissions will be vented to the atmosphere.

Working/breathing losses are calculated using TANKS 4.0.9d. The throughputs for each tank are estimated as the total throughput multiplied by the usable volume of each tank divided by the usable volume of the entire tank battery.

Flash emissions are calculated using VMGSim. For the purpose of the calculations, it is assumed the flash emissions will be distributed among the four condensate storage tanks according to the useable volume.

Storage Tank Emissions Data and Calculations

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

Tank Throughputs

Total Condensate Throughput:	13,560,000	gal/yr
Flashed Condensate Throughput:	1,000	bbl/yr
Flashed Condensate Throughput:	42,000	gal/yr
Stabilized Condensate Throughput:	13,559,000	gal/yr

Tank Number	Useable Volume, gal	Useable Volume, %	Total Throughput, gal/yr
T91019	21,173	33.69	4,567,895
T91020	12,690	20.19	2,737,760
T91021	12,690	20.19	2,737,760
T91028	16,300	25.93	3,516,586
Total	62,853	100.00	13,560,000

Because the tanks are manifolded together, the useable volumes associated with Units T91019 & T91028 are less than the design capacities of the tanks. See Condition A203.C of the existing permit.
This table distributes the annual liquid throughput to the tanks based on the Percent of Total Usable Tank Volume.
Useable Volume (%) = 100 x Useable Volume (gal) / Total Useable Volume (gal)
Total Throughput (gal/yr) = Total Condensate Throughput (gal/yr) x Useable Volume (% / 100)

Flashed Condensate Composition

Pollutant	Flashed Condensate (%)	Stabilizer Condensate (%)	Combined Average (%)
iso-Butane	2.5431	0.0848	0.08493
n-Butane	5.9243	0.0957	0.09608
iso-Pentane	6.3800	0.2445	0.24495
n-Pentane	6.8349	2.6108	2.61111
Cyclopentane	0.0000	0.0019	0.00190
n-Hexane	19.6808	11.5588	11.55940
Cyclohexane	4.4955	21.9072	21.90592
Hexanes	0.0000	0.0000	0.00000
Heptanes	22.0174	22.6863	22.68625
Octanes	19.9502	12.2882	12.28877
Nonanes	3.8478	2.4030	2.40311
Decanes	1.5563	0.2929	0.29299
Methylcyclohexane	0.0000	18.0034	18.00207
2,2,4-Trimethylpentane	0.0000	0.0991	0.09909
Benzene	1.1517	2.7339	2.73378
Ethylbenzene	0.2290	0.0101	0.01012
Toluene	3.5264	4.8637	4.86360
m+p-Xylene	0.0000	0.0806	0.08059
o-Xylene	1.8628	0.0352	0.03533
Total	100.0000	100.0000	100.00000

This table calculates a throughput weighted average condensate composition for use in TANKS 4 (based on the stabilized condensate and flashed condensate throughputs identified in the Tank Throughputs section above)
The flashed condensate composition was calculated from the VMGSim results (see table below)
The stabilizer condensate composition was calculated from the stabilizer gas analysis dated 02/14/2020 (see table below)

Storage Tank Emissions Data and Calculations

Unit Number: T19019, T19020, T19021 & T19028
Description: Condensate Storage Tanks (with the potential for flash emissions)

	Flashed Condensate			Stabilized Condensate	
Pollutant	pph	Wt%	TANKS 4 Wt%	Wt%	TANKS 4 Wt%
Carbon Dioxide	0.0007	0.0027	--	0.0006	--
H2S	0.0000	0.0000	--	0.0000	--
Nitrogen	0.0000	0.0000	--	0.0059	--
Methane	0.0024	0.0087	--	0.0509	--
Ethane	0.0464	0.1706	--	0.0495	--
Propane	0.4551	1.6720	--	0.0444	--
iso-Butane	0.4399	1.6161	2.5431	0.0091	0.0848
n-Butane	1.3602	4.9972	5.9243	0.0200	0.0957
iso-Pentane	1.7366	6.3800	6.3800	0.2445	0.2445
n-Pentane	1.8604	6.8349	6.8349	2.6108	2.6108
Cyclopentane	0.0000	0.0000	0.0000	0.0019	0.0019
n-Hexane	5.3570	19.6808	19.6808	11.5588	11.5588
Cyclohexane	1.2236	4.4955	4.4955	21.9072	21.9072
Hexanes	0.0000	0.0000	0.0000	0.0000	0.0000
Heptanes	5.9930	22.0174	22.0174	22.6863	22.6863
Octanes	5.4303	19.9502	19.9502	12.2882	12.2882
Nonanes	1.0473	3.8478	3.8478	2.403	2.4030
Decanes	0.4236	1.5563	1.5563	0.2929	0.2929
Methylcyclohexane	0.0000	0.0000	0.0000	18.0034	18.0034
2,2,4-Trimethylpentane	0.0000	0.0000	0.0000	0.0991	0.0991
Benzene	0.3135	1.1517	1.1517	2.7339	2.7339
Ethylbenzene	0.0623	0.2290	0.2290	0.0101	0.0101
Toluene	0.9599	3.5264	3.5264	4.8637	4.8637
m+p-Xylene	0.0000	0.0000	0.0000	0.0806	0.0806
o-Xylene	0.5070	1.8628	1.8628	0.0352	0.0352
Total	27.2192	100.0000	100.0000	100.0000	100.0000

This table calculates the weight percent composition of the flashed and stablilzed condensate. These compositions are used in the table above to determine a weighted average condensate composition for use in TANKS 4.
The flashed condensate composition (pph) was obtained from the VMGSim results
Flashed condensate (Wt%) = 100 x Pollutant (pph) / Total Pollutant (pph)
The stabilizer condensate composition (Wt%) was obtained from the stabilizer gas analysis dated 02/14/2020
The TANKS 4 Wt% was determined by equally distributing the non-VOC Wt% emissions between iso-butane and n-butane

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	El Cedro T91019 (Condensate)(New)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank
Tank Dimensions	
Shell Height (ft):	16.00
Diameter (ft):	15.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	19,761.25
Turnovers:	231.15
Net Throughput(gal/yr):	4,567,895.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T91019 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Condensate	All	67.36	53.93	80.79	59.23	1.4353	1.0186	1.9868	83.3598			93.88	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0010	0.0006	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0273	0.0306	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0010	0.0226	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2191	0.2533	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0029	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0001	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2269	0.1353	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1156	0.2095	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0008	0.0289	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0024	0.0228	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1800	0.0973	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0240	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1229	0.0171	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0261	0.1645	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0486	0.0158	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0012	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T91019 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,468.5199
Vapor Space Volume (cu ft):	1,728.6931
Vapor Density (lb/cu ft):	0.0212
Vapor Space Expansion Factor:	0.1867
Vented Vapor Saturation Factor:	0.5893
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,728.6931
Tank Diameter (ft):	15.5000
Vapor Space Outage (ft):	9.1615
Tank Shell Height (ft):	16.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1615
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1615
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	7.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0212
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1867
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.9683
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.0186
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.9868
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5893
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.4353
Vapor Space Outage (ft):	9.1615
Working Losses (lb):	3,857.5997
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Annual Net Throughput (gal/yr.):	4,567,895.0000
Annual Turnovers:	231.1500
Turnover Factor:	0.2965
Maximum Liquid Volume (gal):	19,761.2500
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	15.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	5,326.1196

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro T91019 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	3,857.60	1,468.52	5,326.12
Isobutane	111.34	42.38	153.72
Butane (-n)	87.06	33.14	120.21
Isopentane	87.97	33.49	121.45
Pentane (-n)	634.74	241.64	876.38
Cyclopentane	0.29	0.11	0.39
Hexane (-n)	808.26	307.69	1,115.95
Cyclohexane	977.28	372.03	1,349.31
Heptane (-n)	521.91	198.68	720.60
Octane (-n)	65.82	25.06	90.87
Nonane (-n)	5.70	2.17	7.87
Decane (-n)	0.35	0.13	0.48
Methylcyclohexane	375.22	142.84	518.05
2,2,4-Trimethylpentane (isooctane)	2.20	0.84	3.04
Benzene	118.12	44.97	163.09
Ethylbenzene	0.04	0.02	0.06
Toluene	60.89	23.18	84.07
Xylenes (mixed isomers)	0.41	0.16	0.56

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	El Cedro T91020 & T91021 (Condensate)(New)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	12,000 Gallon Condensate Storage Tank
Tank Dimensions	
Shell Height (ft):	15.00
Diameter (ft):	12.00
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	11,844.42
Turnovers:	231.14
Net Throughput(gal/yr):	2,737,760.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T91020 & T91021 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Condensate	All	67.36	53.93	80.79	59.23	1.4353	1.0186	1.9868	83.3598			93.88	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0010	0.0006	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0273	0.0306	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0010	0.0226	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2191	0.2533	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0029	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0001	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2269	0.1353	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1156	0.2095	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0008	0.0289	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0024	0.0228	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1800	0.0973	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0240	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1229	0.0171	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0261	0.1645	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0486	0.0158	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0012	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T91020 & T91021 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	818.6535
Vapor Space Volume (cu ft):	918.9159
Vapor Density (lb/cu ft):	0.0212
Vapor Space Expansion Factor:	0.1867
Vented Vapor Saturation Factor:	0.6180
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	918.9159
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	8.1250
Tank Shell Height (ft):	15.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0212
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1867
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.9683
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.0186
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.9868
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.6180
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.4353
Vapor Space Outage (ft):	8.1250
Working Losses (lb):	2,312.0895
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Annual Net Throughput (gal/yr.):	2,737,760.0000
Annual Turnovers:	231.1400
Turnover Factor:	0.2965
Maximum Liquid Volume (gal):	11,844.4200
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	3,130.7430

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro T91020 & T91021 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,312.09	818.65	3,130.74
Isobutane	66.73	23.63	90.36
Butane (-n)	52.18	18.48	70.66
Isopentane	52.72	18.67	71.39
Pentane (-n)	380.44	134.70	515.14
Cyclopentane	0.17	0.06	0.23
Hexane (-n)	484.44	171.53	655.97
Cyclohexane	585.74	207.40	793.14
Heptane (-n)	312.81	110.76	423.57
Octane (-n)	39.45	13.97	53.42
Nonane (-n)	3.42	1.21	4.63
Decane (-n)	0.21	0.07	0.28
Methylcyclohexane	224.89	79.63	304.52
2,2,4-Trimethylpentane (isooctane)	1.32	0.47	1.79
Benzene	70.80	25.07	95.87
Ethylbenzene	0.03	0.01	0.03
Toluene	36.49	12.92	49.42
Xylenes (mixed isomers)	0.25	0.09	0.33

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	El Cedro T91028 (Condensate)(New)
City:	Navajo Dam
State:	New Mexico
Company:	Harvest Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	21,000 Gallon Condensate Storage Tank

Tank Dimensions

Shell Height (ft):	20.00
Diameter (ft):	13.50
Liquid Height (ft) :	14.00
Avg. Liquid Height (ft):	7.00
Volume (gallons):	14,990.59
Turnovers:	234.59
Net Throughput(gal/yr):	3,516,586.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Roof Color/Shade:	Gray/Medium
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T91028 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Condensate	All	67.36	53.93	80.79	59.23	1.4353	1.0186	1.9868	83.3598			93.88	
2,2,4-Trimethylpentane (isooctane)						0.7338	0.4989	1.0546	114.2300	0.0010	0.0006	114.23	Option 2: A=6.8118, B=1257.84, C=220.74
Benzene						1.4274	0.9846	2.0237	78.1100	0.0273	0.0306	78.11	Option 2: A=6.905, B=1211.033, C=220.79
Butane (-n)						29.9357	23.3576	37.8083	58.1230	0.0010	0.0226	58.12	Option 1: VP60 = 26.1 VP70 = 31.31
Cyclohexane						1.4738	1.0254	2.0729	84.1600	0.2191	0.2533	84.16	Option 2: A=6.841, B=1201.53, C=222.65
Cyclopentane						4.9596	3.6370	6.6394	70.1300	0.0000	0.0001	70.13	Option 1: VP60 = 4.177 VP70 = 5.24
Decane (-n)						0.0395	0.0291	0.0536	142.2900	0.0029	0.0001	142.29	Option 1: VP60 = .033211 VP70 = .041762
Ethylbenzene						0.1396	0.0876	0.2162	106.1700	0.0001	0.0000	106.17	Option 2: A=6.975, B=1424.255, C=213.21
Heptane (-n)						0.7600	0.5088	1.1128	100.2000	0.2269	0.1353	100.20	Option 3: A=37358, B=8.2585
Hexane (-n)						2.3100	1.6303	3.2059	86.1700	0.1156	0.2095	86.17	Option 2: A=6.876, B=1171.17, C=224.41
Isobutane						43.3083	34.4026	53.8185	58.1230	0.0008	0.0289	58.12	Option 1: VP60 = 38.14 VP70 = 45.16
Isopentane						11.8640	8.7212	15.5743	72.1500	0.0024	0.0228	72.15	Option 1: VP60 = 10.005 VP70 = 12.53
Methylcyclohexane						0.6886	0.4673	0.9913	98.1800	0.1800	0.0973	98.18	Option 2: A=6.823, B=1270.763, C=221.42
Nonane (-n)						0.0784	0.0568	0.1080	128.2600	0.0240	0.0015	128.26	Option 1: VP60 = .065278 VP70 = .08309
Octane (-n)						0.1769	0.1254	0.2493	114.2300	0.1229	0.0171	114.23	Option 1: VP60 = .145444 VP70 = .188224
Pentane (-n)						8.0308	5.9649	10.6537	72.1500	0.0261	0.1645	72.15	Option 3: A=27691, B=7.558
Toluene						0.4136	0.2726	0.6120	92.1300	0.0486	0.0158	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0012	0.0001	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T91028 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	1,355.9695
Vapor Space Volume (cu ft):	1,880.9335
Vapor Density (lb/cu ft):	0.0212
Vapor Space Expansion Factor:	0.1867
Vented Vapor Saturation Factor:	0.5001
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,880.9335
Tank Diameter (ft):	13.5000
Vapor Space Outage (ft):	13.1406
Tank Shell Height (ft):	20.0000
Average Liquid Height (ft):	7.0000
Roof Outage (ft):	0.1406
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1406
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.7500
Vapor Density	
Vapor Density (lb/cu ft):	0.0212
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Tank Paint Solar Absorptance (Roof):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1867
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.9683
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.0186
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.9868
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5001
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.4353
Vapor Space Outage (ft):	13.1406
Working Losses (lb):	2,950.7011
Vapor Molecular Weight (lb/lb-mole):	83.3598
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.4353
Annual Net Throughput (gal/yr.):	3,516,586.0000
Annual Turnovers:	234.5900
Turnover Factor:	0.2945
Maximum Liquid Volume (gal):	14,990.5900
Maximum Liquid Height (ft):	14.0000
Tank Diameter (ft):	13.5000
Working Loss Product Factor:	1.0000
Total Losses (lb):	4,306.6706

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro T91028 (Condensate)(New) - Vertical Fixed Roof Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Condensate	2,950.70	1,355.97	4,306.67
Isobutane	85.16	39.14	124.30
Butane (-n)	66.60	30.60	97.20
Isopentane	67.29	30.92	98.21
Pentane (-n)	485.52	223.12	708.63
Cyclopentane	0.22	0.10	0.32
Hexane (-n)	618.24	284.11	902.35
Cyclohexane	747.53	343.52	1,091.05
Heptane (-n)	399.22	183.46	582.67
Octane (-n)	50.34	23.14	73.48
Nonane (-n)	4.36	2.00	6.37
Decane (-n)	0.27	0.12	0.39
Methylcyclohexane	287.00	131.89	418.90
2,2,4-Trimethylpentane (isooctane)	1.68	0.77	2.46
Benzene	90.35	41.52	131.87
Ethylbenzene	0.03	0.02	0.05
Toluene	46.57	21.40	67.98
Xylenes (mixed isomers)	0.31	0.14	0.46

Simulation Report

Symmetry

File Name: El Cedro Trunk G Unstabilized Condensate Emissions
Company: Virtual Materials Group
Customer:
Project:
Job No:
Prepared By:
Report Date: Tuesday, February 11, 2020
Unit Set: Field

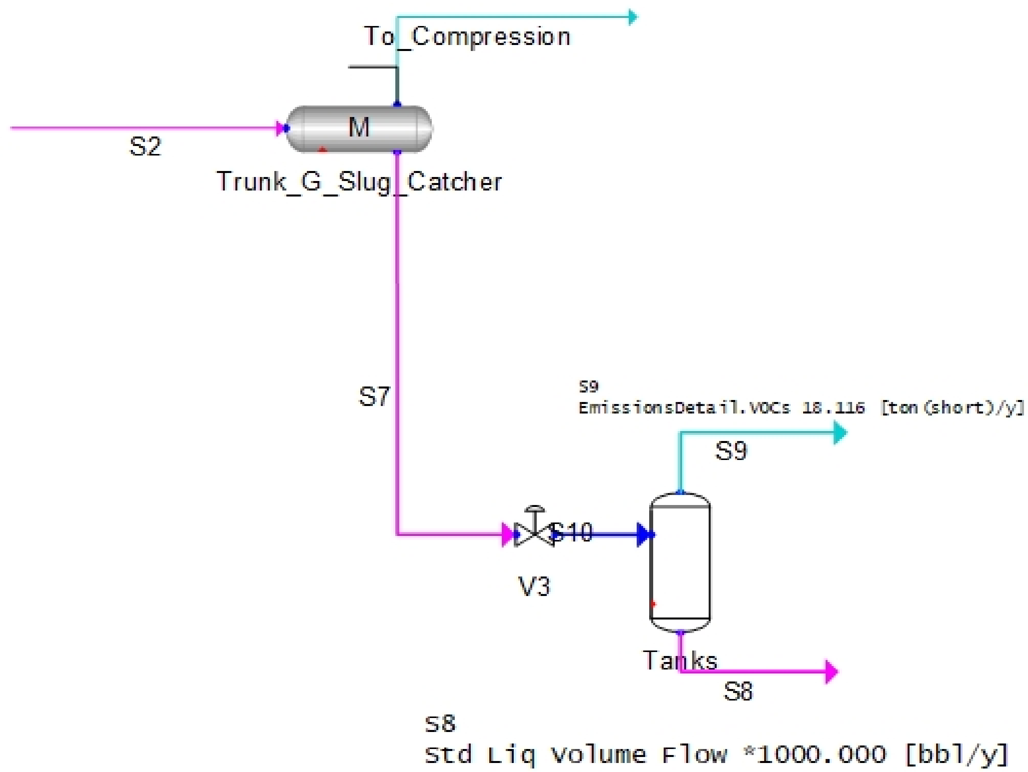
File: U:\Plant Models\El Cedro Trunk G Unstabilized Condensate Emissions.vsym

Symmetry

Main Flowsheet

*Bold face throughout the report denotes specified values.

*Italic face throughout the report denotes recycle values.


To_Compression
M
S2
Trunk_G_Slug_Catcher
S7
S9
EmissionsDetail.VOCs 18.116 [ton(short)/y]
S9
S10
V3
Tanks
S8
S8
Std Liq Volume Flow *1000.000 [bbl/y]

Truck Loading (Condensate) Emissions Calculations

Unit Number: 38
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
1.4353	psia	True vapor pressure of liquid, P	TANKS 4.0 output file
83.3598	lb/lb-mole	Molecular weight of vapors, M	TANKS 4.0 output file
67.36	°F	Temperature of liquid	TANKS 4.0 output file
527.03	°R	Temperature of liquid, T	°F + 459.67
1.70	lb/10^3 gal	Emission factor, L	AP-42, Section 5.2, Equation 1

$$L = 12.46 \frac{SPM}{T}$$

Production Rate

8.82	lb/10^3 gal	Maximum hourly production rate	Harvest Four Corners, LLC
13,560.00	lb/10^3 gal	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	tpy
VOC	14.97	11.51

Uncontrolled Emission Rate (pph) = lb/10^3 gal x 10^3 gal/hr
Uncontrolled Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Percent of VOC, %	Uncontrolled Emission Rates, pph	tpy
Benzene	3.06	4.58E-01	3.52E-01
Ethylbenzene	1.13E-03	1.69E-04	1.30E-04
n-Hexane	20.95	3.14	2.41
Isooctane	5.71E-02	8.54E-03	6.57E-03
Toluene	1.58	2.36E-01	1.82E-01
Xylenes	1.05E-02	1.57E-03	1.21E-03

Percent of VOC calculated from the TANKS 4.0 results
Percent of VOC (%) = 100 x Pollutant Emission Rate (lb/yr) / Total VOC Emission Rate (lb/yr)
Uncontrolled Emission Rates (pph) = VOC Uncontrolled Emission Rate (pph) x (% / 100)
Uncontrolled Emission Rates (tpy) = VOC Uncontrolled Emission Rate (tpy) x (% / 100)

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	El Cedro T20 (Gasoline)
City:	Navajo Dam
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	500 Gallon Gasoline Storage Tank

Tank Dimensions

Shell Length (ft):		5.00
Diameter (ft):		4.00
Volume (gallons):		500.00
Turnovers:		12.00
Net Throughput(gal/yr):		6,000.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T20 (Gasoline) - Horizontal Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Gasoline (RVP 13)	All	64.94	53.24	76.64	58.39	7.6119	6.1130	9.3880	62.0000			92.00	Option 4: RVP=13, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T20 (Gasoline) - Horizontal Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	540.4915
Vapor Space Volume (cu ft):	40.0203
Vapor Density (lb/cu ft):	0.0838
Vapor Space Expansion Factor:	0.7975
Vented Vapor Saturation Factor:	0.5534
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	40.0203
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	5.0475
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0838
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.7975
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	3.2750
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	6.1130
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	9.3880
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5534
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	7.6119
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	67.4196
Vapor Molecular Weight (lb/lb-mole):	62.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6119
Annual Net Throughput (gal/yr.):	6,000.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	607.9111

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro T20 (Gasoline) - Horizontal Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Gasoline (RVP 13)	67.42	540.49	607.91

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	El Cedro Tank 35 (Methanol)
City:	Blanco
State:	New Mexico
Company:	Williams Four Corners, LLC
Type of Tank:	Horizontal Tank
Description:	1,100 Gallon Methanol Tank

Tank Dimensions

Shell Length (ft):	12.00
Diameter (ft):	4.00
Volume (gallons):	1,100.00
Turnovers:	12.00
Net Throughput(gal/yr):	13,200.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Gray/Light
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro Tank 35 (Methanol) - Horizontal Tank
Blanco, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Methyl alcohol	All	64.94	53.24	76.64	58.39	1.6820	1.1617	2.3895	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro Tank 35 (Methanol) - Horizontal Tank
Blanco, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	57.1772
Vapor Space Volume (cu ft):	96.0487
Vapor Density (lb/cu ft):	0.0096
Vapor Space Expansion Factor:	0.2008
Vented Vapor Saturation Factor:	0.8487
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	96.0487
Tank Diameter (ft):	4.0000
Effective Diameter (ft):	7.8196
Vapor Space Outage (ft):	2.0000
Tank Shell Length (ft):	12.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0096
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2008
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	1.2278
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.1617
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3895
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.8487
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.6820
Vapor Space Outage (ft):	2.0000
Working Losses (lb):	16.9368
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Annual Net Throughput (gal/yr.):	13,200.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	4.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	74.1140

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro Tank 35 (Methanol) - Horizontal Tank
Blanco, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	16.94	57.18	74.11

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	El Cedro Tank 36 (Methanol)
City:	Blanco
State:	New Mexico
Company:	Williams Four Corners, LLC
Type of Tank:	Vertical Fixed Roof Tank
Description:	12,600 Gallon Methanol Tank
Tank Dimensions	
Shell Height (ft):	17.00
Diameter (ft):	12.00
Liquid Height (ft) :	15.00
Avg. Liquid Height (ft):	8.00
Volume (gallons):	12,600.00
Turnovers:	12.00
Net Throughput(gal/yr):	151,200.00
Is Tank Heated (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Light
Shell Condition	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good
Roof Characteristics	
Type:	Cone
Height (ft)	0.00
Slope (ft/ft) (Cone Roof)	0.06
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro Tank 36 (Methanol) - Vertical Fixed Roof Tank
Blanco, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Methyl alcohol	All	64.94	53.24	76.64	58.39	1.6820	1.1617	2.3895	32.0400			32.04	Option 2: A=7.897, B=1474.08, C=229.13

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro Tank 36 (Methanol) - Vertical Fixed Roof Tank
Blanco, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	399.1775
Vapor Space Volume (cu ft):	1,032.0132
Vapor Density (lb/cu ft):	0.0096
Vapor Space Expansion Factor:	0.2008
Vented Vapor Saturation Factor:	0.5514
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	1,032.0132
Tank Diameter (ft):	12.0000
Vapor Space Outage (ft):	9.1250
Tank Shell Height (ft):	17.0000
Average Liquid Height (ft):	8.0000
Roof Outage (ft):	0.1250
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.1250
Roof Height (ft):	0.0000
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	6.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0096
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Daily Avg. Liquid Surface Temp. (deg. R):	524.6094
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.0642
Tank Paint Solar Absorptance (Shell):	0.5400
Tank Paint Solar Absorptance (Roof):	0.5400
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.2008
Daily Vapor Temperature Range (deg. R):	46.7976
Daily Vapor Pressure Range (psia):	1.2278
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	1.1617
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	2.3895
Daily Avg. Liquid Surface Temp. (deg R):	524.6094
Daily Min. Liquid Surface Temp. (deg R):	512.9100
Daily Max. Liquid Surface Temp. (deg R):	536.3088
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.5514
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.6820

Vapor Space Outage (ft):	9.1250
Working Losses (lb):	194.0032
Vapor Molecular Weight (lb/lb-mole):	32.0400
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.6820
Annual Net Throughput (gal/yr.):	151,200.0000
Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	12,600.0000
Maximum Liquid Height (ft):	15.0000
Tank Diameter (ft):	12.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	593.1807

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro Tank 36 (Methanol) - Vertical Fixed Roof Tank
Blanco, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Methyl alcohol	194.00	399.18	593.18

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	El Cedro T49 (Surfatron DN-100)
City:	Navajo Dam
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	65 Gallon Surfatron DN-100 Storage Tank

Tank Dimensions

Shell Length (ft):		5.00
Diameter (ft):		3.00
Volume (gallons):		65.00
Turnovers:		12.00
Net Throughput(gal/yr):		780.00
Is Tank Heated (y/n):	N	
Is Tank Underground (y/n):	N	

Paint Characteristics

Shell Color/Shade:	Gray/Medium
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T49 (Surfatron DN-100) - Horizontal Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Surfatron DN-100	All	67.36	53.93	80.79	59.23	0.7416	0.5339	0.9747	79.6438			112.39	
1,2,4-Trimethylbenzene						0.0273	0.0160	0.0451	120.1900	0.3000	0.0156	120.19	Option 2: A=7.04383, B=1573.267, C=208.56
Isopropyl alcohol						0.6258	0.3835	0.9914	60.0900	0.0500	0.0595	60.09	Option 2: A=8.1177, B=1580.92, C=219.61
Isopropyl benzene						0.0631	0.0382	0.1009	120.2000	0.0500	0.0060	120.20	Option 2: A=6.93666, B=1460.793, C=207.78
Jet naphtha (JP-4)						1.5209	1.1180	1.9396	80.0000	0.4500	0.8681	120.00	Option 1: VP60 = 1.3 VP70 = 1.6
Naphthalene						0.0034	0.0019	0.0060	128.2000	0.0500	0.0003	128.20	Option 2: A=7.3729, B=1968.36, C=222.61
Toluene						0.4136	0.2726	0.6120	92.1300	0.0500	0.0393	92.13	Option 2: A=6.954, B=1344.8, C=219.48
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0500	0.0111	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T49 (Surfatron DN-100) - Horizontal Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations

Standing Losses (lb):	10.9648
Vapor Space Volume (cu ft):	22.5114
Vapor Density (lb/cu ft):	0.0104
Vapor Space Expansion Factor:	0.1353
Vented Vapor Saturation Factor:	0.9443
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	22.5114
Tank Diameter (ft):	3.0000
Effective Diameter (ft):	4.3713
Vapor Space Outage (ft):	1.5000
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0104
Vapor Molecular Weight (lb/lb-mole):	79.6438
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7416
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1353
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.4408
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7416
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.5339
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.9747
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9443
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.7416
Vapor Space Outage (ft):	1.5000
Working Losses (lb):	1.0970
Vapor Molecular Weight (lb/lb-mole):	79.6438
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.7416
Annual Net Throughput (gal/yr.):	780.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.0000
Working Loss Product Factor:	1.0000

Total Losses (lb):	12.0618

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro T49 (Surfatron DN-100) - Horizontal Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Surfatron DN-100	1.10	10.96	12.06
Naphthalene	0.00	0.00	0.00
Xylenes (mixed isomers)	0.01	0.12	0.13
Isopropyl benzene	0.01	0.07	0.07
Toluene	0.04	0.43	0.47
Isopropyl alcohol	0.07	0.65	0.72
1,2,4-Trimethylbenzene	0.02	0.17	0.19
Jet naphtha (JP-4)	0.95	9.52	10.47

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification	
User Identification:	El Cedro T52 (Corrosion Inhibitor)
City:	Navajo Dam
State:	New Mexico
Company:	Williams Four Corners LLC
Type of Tank:	Horizontal Tank
Description:	325 Gallon Corrosion Inhibitor Storage Tank
Tank Dimensions	
Shell Length (ft):	5.00
Diameter (ft):	3.25
Volume (gallons):	325.00
Turnovers:	12.00
Net Throughput(gal/yr):	3,900.00
Is Tank Heated (y/n):	N
Is Tank Underground (y/n):	N
Paint Characteristics	
Shell Color/Shade:	Gray/Medium
Shell Condition	Good
Breather Vent Settings	
Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meterological Data used in Emissions Calculations: Albuquerque, New Mexico (Avg Atmospheric Pressure = 12.15 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

El Cedro T52 (Corrosion Inhibitor) - Horizontal Tank
Navajo Dam, New Mexico

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Corrision Inhibitor	All	67.36	53.93	80.79	59.23	1.1783	0.7953	1.6922	44.8406			77.18	
1,2,4-Trimethylbenzene						0.0273	0.0160	0.0451	120.1900	0.4500	0.0179	120.19	Option 2: A=7.04383, B=1573.267, C=208.56
Jet naphtha (JP-4)						1.5209	1.1180	1.9396	80.0000	0.3000	0.4443	120.00	Option 1: VP60 = 1.3 VP70 = 1.6
Methyl alcohol						1.8115	1.1881	2.6951	32.0400	0.2000	0.5292	32.04	Option 2: A=7.897, B=1474.08, C=229.13
Xylenes (mixed isomers)						0.1165	0.0728	0.1813	106.1700	0.0500	0.0085	106.17	Option 2: A=7.009, B=1462.266, C=215.11

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

El Cedro T52 (Corrosion Inhibitor) - Horizontal Tank
Navajo Dam, New Mexico

Annual Emission Calcaulations	
Standing Losses (lb):	14.5741
Vapor Space Volume (cu ft):	26.4196
Vapor Density (lb/cu ft):	0.0093
Vapor Space Expansion Factor:	0.1782
Vented Vapor Saturation Factor:	0.9079
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	26.4196
Tank Diameter (ft):	3.2500
Effective Diameter (ft):	4.5498
Vapor Space Outage (ft):	1.6250
Tank Shell Length (ft):	5.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0093
Vapor Molecular Weight (lb/lb-mole):	44.8406
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1783
Daily Avg. Liquid Surface Temp. (deg. R):	527.0322
Daily Average Ambient Temp. (deg. F):	56.1542
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	518.9042
Tank Paint Solar Absorptance (Shell):	0.6800
Daily Total Solar Insulation Factor (Btu/sqft day):	1,765.3167
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1782
Daily Vapor Temperature Range (deg. R):	53.7176
Daily Vapor Pressure Range (psia):	0.8969
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1783
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.7953
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	1.6922
Daily Avg. Liquid Surface Temp. (deg R):	527.0322
Daily Min. Liquid Surface Temp. (deg R):	513.6028
Daily Max. Liquid Surface Temp. (deg R):	540.4617
Daily Ambient Temp. Range (deg. R):	27.9250
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9079
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	1.1783
Vapor Space Outage (ft):	1.6250
Working Losses (lb):	4.9061
Vapor Molecular Weight (lb/lb-mole):	44.8406
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.1783
Annual Net Throughput (gal/yr.):	3,900.0000

Annual Turnovers:	12.0000
Turnover Factor:	1.0000
Tank Diameter (ft):	3.2500
Working Loss Product Factor:	1.0000
Total Losses (lb):	19.4802

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

El Cedro T52 (Corrosion Inhibitor) - Horizontal Tank
Navajo Dam, New Mexico

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Corrision Inhibitor	4.91	14.57	19.48
1,2,4-Trimethylbenzene	0.09	0.26	0.35
Jet naphtha (JP-4)	2.18	6.48	8.66
Methyl alcohol	2.60	7.71	10.31
Xylenes (mixed isomers)	0.04	0.12	0.17

Heater Exhaust Emissions Calculations

Unit Number: 37
Description: Exotherm Stabilizer Reboiler

Note: The data on this worksheet applies to each individual emissions unit identified above.

Fuel Consumption

0.80	MMBtu/hr	Capacity	Mfg. data
889	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
7,008	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
7.79	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	tpy
NOX	100	8.89E-02	3.89E-01
CO	84	7.47E-02	3.27E-01
VOC	5.5	4.89E-03	2.14E-02
SO2	0.6	5.33E-04	2.34E-03
PM	7.60	6.76E-03	2.96E-02
PM10	7.60	6.76E-03	2.96E-02
PM2.5	7.60	6.76E-03	2.96E-02
Lead	5.00E-04	4.44E-07	1.95E-06

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Exhaust Parameters

600	°F	Exhaust temperature	Mfg. data
71.86	acfm	Stack flowrate	ft/sec x ft^2 x 60 sec/min
0.50	ft	Stack exit diameter	Harvest Four Corners, LLC
0.20	ft^2	Stack exit area	3.1416 x ((ft / 2) ^2)
6.10	fps	Stack exit velocity	Estimate
18.00	ft	Stack height	Harvest Four Corners, LLC

Heater Exhaust Emissions Calculations

Unit Number: 39 & 45
Description: Water Tank Heater & Tech Shop Heater

Note: The data on this worksheet applies to each individual emissions unit identified above.

Fuel Consumption

0.25	MMBtu/hr	Capacity	Mfg. data
278	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
2,190	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
2.43	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	2.78E-02	1.22E-01
CO	84	2.33E-02	1.02E-01
VOC	5.5	1.53E-03	6.69E-03
SO2	0.6	1.67E-04	7.30E-04
PM	7.60	2.11E-03	9.25E-03
PM10	7.60	2.11E-03	9.25E-03
PM2.5	7.60	2.11E-03	9.25E-03
Lead	5.00E-04	1.39E-07	6.08E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Heater Exhaust Emissions Calculations

Unit Number: 40-44
Description: Tech Shop Heater, Maintenance Shop Heaters (3X) & Generator Building Heater

Note: The data on this worksheet applies to each individual emissions unit identified above.

Fuel Consumption

0.125	MMBtu/hr	Capacity	Mfg. data
139	scf/hr	Hourly fuel consumption	MMBtu/hr x 1,000,000 / Btu/scf
8,760	hr/yr	Annual operating time	Harvest Four Corners, LLC
1,095	MMBtu/yr	Annual fuel consumption	MMBtu/hr x hr/yr
1.22	MMscf/yr	Annual fuel consumption	scf/hr x hr/yr / 1,000,000
900	Btu/scf	Field gas heating value	Nominal heat content

Steady-State Emission Rates

Pollutants	Emission Factors, lb/MMscf	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
NOX	100	1.39E-02	6.08E-02
CO	84	1.17E-02	5.11E-02
VOC	5.5	7.64E-04	3.35E-03
SO2	0.6	8.33E-05	3.65E-04
PM	7.60	1.06E-03	4.62E-03
PM10	7.60	1.06E-03	4.62E-03
PM2.5	7.60	1.06E-03	4.62E-03
Lead	5.00E-04	6.94E-08	3.04E-07

Emission factors taken from AP-42, Tables 1.4-1 & 1.4-2
Uncontrolled Emission Rates (pph) = lb/MMBtu x MMBtu/hr
Uncontrolled Emission Rates (tpy) = Uncontrolled Emission Rates (pph) x hr/yr / 2,000 lb/ton

Truck Loading (Produced Water) Emissions Calculations

Unit Number: 46
Description: Truck Loading

Emission Factor

0.6		Saturation factor, S	AP-42, Table 5.2-1 (submerged loading & dedicated service)
0.4581	psia (maximum)	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
0.3045	psia (average)	True vapor pressure of liquid, P	Estimated using Antoine's Equation (see calculations below)
18.02	lb/lb-mole	Molecular weight of water vapor, M	TANKS 4.0 Database
77	°F (maximum)	Temperature of liquid	Estimated (see calculations below)
65	°F (average)	Temperature of liquid	Estimated (see calculations below)
536.67	°R (maximum)	Temperature of liquid, T	°F + 459.67
524.67	°R (average)	Temperature of liquid, T	°F + 459.67
0.11	lb/10^3 gal (maximum)	Emission factor, L	AP-42, Section 5.2, Equation 1
0.08	lb/10^3 gal (average)	Emission factor, L	AP-42, Section 5.2, Equation 1

$$L = 12.46 \frac{SPM}{T}$$

Production Rate

3.36	10^3 gal/hr	Maximum hourly production rate	Harvest Four Corners, LLC
2,822.40	10^3 gal/yr	Maximum annual production rate	Harvest Four Corners, LLC

Steady-State Emission Rates

Pollutant	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
VOC	3.86E-01	1.10E-01

The short-term emission rates are calculated using the maximum true vapor pressure and maximum temperature of the liquid
The annual emission rates are calculated using the average true vapor pressure and average temperature of the liquid
Uncontrolled Emission Rate (pph) = lb/10^3 gal x 10^3 gal/hr
Uncontrolled Emission Rate (tpy) = lb/10^3 gal x 10^3 gal/yr / 2,000 lb/ton

Pollutants	Mass Fraction	Uncontrolled Emission Rates, pph	Uncontrolled Emission Rates, tpy
Benzene	0.0267	1.03E-04	2.95E-05
Ethylbenzene	0.0027	1.03E-05	2.95E-06
n-Hexane	0.0840	3.24E-04	9.27E-05
Toluene	0.0344	1.33E-04	3.79E-05
m-Xylene	0.0229	8.85E-05	2.53E-05

HAP mass fractions are estimated from the produced water tank emission factors
HAP Mass Fraction = HAP Emission Factor (lb/bbl) / VOC Emission Factor (lb/bbl)
Emission Rates (pph) = VOC Emission Rate (pph) x HAP Mass Fraction
Emission Rates (tpy) = VOC Emission Rate (tpy) x HAP Mass Fraction

Truck Loading (Produced Water) Emissions Calculations

Unit Number: 46
Description: Truck Loading

Vapor Pressure of Produced Water:

Because the produced water is assumed to be 99% water, it is estimated that the true vapor pressure of produced water is approximately equal to the true vapor pressure of pure water.
An estimate of the true vapor pressure for water is calculated using Antoine's equation (see AP-42, Section 7.1, Equation 1-25).

Maximum:

Temperature = 77 °F

log P = A - (B / (C + T))

A = 8.07131
B = 1730.63
C = 233.426
T = 25.00 °C
P = mmHg

P = 10^(A - (B / (C + T))

P = 23.69 mmHg
P = 0.4581 psi

Note: 760 mmHg = 14.7 psia

Average:

Temperature = 65 °F

log P = A - (B / (C + T))

A = 8.07131
B = 1730.63
C = 233.426
T = 18.33 °C
P = mmHg

P = 10^(A - (B / (C + T))

P = 15.75 mmHg
P = 0.3045 psi

Section 6.a

Green House Gas Emissions

(Submitting under 20.2.70, 20.2.72 20.2.74 NMAC)

Title V (20.2.70 NMAC), Minor NSR (20.2.72 NMAC), and PSD (20.2.74 NMAC) applicants must estimate and report greenhouse gas (GHG) emissions to verify the emission rates reported in the public notice, determine applicability to 40 CFR 60 Subparts, and to evaluate Prevention of Significant Deterioration (PSD) applicability. GHG emissions that are subject to air permit regulations consist of the sum of an aggregate group of these six greenhouse gases: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Calculating GHG Emissions:

1. Calculate the ton per year (tpy) GHG mass emissions and GHG CO_2e emissions from your facility.
2. GHG mass emissions are the sum of the total annual tons of greenhouse gases without adjusting with the global warming potentials (GWPs). GHG CO_2e emissions are the sum of the mass emissions of each individual GHG multiplied by its GWP found in Table A-1 in 40 CFR 98 Mandatory Greenhouse Gas Reporting.
3. Emissions from routine or predictable start up, shut down, and maintenance must be included.
4. Report GHG mass and GHG CO_2e emissions in Table 2-P of this application. Emissions are reported in **short** tons per year and represent each emission unit's Potential to Emit (PTE).
5. All Title V major sources, PSD major sources, and all power plants, whether major or not, must calculate and report GHG mass and CO2e emissions for each unit in Table 2-P.
6. For minor source facilities that are not power plants, are not Title V, and are not PSD there are three options for reporting GHGs in Table 2-P: 1) report GHGs for each individual piece of equipment; 2) report all GHGs from a group of unit types, for example report all combustion source GHGs as a single unit and all venting GHGs as a second separate unit; 3) or check the following ☐ By checking this box, the applicant acknowledges the total CO2e emissions are less than 75,000 tons per year.

Sources for Calculating GHG Emissions:

- Manufacturer's Data
- AP-42 Compilation of Air Pollutant Emission Factors at http://www.epa.gov/ttn/chief/ap42/index.html
- EPA's Internet emission factor database WebFIRE at http://cfpub.epa.gov/webfire/
- 40 CFR 98 Mandatory Green House Gas Reporting except that tons should be reported in short tons rather than in metric tons for the purpose of PSD applicability.
- API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August 2009 or most recent version.
- Sources listed on EPA's NSR Resources for Estimating GHG Emissions at http://www.epa.gov/nsr/clean-air-act-permitting-greenhouse-gases:

Global Warming Potentials (GWP):
Applicants must use the Global Warming Potentials codified in Table A-1 of the most recent version of 40 CFR 98 Mandatory Greenhouse Gas Reporting. The GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to that of one unit mass of CO_2 over a specified time period.

"Greenhouse gas" for the purpose of air permit regulations is defined as the aggregate group of the following six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. **(20.2.70.7 NMAC, 20.2.74.7 NMAC).** You may also find GHGs defined in 40 CFR 86.1818-12(a).

Metric to Short Ton Conversion:
Short tons for GHGs and other regulated pollutants are the standard unit of measure for PSD and title V permitting programs. 40 CFR 98 Mandatory Greenhouse Reporting requires metric tons.
1 metric ton = 1.10231 short tons (per Table A-2 to Subpart A of Part 98 – Units of Measure Conversions)

Greenhouse Gas Emissions

The carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) exhaust emissions for the engines, turbines, heaters and reboiler were calculated using emission factors from 40 Code of Federal Regulations (CFR), Part C, Tables C-1 & C-2 and the respective engine, turbine, heater and reboiler higher heating value (HHV) design heat rates. Except for the emergency generator engine (Unit 19), emissions were calculated assuming the units all operate 8,760 hours per year. Emissions from the emergency generator engine were calculated using 500 hours per year of operation.

The CO_2 and CH_4 emissions from blowdown of the turbines, compressors, pig receivers and piping associated with the station were calculated from the quantity of gas vented during each event, the composition of the gas, and the number of events. The quantity of gas vented during each event was determined by WFC engineering. The composition of the gas was determined from extended gas analyses. The annual number of blowdown events were estimated based on historical operations.

The CO_2 and CH_4 emissions from valves, connectors, open-ended lines and pressure relief valves were calculated using the Subpart W methodology applicable to these source types. The component count was determined from the number of compressors and dehydrators permitted to operate at the station, using an equation derived by WFC that is representative of their facilities. Emission factors were obtained from Table W-1A of Subpart W (Western U.S. – Gas Service). The facility CO_2 and CH_4 contents were taken from an extended gas analysis. Emissions were calculated assuming the equipment operates 8,760 hours per year.

Based on the gas release rate 10.0 tons of VOC per year, CO_2 and CH_4, malfunction emissions were calculated using facility gas composition.

Green House Gas Emissions Data and Calculations

Sources	Facility Total Emissions				
	CO_2, tpy	CH_4, tpy	N_2O, tpy	GHG, tpy	CO_2e, tpy
Engine & Turbine Exhaust Emissions (w/o Unit 18a)	171,666.17	3.24	3.24E-01	171,669.73	171843.47
Engine & Turbine Exhaust Emissions (w/o Unit 18)	167,786.08	3.16	3.16E-01	167,789.55	167959.36
Blowdown Emissions	101.00	443.58	--	544.58	11190.48
Reciprocating Compressor Venting Emissions	93.31	554.36	--	647.67	13952.22
Centrifugal Compressor Venting Emissions	83.31	304.10	--	387.41	7685.74
Heater & Boiler Exhaust Emissions	1,775.30	3.35E-02	3.35E-03	1,775.34	1777.13
Equipment Leak Emissions	5.25	28.99	--	34.24	729.93
Natural Gas Pneumatic Device Venting Emissions	1.85	6.73	--	8.57	170.00
Natural Gas Driven Pneumatic Pump Venting Emissions	6.07E-01	2.21	--	2.82	55.83
Malfunction Emissions	328.07	1195.65	--	1523.72	30219.28
Storage Tank Emissions	8.06E-02	7.66E-01	--	8.46E-01	19.23
Total #1	174,054.95	2,539.64	3.27E-01	176,594.91	237,643.31
Total #2	170,174.86	2,539.56	3.20E-01	172,714.74	233,759.21

Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.
Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Engine & Turbine Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO_2, kg/MMBtu	CH_4, kg/MMBtu	N_2O, kg/MMBtu	CO_2, tpy	CH_4, tpy	N_2O, tpy
1	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
2	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
3	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
4	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
5	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
6	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
7	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
8	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
9	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
10	Waukesha 7042GL	53.06	1.00E-03	1.00E-04	6,010.45	1.13E-01	1.13E-02
15	Solar MARS 90-T12000S	53.06	1.00E-03	1.00E-04	50,367.37	9.49E-01	9.49E-02
16	Solar MARS 90-T12000S	53.06	1.00E-03	1.00E-04	50,367.37	9.49E-01	9.49E-02
17	Waukesha L7042G	53.06	1.00E-03	1.00E-04	4,209.59	7.93E-02	7.93E-03
18	Waukesha L7042GSI	53.06	1.00E-03	1.00E-04	6,453.57	1.22E-01	1.22E-02
or 18a	Waukesha F2895GSIU	53.06	1.00E-03	1.00E-04	2,573.47	4.85E-02	4.85E-03
19	Waukesha F2895GSIU	53.06	1.00E-03	1.00E-04	163.75	3.09E-03	3.09E-04
	Total #1				171,666.17	3.24	3.24E-01
	Total #2				167,786.08	3.16	3.16E-01

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2
Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton
Total #1 assumes Harvest Four Corners, LLC choses to operate Unit 18.
Total #2 assumes Harvest Four Corners, LLC choses to operate Unit 18a.

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV Design Heat Rates, MMBtu/hr	HHV Fuel Usages, MMBtu/yr
1	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
2	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
3	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
4	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
5	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
6	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
7	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
8	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
9	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
10	Waukesha 7042GL	Nat. Gas	8,760	10.58	11.76	102,979
15	Solar MARS 90-T12000S	Nat. Gas	8,760	88.66	98.51	862,957
16	Solar MARS 90-T12000S	Nat. Gas	8,760	88.66	98.51	862,957
17	Waukesha L7042G	Nat. Gas	8,760	7.41	8.23	72,124
18	Waukesha L7042GSI	Nat. Gas	8,760	11.36	12.62	110,571
or 18a	Waukesha F2895GSIU	Nat. Gas	8,760	4.53	5.03	44,092
19	Waukesha F2895GSIU	Nat. Gas	500	5.05	5.61	2,806

The fuel types and operating times are provided by Harvest Four Corners, LLC
The LHV design heat rates are taken from manufacturers data
HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rates (MMBtu/hr) / 0.9 LHV/HHV
HHV Fuel Usages (MMBtu/yr) = HHV Design Heat Rates (MMBtu/hr) x hr/yr

Blowdown Emissions

Unit Numbers	Description	Total Gas Losses, scf/yr	CO_2 Emission Factors, lb/scf	CH_4 Emission Factors, lb/scf	Emission Rates CO_2, tpy	Emission Rates CH_4, tpy
SSM	SSM (Units 1-5)	14,375,000	0.0104	0.0380	74.85	272.78
SSM	SSM (Units 6-10)	4,008,550	0.0017	0.0341	3.49	68.43
SSM	SSM (Units 15 & 16)	4,130,000	0.0104	0.0380	21.50	78.37
PR1	G-12 Pig Receiver	200,000	0.0012	0.0352	1.20E-01	3.52
PR2	11-S Pig Receiver	1,200,000	0.0017	0.0341	1.04	20.48
	Total				101.00	443.58

The annual blowdown volumes are calculated from data provided by Harvest Four Corners, LLC
The CO_2 & CH_4 emission factors for SSM (Units 1-5) and SSM (Units 15 & 16) were calculated from the Manzanares extended gas analysis
The CO_2 & CH_4 emission factors for SSM (Units 6-10) and 11-S Pig Receiver were calculated from the Trunk G extended gas analysis
The CO_2 & CH_4 emission factors for G-12 Pig Receiver were calculated from the Trunk L extended gas analysis
Emission Rates (tpy) = scf/yr x lb/scf / 2,000 lb/ton

Reciprocating Compressor Venting Emissions

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
1-5	Blowdown Valve Leakage	7.64	27.88
1-5	Rod Packing Emissions	72.32	263.95
1-5	Isolation Valve Leakage	0.00E+00	0.00E+00
6-10	Blowdown Valve Leakage	1.28	25.08
6-10	Rod Packing Emissions	12.08	237.45
6-10	Isolation Valve Leakage	0.00E+00	0.00E+00
	Total	93.31	554.36

Operating or standby mode - includes blowdown valve leakage through blowdown vent stack
Operating mode - includes rod packing emissions
Non-operating depressurized mode - includes isolation valve leakage through open blowdown vents (without blind flanges)
Rod packing gas emissions assume 4 cylinders per compressor
A combination of equations W-26 & W-36 (Subpart W) is used to calculate reciprocating compressor emissions
As the NMED requires CO2 & CH4 emissions rather than CO2e emissions, it is not necessary to include the global warming potential from equation W-36
CO2 Emission Rates (tpy) = # x scf/hr x hr/yr x (CO2 Mole Percent (%) / 100) x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne
CH4 Emission Rates (tpy) = # x scf/hr x hr/yr x (CH4 Mole Percent (%) / 100) x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Unit Numbers	Description	Number of Compressors #	Gas Emissions, scf/hr	Operating Times, hr/yr	CO2 Mole Percents, %	CH4 Mole Percents, %	CO2 Density, kg/scf	CH4 Density, kg/scf
1-5	Blowdown Valve Leakage	5	33.5	8,760	8.98	89.77	0.0526	0.0192
1-5	Rod Packing Emissions	5	317.2	8,760	8.98	89.77	0.0526	0.0192
1-5	Isolation Valve Leakage	5	10.5	0	8.98	89.77	0.0526	0.0192
6-10	Blowdown Valve Leakage	5	33.5	8,760	1.50	80.75	0.0526	0.0192
6-10	Rod Packing Emissions	5	317.2	8,760	1.50	80.75	0.0526	0.0192
6-10	Isolation Valve Leakage	5	10.5	0	1.50	80.75	0.0526	0.0192

The number of compressors and operatrig times are provided by Harvest Four Corners, LLC
Blowdown valve leakage (33.5 scf/hr) and rod packing emissions occur in operating mode
Blowdown valve leakage (10.5 scf/hr) occurs in standby pressurized mode
Emission factors are the three year rolling average (2012-2014) of all measurements in the Williams Field Services, LLC compressor fleet located at natural gas processing plants
The CO2 & CH4 mole percents for Units 1-5 are taken from the Manzanares extended gas analysis
The CO2 & CH4 mole percents for Units 6-10 are taken from the Trunk G extended gas analysis
The CO2 & CH4 densities (kg/scf) are taken from Subpart W, Paragraph 98.233(v)

Centrifugal Compressor Venting Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
15 & 16	Blowdown Valve Leakage	15.27	55.72
15 & 16	Oil Degassing Vents	68.05	248.38
15 & 16	Isolation Valve Leakage	0.00E+00	0.00E+00
	Total	83.31	304.10

Operating mode - includes blowdown valve leakage (wet and dry seal) and the oil degassing vents (wet seal)
Non-operating depressurized mode - includes isolation valve leakage (wet & dry seal) through open blowdown vents (without blind flanges)
A combination of equations W-22 & W-36 (Subpart W) is used to calculate centrifugal compressor emissions
As the NMED requires CO2 & CH4 emissions rather than CO2e emissions, it is not necessary to include the global warming potential from equation W-36
CO2 Emission Rates (tpy) = # x scf/hr x hr/yr x (CO2 Mole Percent (%) / 100) x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne
CH4 Emission Rates (tpy) = # x scf/hr x hr/yr x (CH4 Mole Percent (%) / 100) x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	Number of Compressors #	Gas Emissions, scf/hr	Operating Times, hr/yr	CO2 Mole Percents, %	CH4 Mole Percents, %	CO2 Density, kg/scf	CH4 Density, kg/scf
15 & 16	Blowdown Valve Leakage	2	167.4	8,760	8.98	89.77	0.0526	0.0192
15 & 16	Oil Degassing Vents	2	746.2	8,760	8.98	89.77	0.0526	0.0192
15 & 16	Isolation Valve Leakage	2	10.8	0	8.98	89.77	0.0526	0.0192

The number of compressors and operating times are provided by Harvest Four Corners, LLC
Emission factors are the three year rolling average (2012-2014) of all measurements in the Williams Field Services, LLC compressor fleet located at natural gas processing plants
The CO_2 & CH_4 mole percents for Units 15 & 16 are taken from the Manzanares extended gas analysis
The CO_2 & CH_4 densities (kg/scf) are taken from Subpart W, Paragraph 98.233(v)

Heater & Boiler Exhaust Emissions

Unit Numbers	Description	Emission Factors			Emission Rates		
		CO2, kg/MMBtu	CH4, kg/MMBtu	N2O, kg/MMBtu	CO2, tpy	CH4, tpy	N2O, tpy
20	Sivals Heater	53.06	1.00E-03	1.00E-04	284.05	5.35E-03	5.35E-04
28	Pesco Heater	53.06	1.00E-03	1.00E-04	397.67	7.49E-03	7.49E-04
37	Stabilizer Reboiler	53.06	1.00E-03	1.00E-04	454.48	8.57E-03	8.57E-04
39	Water Tank Heater	53.06	1.00E-03	1.00E-04	142.02	2.68E-03	2.68E-04
40	Tech Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
41	Maintenance Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
42	Maintenance Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
43	Maintenance Shop Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
44	Generator Building Heater	53.06	1.00E-03	1.00E-04	71.01	1.34E-03	1.34E-04
45	Tech Shop Heater	53.06	1.00E-03	1.00E-04	142.02	2.68E-03	2.68E-04
	Total				1,775.30	3.35E-02	3.35E-03

The emissions factors are taken from 40 CFR 98, Subpart C, Tables C-1 & C-2
Emission Rates (tpy) = kg/MMBtu x 2.2 lb/kg x MMBtu/yr / 2,000 lb/ton

Unit Numbers	Description	Fuel Types	Operating Times, hr/yr	LHV Design Heat Rates, MMBtu/hr	HHV Design Heat Rates, MMBtu/hr	HHV Fuel Usages, MMBtu/yr
20	Sivals Heater	Nat. Gas	8,760	0.500	0.556	4,867
28	Pesco Heater	Nat. Gas	8,760	0.700	0.778	6,813
37	Stabilizer Reboiler	Nat. Gas	8,760	0.800	0.889	7,787
39	Water Tank Heater	Nat. Gas	8,760	0.250	0.278	2,433
40	Tech Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
41	Maintenance Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
42	Maintenance Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
43	Maintenance Shop Heater	Nat. Gas	8,760	0.125	0.139	1,217
44	Generator Building Heater	Nat. Gas	8,760	0.125	0.139	1,217
45	Tech Shop Heater	Nat. Gas	8,760	0.250	0.278	2,433

The fuel type and operating times are provided by Harvest Four Corners, LLC
The LHV design heat rates are taken from manufacturers data
HHV Design Heat Rates (MMBtu/hr) = LHV Design Heat Rate (MMBtu/hr) / 0.9 LHV/HHV
HHV Fuel Usages (MMBtu/yr) = HHV Design Heat Rate (MMBtu/hr) x hr/yr

Green House Gas Emissions Data and Calculations

Equipment Leaks Emissions

Unit Numbers	Description	Emission Rates	
		CO2, tpy	CH4, tpy
1-5, 15 & 16	Valves	3.48	12.69
1-5, 15 & 16	Connectors	4.98E-01	1.82
1-5, 15 & 16	Open-Ended Lines	2.30E-01	8.41E-01
1-5, 15 & 16	Pressure Relief Valves	4.31E-01	1.57
6-10	Valves	4.64E-01	9.13
6-10	Connectors	6.36E-02	1.25
6-10	Open-Ended Lines	3.14E-02	6.17E-01
6-10	Pressure Relief Valves	5.44E-02	1.07
	Total	5.25	28.99

A combination of equations W-31 & W-36 (Subpart W) is used to calculate uncombusted CO2 & CH4 emissions
As the NMED requires CO2 & CH4 emissions rather than CO2e emissions, it is not necessary to include the global warming potential from equation W-36
CO2 Emission Rate (tpy) = # x scf/hr/component x (CO2 Content (mole %) / 100) x hr/yr x CO2 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne
CH4 Emission Rate (tpy) = # x scf/hr/component x (CH4 Content (mole %) / 100) x hr/yr x CH4 Density (kg/scf) x (2,204.6 lb/tonne / 2,000 lb/ton) / 1,000 kg/tonne

Unit Numbers	Description	Number of Components, #	Emission Factors, scf/hr /component	CO2 Contents, mole %	CH4 Contents, mole %	Operating Times, hr/yr	CO2 Density, kg/scf	CH4 Density, kg/scf
1-5, 15 & 16	Valves	630	0.121	8.98	89.77	8,760	0.0526	0.0192
1-5, 15 & 16	Connectors	643	0.017	8.98	89.77	8,760	0.0526	0.0192
1-5, 15 & 16	Open-Ended Lines	163	0.031	8.98	89.77	8,760	0.0526	0.0192
1-5, 15 & 16	Pressure Relief Valves	49	0.193	8.98	89.77	8,760	0.0526	0.0192
6-10	Valves	504	0.121	1.50	80.75	8,760	0.0526	0.0192
6-10	Connectors	491	0.017	1.50	80.75	8,760	0.0526	0.0192
6-10	Open-Ended Lines	133	0.031	1.50	80.75	8,760	0.0526	0.0192
6-10	Pressure Relief Valves	37	0.193	1.50	80.75	8,760	0.0526	0.0192

The number of sources are calculated based on the number of compressors and dehydrators at the station (see criteria pollutant and HAP equipment leaks calculations)
The emission factors are taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
The CO2 & CH4 mole percents for components associated with Units 1-5, 15 & 16 are taken from the Manzanares extended gas analysis
The CO2 & CH4 mole percents for components associated with Units 6-10 are taken from the Trunk G extended gas analysis
The operating times are provided by Harvest Four Corners, LLC (default is the entire year)
The CO2 & CH4 densities are taken from Subpart W, Paragraph 98.233(v)

Natural Gas Pneumatic Device Venting Emissions

Unit Numbers	Description	Number of Devices, #	Emission Factors, scf/hr/device	Operating Times, hr/yr	Emission Rates	
					CO2, tpy	CH4, tpy
NA	Continuous High Bleed Pneumatic Devices	0	37.3	8,760	0.00E+00	0.00E+00
NA	Intermittent Bleed Pneumatic Devices	3	13.5	8,760	1.85	6.73
NA	Continuous Low Bleed Pneumatic Devices	0	1.39	8,760	0.00E+00	0.00E+00
	Total				1.85	6.73

The number of devices and operating times are provided by Harvest Four Corners, LLC
The emission factors are taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
Equation W-1 (Subpart W) is used to calculate CO2 & CH4 emissions
As the NMED requires CO2 & CH4 emissions in addition to CO2e emissions, it is necessary to divide by the global warming potentials
CO2 Emission Rates (tpy) = # x scf/hr/device x (CO2 Content (mole %) / 100) x CO2 Conversion Factors (tonne CO2e/scf) x hr/yr x (2,204.6 lb/tonne / 2,000 lb/ton) / CO2 Global Warming Potentials (tonne CO2e/tonne CO2)
CH4 Emission Rates (tpy) = # x scf/hr/device x (CH4 Contents (mole %) / 100) x CH4 Conversion Factors (tonne CO2e/scf) x hr/yr x (2,204.6 lb/tonne / 2,000 lb/ton) / CH4 Global Warming Potentials (tonne CO2e/tonne CH4)

Green House Gas Emissions Data and Calculations

Unit Numbers	Description	CO2 Contents, mole %	CH4 Contents, mole %	CO2 Conversion Factors, tonne CO2e /scf	CH4 Conversion Factors, tonne CO2e /scf	CO2 Global Warming Potentials, tonne CO2e /tonne CO2	CH4 Global Warming Potentials, tonne CO2e /tonne CH4
NA	Continuous High Bleed Pneumatic Devices	8.98	89.77	5.262E-05	4.790E-04	1	25
NA	Continuous Low Bleed Pneumatic Devices	8.98	89.77	5.262E-05	4.790E-04	1	25
NA	Intermittent Bleed Pneumatic Devices	8.98	89.77	5.262E-05	4.790E-04	1	25

The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The conversion factors are taken from Subpart W, Paragraph 98.233(a)
The global warming potentials are taken from 40 CFR Part 98, Table A-1

Natural Gas Driven Pneumatic Pump Venting Emissions

Emission Rates

Unit Number	Description	Number of Pumps, #	Emission Factor, scf/hr/pump	Operating Time, hr/yr	Emission Rates CO2, tpy	CH4, tpy
NA	Pneumatic Pump Venting	1	13.3	8,760	6.07E-01	2.21

The number of pumps are provided by Harvest Four Corners, LLC
The emission factor is taken from Subpart W, Table W-1A (Western U.S. - Gas Service)
The operating time is provided by Harvest Four Corners, LLC (default is the entire year)
Equation W-2 (Subpart W) is used to calculate CO2 & CH4 emissions
As the NMED requires CO2 & CH4 emissions in addition to CO2e emissions, it is necessary to divide by the global warming potentials
CO2 Emission Rate (tpy) = # x scf/hr/pump x (CO2 Content (mole %) / 100) x CO2 Conversion Factor (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CO2 Global Warming Potentials (tonne CO2e/tonne CO2)
CH4 Emission Rate (tpy) = # x scf/hr/pump x (CH4 Content (mole %) / 100) x CH4 Conversion Factor (tonne CO2e/scf) x hr/yr
x (2,204.6 lb/tonne / 2,000 lb/ton) / CH4 Global Warming Potentials (tonne CO2e/tonne CH4)

Unit Number	Description	CO2 Content, mole %	CH4 Content, mole %	CO2 Conversion Factor, tonne CO2e /scf	CH4 Conversion Factor, tonne CO2e /scf	CO2 Global Warming Potential, tonne CO2e /tonne CO2	CH4 Global Warming Potential, tonne CO2e /tonne CH4
NA	Pneumatic Pump Venting	8.98	89.77	5.262E-05	4.790E-04	1	25

The facility CO2 and CH4 contents are taken from the facility extended gas analysis
The conversion factors are taken from Subpart W, Paragraph 98.233(a)
The operating time is provided by Harvest Four Corners, LLC (the default is the entire year)
The global warming potentials are taken from 40 CFR Part 98, Table A-1

Malfunction Emissions

Unit Number	Description	Emission Rates VOC, tpy	CO2, tpy	CH4, tpy
M1	Malfunctions	10.00	328.07	1,195.65

The VOC emission rate is estimated (see calculations workbook)
CO2 Emission Rate (tpy) = VOC Emission Rate (tpy) x (Total Component Weight (lb/lb-mole) / VOC Component Weight (lb-lb-mole))
x (CO2 Weight % of Total (%) / 100)
CH4 Emission Rate (tpy) = VOC Emission Rate (tpy) x (Total Component Weight (lb/lb-mole) / VOC Component Weight (lb-lb-mole))
x (CH4 Weight % of Total (%) / 100)

Unit Number	Description	Total Component Weight, lb/lb-mole	VOC Component Weight, lb/lb-mole	CO2 Weight % of Total, %	CH4 Weight % of Total, %
M1	Malfunctions	18.77	0.12	21.05	76.70

The total & VOC component weights and CO2 & CH4 weight % of totals are calculated from the facility extended gas analysis

Green House Gas Emissions Data and Calculations

Storage Tank Emissions

Unit Number	Description	Emission Rates	
		CO_2, tpy	CH_4, tpy
T91019	Condensate	2.72E-02	2.58E-01
T91020	Condensate	1.63E-02	1.55E-01
T91021	Condensate	1.63E-02	1.55E-01
T91028	Condensate	2.09E-02	1.99E-01
	Total	8.06E-02	7.66E-01

The emission rates are taken from HYSYS output files, as applicable

Gas Stream Compositions

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	8.9772	44.01	3.95	21.0451	0.0104
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.0566	28.01	0.02	0.0844	0.0000
Methane	89.7679	16.04	14.40	76.6980	0.0380
Ethane	0.9558	30.07	0.29	1.5309	0.0008
Propane	0.1715	44.09	0.08	0.4028	0.0002
IsoButane	0.0262	58.12	0.02	0.0811	0.0000
Normal Butane	0.0266	58.12	0.02	0.0824	0.0000
IsoPentane	0.0073	72.15	0.01	0.0281	0.0000
Normal Pentane	0.0056	72.15	0.00	0.0215	0.0000
Cyclopentane	0.0001	70.14	0.00	0.0004	0.0000
n-Hexane	0.0005	86.17	0.00	0.0023	0.0000
Cyclohexane	0.0003	84.16	0.00	0.0013	0.0000
Other Hexanes	0.0009	86.18	0.00	0.0041	0.0000
Heptanes	0.0007	100.20	0.00	0.0037	0.0000
Methylcyclohexane	0.0008	98.19	0.00	0.0042	0.0000
2,2,4-Trimethylpentane	0.0000	100.21	0.00	0.0000	0.0000
Benzene	0.0002	78.11	0.00	0.0008	0.0000
Toluene	0.0006	92.14	0.00	0.0029	0.0000
Ethylbenzene	0.0000	106.17	0.00	0.0000	0.0000
Xylenes	0.0002	106.17	0.00	0.0011	0.0000
C8+ heavies	0.0008	110.00	0.00	0.0047	0.0000
Total	99.9998		18.77	100.0000	0.0495
VOC			0.12	--	0.0003

Gas stream composition obtained from El Cedro (Manzanares) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole)
Weight Percent of Total (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Emission Factors (lb/scf) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole) / 379.4 scf/lb-mole

Green House Gas Emissions Data and Calculations

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	1.4996	44.01	0.66	3.5155	0.0017
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.1786	28.01	0.05	0.2665	0.0001
Methane	80.7532	16.04	12.95	68.9958	0.0341
Ethane	7.4024	30.07	2.23	11.8567	0.0059
Propane	3.5417	44.09	1.56	8.3178	0.0041
IsoButane	0.7647	58.12	0.44	2.3674	0.0012
Normal Butane	4.6213	58.12	2.69	14.3070	0.0071
IsoPentane	0.3987	72.15	0.29	1.5323	0.0008
Normal Pentane	0.2746	72.15	0.20	1.0553	0.0005
Cyclopentane	0.0034	70.14	0.00	0.0127	0.0000
n-Hexane	0.1257	86.17	0.11	0.5770	0.0003
Cyclohexane	0.0470	84.16	0.04	0.2107	0.0001
Other Hexanes	0.0853	86.18	0.07	0.3916	0.0002
Heptanes	0.0996	100.20	0.10	0.5316	0.0003
Methylcyclohexane	0.0892	98.19	0.09	0.4665	0.0002
2,2,4-Trimethylpentane	0.0063	100.21	0.01	0.0336	0.0000
Benzene	0.0165	78.11	0.01	0.0687	0.0000
Toluene	0.0312	92.14	0.03	0.1531	0.0001
Ethylbenzene	0.0006	106.17	0.00	0.0034	0.0000
Xylenes	0.0083	106.17	0.01	0.0469	0.0000
C8+ heavies	0.0523	110.00	0.06	0.3064	0.0002
Total	100.0002		21.59	115.0167	0.0569
VOC			5.70	--	0.0150

Gas stream composition obtained from El Cedro (Trunk G) extended gas analysis dated 02/07/2020
Component Weights (lb/lb-mole) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole)
Weight Percent of Total (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)
Emission Factors (lb/scf) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole) / 379.4 scf/lb-mole

Green House Gas Emissions Data and Calculations

Components	Mole Percents, %	Molecular Weights, lb/lb-mole	Component Weights, lb/lb-mole	Weight Percent of Total, %	Emission Factors, lb/scf
Carbon Dioxide	1.0334	44.01	0.45	2.4226	0.0012
Hydrogen Sulfide	0.0000	34.07	0.00	0.0000	0.0000
Nitrogen	0.2947	28.01	0.08	0.4397	0.0002
Methane	83.3290	16.04	13.37	71.1966	0.0352
Ethane	8.6116	30.07	2.59	13.7936	0.0068
Propane	3.6567	44.09	1.61	8.5879	0.0042
IsoButane	0.7113	58.12	0.41	2.2021	0.0011
Normal Butane	1.2286	58.12	0.71	3.8036	0.0019
IsoPentane	0.3696	72.15	0.27	1.4205	0.0007
Normal Pentane	0.2568	72.15	0.19	0.9869	0.0005
Cyclopentane	0.0042	70.14	0.00	0.0157	0.0000
n-Hexane	0.1085	86.17	0.09	0.4980	0.0002
Cyclohexane	0.0361	84.16	0.03	0.1618	0.0001
Other Hexanes	0.1681	86.18	0.14	0.7717	0.0004
Heptanes	0.0745	100.20	0.07	0.3976	0.0002
Methylcyclohexane	0.0582	98.19	0.06	0.3044	0.0002
2,2,4-Trimethylpentane	0.0038	100.21	0.00	0.0203	0.0000
Benzene	0.0024	78.11	0.00	0.0100	0.0000
Toluene	0.0222	92.14	0.02	0.1090	0.0001
Ethylbenzene	0.0004	106.17	0.00	0.0023	0.0000
Xylenes	0.0038	106.17	0.00	0.0215	0.0000
C8+ heavies	0.0263	110.00	0.03	0.1541	0.0001
Total	100.0002		20.15	107.3198	0.0531
VOC			3.65	--	0.0096

Gas stream composition obtained from Trunk L extended gas analysis dated 02/06/2020

Component Weights (lb/lb-mole) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole)

Weight Percent of Total (%) = 100 x Component Weights (lb/lb-mole) / Total Component Weight (lb/lb-mole)

Emission Factors (lb/scf) = [Mole Percents (%) / 100] x Molecular Weights (lb/lb-mole) / 379.4 scf/lb-mole

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Section 7

Information Used To Determine Emissions

Information Used to Determine Emissions shall include the following:

- ☑ If manufacturer data are used, include specifications for emissions units and control equipment, including control efficiencies specifications and sufficient engineering data for verification of control equipment operation, including design drawings, test reports, and design parameters that affect normal operation.
- ☐ If test data are used, include a copy of the complete test report. If the test data are for an emissions unit other than the one being permitted, the emission units must be identical. Test data may not be used if any difference in operating conditions of the unit being permitted and the unit represented in the test report significantly effect emission rates.
- ☑ If the most current copy of AP-42 is used, reference the section and date located at the bottom of the page. Include a copy of the page containing the emissions factors, and clearly mark the factors used in the calculations.
- ☐ If an older version of AP-42 is used, include a complete copy of the section.
- ☑ If an EPA document or other material is referenced, include a complete copy.
- ☐ Fuel specifications sheet.
- ☑ If computer models are used to estimate emissions, include an input summary (if available) and a detailed report, and a disk containing the input file(s) used to run the model. For tank-flashing emissions, include a discussion of the method used to estimate tank-flashing emissions, relative thresholds (i.e., permit or major source (NSPS, PSD or Title V)), accuracy of the model, the input and output from simulation models and software, all calculations, documentation of any assumptions used, descriptions of sampling methods and conditions, copies of any lab sample analysis.

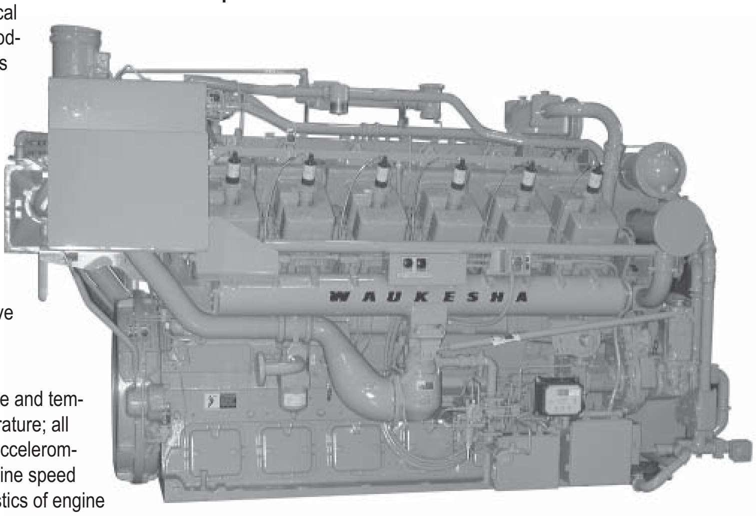
Waukesha

POWERING PERFORMANCE

L7042GL

VHP® Gas Engine

886 - 1547 BHP



Engine shown without Extender Series Features.

Model L7042GL with ESM®

Turbocharged and Intercooled, Twelve Cylinder, Lean Combustion, Four-Cycle Gas Engine

STANDARD EQUIPMENT

AIR CLEANER – Two, 3" dry type filter with hinged rain shield and service indicator.

BARRING DEVICE – Manual.

BATTERY BOX – Ship loose battery box designed to accommodate two series 31 12 VDC batteries. Includes power disconnect switch and 20 foot (6.1 m) cable for connection to ESM Power Distribution Box.

BEARINGS – Heavy duty, replaceable, precision type.

BREATHER – Self regulating, closed system.

CONNECTING RODS – Drop forged steel, rifle drilled.

CONTROL SYSTEM – Waukesha Engine System Manager (ESM) integrates spark timing control, speed governing, detonation detection, start-stop control, diagnostic tools, fault logging and engine safeties. Engine Control Unit (ECU) is central brain of the control system and main customer interface. Interface with ESM is through 25 foot (7.6 m) harness to local panel, through MODBUS RTU slave connection RS-485 multidrop hardware, and through the Electronic Service Program (ESP). Customer connections are only required to the local panel, fuel valve, and 24V DC power supply. Compatible with Woodward load sharing module. ESM meets Canadian Standards Association Class I, Division 2, Group D, hazardous location requirements. ESM controlled prechamber logic.

CRANKCASE – Integral crankcase and cylinder frame. Main bearing caps drilled and tapped for temperature sensors. Does not include sensors.

CRANKSHAFT – Counterweighted, forged steel, seven main bearings, and dynamically balanced.

CYLINDERS – Removable bainitic cast iron wet type cylinder liners, chrome plated on outer diameter.

CYLINDER HEADS – Twelve interchangeable. Two hard faced intake and two hard faced exhaust valves per cylinder. Hard faced intake and exhaust valve seat inserts. Roller valve lifters and hydraulic push rods. Includes prechamber and related fuel control valves.

ENGINE ROTATION – Counterclockwise when facing flywheel.

ENGINE MONITORING DEVICES – Factory mounted and wired sensors for lube oil pressure and temperature; intake manifold temperature and pressure; overspeed; and jacket water temperature; all accessible through ESM®. ESM continually monitors combustion performance through accelerometers to provide detonation protection. Dual magnetic pick-ups are used for accurate engine speed monitoring. ESM provides predictive spark plug diagnostics as well as advanced diagnostics of engine and all ESM sensors and logs any faults into non-volatile flash memory.

EXHAUST THERMOCOUPLES – 14 K-type thermocouples. One for each individual cylinder and one pre-turbine for each bank and 25 foot (7.6 m) harness.

EXHAUST OUTLET – Single vertical at rear. Flexible stainless steel connection with 8" (203 mm) pipe flange.

FLYWHEEL – Approx. WR2 = 155000 lb-in2; with ring gear (208 teeth), machined to accept two drive adapters: 31.88" (810 mm) pilot bore, 30.25"(768 mm) bolt circle, (12) 0.75"–10 tapped holes; or 28.88" (734 mm) pilot bore, 27.25" (692 mm) bolt circle, (12) 0.625"–11 tapped holes and (12) 0.75"–10 tapped holes.

FLYWHEEL HOUSING – No. 00 SAE.

FUEL SYSTEM – Single 3" ANSI flange fuel inlet connection. Dual natural gas, 4" (102 mm) duplex updraft carburetors. Two mounted Mooney Flowgrid 250, 2" (51 mm) gas regulators, 43 – 60 psi (296 – 414 kPa) gas inlet pressure required. Prechamber fuel system and control logic. 10 foot (3 m) harness provided for ESM control of customer supplied fuel shutoff valve.

GOVERNOR – Electric throttle actuator controlled by ESM with throttle position feedback. Governor tuning is performed using ESP. ESM includes option of a load-coming feature to improve engine response to step loads.

IGNITION SYSTEM – Ignition Power Module (IPM) controlled by ESM, with spark timing optimized for any speed-load condition. Dual voltage energy levels automatically controlled by ESM to maximize spark plug life.

INTERCOOLER – Air–to–water.

LEVELING BOLTS

LIFTING EYES – Requires 9.5 ton Working Load Limit (W.L.L.) anchor shackles.

LUBRICATION – Full pressure, gear type pump. Engine mounted full flow lube oil micro-fiberglass filters with mounted differential pressure gauge. MICROSPIN® bypass filter, engine mounted. Lube oil strainer, mounted. Air/gas motor driven prelube pump, requires final piping.

MANIFOLDS – Exhaust, (2) water cooled.

OIL COOLER – Shell and tube type, with thermostatic temperature controller and pressure regulating valve. Factory mounted.

OIL PAN – Deep sump type. 190 gallon (719 L) capacity including filter and cooler.

PAINT – Oilfield orange primer.

PISTONS – Aluminum with floating pin. Oil cooled.

SHIPPING SKID – For domestic truck or rail.

TURBOCHARGERS – Two, dry type. Wastegate controlled.

VIBRATION DAMPER – Two, viscous type. Guard included with remote mounted radiator or no radiator.

WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – Belt driven water circulating high capacity pump for intercooler and lube oil cooler. See S6543-38 performance curve for use with standard 10" diameter crankshaft pulley. Includes thermostatic valve.

WATER CIRCULATING SYSTEM, ENGINE JACKET – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full flow bypass type. Flange connections and mating flanges for (2) 4" (102 mm) inlets and (1) 5" (127 mm) outlet.

SPECIFICATIONS

Cylinders
V 12

Piston Displacement
7040 cu. in.
(115 L)

Bore & Stroke
9.375″ x 8.5″
(238 x 216 mm)

Compression Ratio
10.5:1

Jacket Water System Capacity
107 gal.
(405 L)

Lube Oil Capacity
190 gal.
(719 L)

Starting System
125 - 150 psi air/gas
24/32V electric

Dry Weight
21,000 lb.
(9525 kg)

POWER RATINGS: L7042GL VHP® GAS ENGINES

Model	I.C. Water Inlet Temp. °F (°C) (Tcra)	C.R.	Brake Horsepower (kWb Output) 800 rpm	900 rpm	1000 rpm	1100 rpm	1200 rpm
L7042GL	85° (29°)	10.5:1	928 (692)	1160 (865)	1289 (961)	1418 (1057)	1547 (1154)
L7042GL	130° (54°)	10.5:1	886 (661)	1110 (828)	1233 (919)	1357 (1012)	1480 (1104)

Rating Standard: All models: Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and auxiliary water temperature Tcra (clause 10.1) as specified above limited to ± 10° F (± 5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

ISO Standard Power/Continuous Power Rating: The highest load and speed which can be applied 24 hours a day, seven days a week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or maximum load indicated by the intermittent rating, whichever is lower, for two hours in each 24 hour period.

All natural gas engine ratings are based on a fuel of 900 Btu/ft^3 (35.3 MJ/nm^3) SLHV value, with a 91 Waukesha Knock Index®.

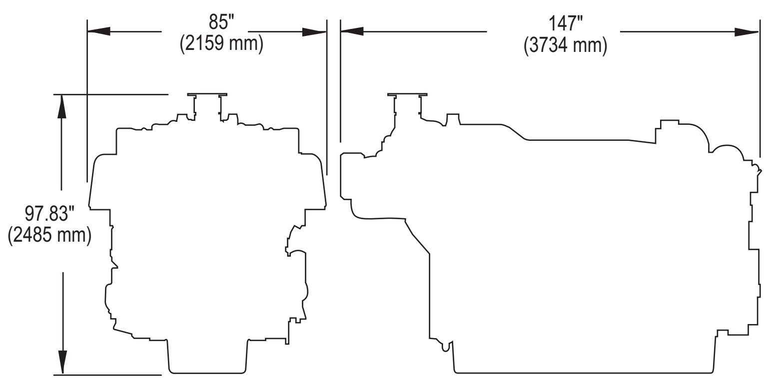
For conditions or fuels other than standard, contact the Waukesha Engine Sales Engineering Department.

PERFORMANCE: L7042GL VHP® GAS ENGINES

NO$_X$ Settings	English	130° F ICW 1200	130° F ICW 1000	85° F ICW 1200	85° F ICW 1000	NO$_X$ Settings	Metric	54° C ICW 1200	54° C ICW 1000	29° C ICW 1200	29° C ICW 1000
	RPM	1200	1000	1200	1000		RPM	1200	1000	1200	1000
1.5 g NO$_X$	Power (Bhp)	1480	1233	1547	1289	1.5 g NO$_X$	Power (kWb)	1104	919	1154	962
	BSFC (Btu/bhp-hr)	7135	6850	7160	6865		BSFC (kJ/kW-hr)	10089	9686	10124	9707
	NOx (grams/bhp-hr)	1.50	1.50	1.50	1.50		NOx (g/nm^3)	0.62	0.62	0.62	0.62
	CO (grams/bhp-hr)	2.65	2.65	2.65	2.65		CO (g/nm^3)	1.09	1.09	1.09	1.09
	NMHC (grams/bhp--hr)	0.70	0.80	0.80	0.90		NMHC (g/nm^3)	0.29	0.41	0.33	0.37

NOTES:

1) Fuel consumption and exhaust emissions are based on ISO 3046/1-1995 standard reference conditions and commercial quality natural gas of 900 Btu/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) saturated lower heat value, Waukesha Knock Index® of 91 and 93% methane content by volume. ISO 3046/1-1995 standard reference conditions are 77°F (25°C) ambient temperature, 29.54 inches Hg (100 kPa) barometric pressure, 30% relative humidity (1kPa/0.3 inches Hg water vapor pressure).
2) S.I. exhaust emissions are corrected to 5% O_2 (0°C and 101.325 kPa).
3) Data will vary due to variations in site conditions. For conditions and/or fuels other than standard, consult the Waukesha Engine Sales Engineering Department.
4) Fuel consumption based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/ft^3 saturated low heat valve



Waukesha

WAUKESHA ENGINE
DRESSER, INC.
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Waukesha, WI 53188-4999
Phone: (262) 547-3311 Fax: (262) 549-2795
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Bulletin 7005 0107

Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.

DRESSER Waukesha

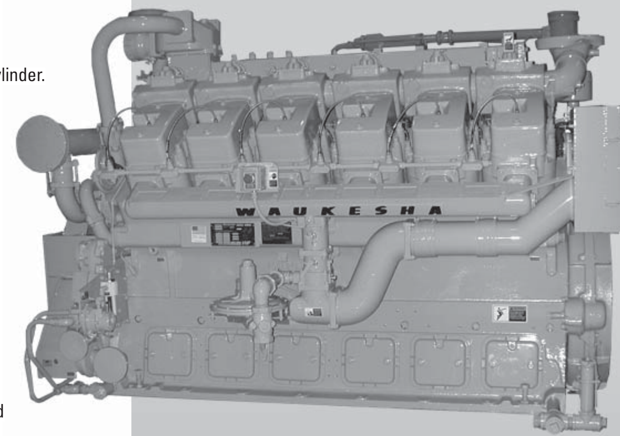
L7042G

STANDARD EQUIPMENT

AIR CLEANER – Two, dry type with rain shield and service indicator.
BARRING DEVICE – Manual.
BEARINGS – Heavy duty, replaceable, precision type.
BREATHER – Closed system.
CONNECTING RODS – Drop forged steel, rifle drilled.
CONTROL SYSTEM – Pneumatic. Includes pilot operated valves for air start and prelube. Engine mounted control panel with two push button valves. Pilot operated air start valves omitted when starter is not furnished by Waukesha. Includes engine On/Off push button. One mounted on either side of the engine.
CRANKCASE – Integral crankcase and cylinder frame. Main bearing caps drilled and tapped for temperature sensors. Does not include sensors.
CRANKSHAFT – Counterweighted, forged steel, seven main bearings, and dynamically balanced.
CYLINDERS – Removable wet type cylinder liners, chrome plated on outer diameter. Induction hardened.
CYLINDER HEADS – Twelve interchangeable. Two hard faced intake and two hard faced exhaust valves per cylinder. Hard faced intake and exhaust valve seat inserts. Roller valve lifters and hydraulic push rods.
ENGINE ROTATION – Counterclockwise when facing flywheel.
ENGINE MONITOR DEVICES – Engine thermocouples, K–type, are wired to a common junction box for jacket water temperature, lube oil temperature and intake manifold temperature. Magnetic pickup wired for customer supplied tachometer. Lube oil pressure and intake manifold pressure sensing lines are terminated in a common bulk head.
EXHAUST OUTLET – Single vertical at rear. Flexible stainless steel connection with 8" (203 mm) pipe flange.
FLYWHEEL – Approx. WR^2 = 155000 lb-in^2; with ring gear (208 teeth), machined to accept two drive adapters: 31.88" (810 mm) pilot bore, 30.25" (768 mm) bolt circle, (12) 0.75"–10 tapped holes; or 28.88" (734 mm) pilot bore, 27.25" (692 mm) bolt circle, (12) 0.625"–11 tapped holes and (12) 0.75"–10 tapped holes.
FUEL SYSTEM – Dual, natural gas, 4" (102 mm) updraft. Two Fisher Model S–201, 2" (51 mm) gas regulators, 13 psi (89 kPa) maximum inlet pressure.
FLYWHEEL HOUSING – No. 00 SAE.
GOVERNOR – Woodward UG–8 LD hydraulic lever type, with friction type speed control. Mounted on right hand side.
IGNITION – Waukesha Custom Engine Control Ignition Module. Electronic digital ignition system. 24V DC power required.
LEVELING BOLTS
LIFTING EYES – Requires 9.5 ton Working Load Limit (W.L.L.) anchor shackles.
LUBRICATION – Full pressure. Gear type pump. Full flow filter, 36 gallon (136 litres) capacity, not mounted. Includes lube oil strainer (mounted on engine) and flexible connections (shipped loose). Air/gas motor driven prelube pump. Requires final piping.
MANIFOLDS – Exhaust, (2) water cooled.
OIL COOLER – Shell and tube type, with thermostatic temperature controller and pressure regulating valve. Not mounted.
OIL PAN – Base type. 90 gallon (340 litres) capacity including filter and cooler.
PAINT – Oilfield orange primer.
PISTONS – Aluminum with floating pin. Standard 10:1 compression ratio. Oil cooled.
SHIPPING SKID – For domestic truck or rail.
VIBRATION DAMPER – Viscous type. Guard included with remote mounted radiator or no radiator.
WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – For oil cooler. Pump is belt driven from crankshaft pulley.
WATER CIRCULATING SYSTEM, ENGINE JACKET – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full flow bypass type. Flange connections and mating flanges for (2) 4" (102 mm) inlets and (1) 5" (127 mm) outlet.

VHP® Series Gas Engine

732 - 1025 BHP
(546 - 764 kWb)



Engine shown with options.

Model L7042G

Naturally Aspirated, Twelve Cylinder, Four-Cycle Gas Fueled Engine

SPECIFICATIONS

Cylinders
V 12

Piston Displacement
7040 cu. in.
(115 L)

Bore & Stroke
9.375" x 8.5"
(238 x 216 mm)

Compression Ratio
10:1

Jacket Water System Capacity
107 gal. (405 L)

Lube Oil Capacity
90 gal. (340 L)

Starting System
125 - 150
psi air/gas
24 V electric

Dry Weight
21,000 lb.
(9525 kg)

POWER RATINGS: L7042G VHP® SERIES GAS ENGINE

Model	I.C. Water Inlet Temp. °F (°C) (Tcra)	C.R.	Brake Horsepower (kWb Output) 800 rpm	900 rpm	1000 rpm	1200 rpm
L7042G	85° (29°)	10:1	732 (546)	818 (610)	896 (668)	1025 (764)

Rating Standard: All models: Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and auxiliary water temperature Tcra (clause 10.1) as specified above limited to ± 10° F (± 5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

ISO Standard Power/Continuous Power Rating: The highest load and speed which can be applied 24 hours a day, seven days a week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or maximum load indicated by the intermittent rating, whichever is lower, for two hours in each 24 hour period.

All natural gas engine ratings are based on a fuel of 900 Btu/ft^3 (35.3 MJ/nm^3) SLHV, with a 91 WKI®.

For conditions or fuels other than standard, contact the Dresser Waukesha Application Engineering Department.

PERFORMANCE: L7042G VHP® SERIES GAS ENGINE

English 130° F I.C. Water Temperature

Catalyst Settings			
	RPM	1200	1000
	Power (Bhp)	1025	896
	BSFC (Btu/bhp-hr)	7225	7135
	NOx (grams/bhp-hr)	16.0	16.0
	CO (grams/bhp-hr)	13.0	13.0
	NMHC (grams/bhp-hr)	0.25	0.25

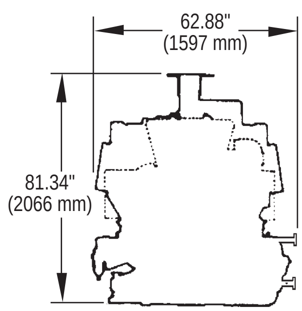
Metric 54° C I.C. Water Temperature

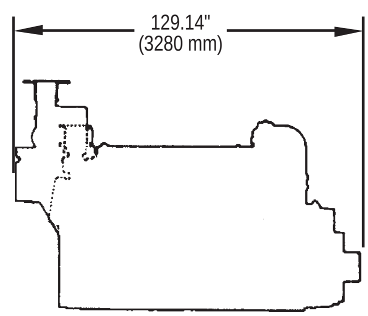
Catalyst Settings			
	RPM	1200	1000
	Power (kWb)	764	668
	BSFC (kJ/kW-hr)	10225	10095
	NOx (g/nm^3)	5.9	5.9
	CO (g/nm^3)	4.8	4.8
	NMHC (g/nm^3)	0.1	0.1

NOTES:

1) Fuel consumption and exhaust emissions are based on ISO 3046/1-1995 standard reference conditions and commercial quality natural gas of 900 Btu/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) saturated lower heat value, Waukesha Knock Index® of 91 and 93% methane content by volume.
ISO 3046/1-1995 standard reference conditions are 77°F (25°C) ambient temperature, 29.54 inches Hg (100 kPa) barometric pressure, 30% relative humidity (1kPa/0.3 inches Hg water vapor pressure).
2) S.I. exhaust emissions are corrected to 5% O_2 (0°C and 101.325 kPa).
3) Data will vary due to variations in site conditions. For conditions and/or fuels other than standard, consult the Dresser Waukesha Application Engineering Department.
4) Fuel consumption based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/ft^3 saturated low heat valve

Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.





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DRESSER® Waukesha

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jmartindale@emittechnologies.com

Prepared For:
Mike Johnson
WILLIAMS FIELD SERVICES

QUOTE: QUO-11395-S0H2

INFORMATION PROVIDED BY WAUKESHA

Engine:	L7042G
Horsepower:	1025
RPM:	1200
Compression Ratio:	10.0
Exhaust Flow Rate:	4392 CFM
Exhaust Temperature:	1058 °F
Reference:	6124-5
Fuel:	Natural Gas
Annual Operating Hours:	8760

Uncontrolled Emissions

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	13.00	29.38	128.67
CO:	9.00	20.34	89.08
THC:	2.00	4.52	19.80
NMHC	0.30	0.68	2.97
NMNEHC:	0.15	0.34	1.48
HCHO:	0.05	0.11	0.49
O2:	0.30 %		

POST CATALYST EMISSIONS

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	<1.10	<2.49	<10.89
CO:	<2.00	<4.52	<19.80
VOC:	<0.11	<0.25	<1.10
HCHO:	<0.01	<0.03	<0.12

CONTROL EQUIPMENT

Catalyst Housing

Model:	ELS-3550-1212F-4CE0-241
Manufacturer:	EMIT Technologies, Inc
Element Size:	Rectangle 24" x 15" x 3.5"
Housing Type:	4 Element Capacity
Catalyst Installation:	Accessible Housing
Construction:	10 gauge Carbon Steel
Sample Ports:	9 (0.5" NPT)
Inlet Connections:	12" Flat Face Flange
Outlet Connections:	12" Flat Face Flange
Configuration:	End In / Side Out
Silencer:	Integrated
Silencer Grade:	Critical
Insertion Loss:	25-30 dBA

Catalyst Element

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Group Metals
Substrate Type:	BRAZED
Manufacturer:	EMIT Technologies, Inc
Element Quantity:	2
Element Size:	Rectangle 24" x 15" x 3.5"

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WARRANTY

EMIT Technologies, Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of two (2) years from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from improper use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with a HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 1 year from installation, or 8760 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures. In most cases, excluding thermal deactivation, catalyst performance is redeemable by means of proper washing (refer to EMIT Catalyst/Silencer Housing Manual for element wash information, or contact a local EMIT Sales representative).

The exhaust temperature operating range at the converter inlet is a minimum of 600°F for oxidation catalyst and 750 ˚F for NSCR catalyst, and a maximum of 1250°F.

If a properly functioning, high temperature shut down switch is not installed, thermal deactivation of catalyst at sustained temperatures above 1250˚F is not covered. If excessive exposure to over oxygenation of NSCR catalyst occurs due to improperly functioning or non-existent Air/Fuel ratio control, then deactivation of catalyst is not warranted.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent. Standard Oxidation Catalyst conversion efficiencies (% reduction) will be guaranteed for fuel gas containing less than 1.5% mole fraction of non-methane, non-ethane hydrocarbons. Applications where fuel gas exceeds this level will require a Premium Oxidation Catalyst to maintain guaranteed VOC conversion efficiencies.

Engine lubrication oil shall contain less than 0.5 wt% Sulfated Ash with a maximum allowable specific oil consumption of 0.7 g/bhp-hr. The catalyst shall be limited to a maximum ash loading of 0.022 lb/ft3. Phosphorous and zinc additives are limited to 0.03 wt%. New or Reconstructed engines must operate for a minimum of 100 hours prior to catalyst installation, otherwise the warranty is void.

The catalyst must not be exposed to the following know poisoning agents, including: antimony, arsenic, chromium, copper, iron, lead, lithium, magnesium, mercury, nickel, phosphorous, potassium, silicon, sodium, sulfur, tin, and zinc. Total poison concentrations in the fuel gas must be limited to 0.25 ppm or less for catalyst to function properly.

Shipment - Promised shipping dates are approximate lead times from the point of manufacture and are not guaranteed. EMIT Technologies, Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies, Inc. shall not be responsible for goods damaged or lost in transit.

Terms: Credit is extended to purchaser for net 30 time period. If payment is not received in the net 30 timeframe, interest on the unpaid balance will accrue at a rate of 1.5% per month from the invoice date.

Order Cancellation Terms: Upon cancellation of an order once submittal of a Purchase Order has occurred, the customer will pay a 25% restocking fee for Catalyst Housings, Catalyst Elements, and Air/Fuel Ratio Controllers; 50% restocking fee for Cooler Top Solutions, Exhaust System Accessories, and other Custom Built Products; 100% of all associated shipping costs incurred by EMIT; 100% of all project expenses incurred by EMIT for Field Services.

DRESSER® Waukesha

L7042GSI

STANDARD EQUIPMENT

AIR CLEANER – Two, 3" dry type filter with hinged rain shield and service indicator.

AIR FUEL RATIO CONTROL (AFR) – Integrated ESM® - AFR catalyst rich-burn control, main fuel gas regulator actuators, exhaust O_2 sensor(s), and post turbocharger exhaust thermocouple. Factory mounted and tested. AFR maintains emissions through load and speed changes. The ESM AFR meets Canadian Standards Association Class 1, Division 2, Group D hazardous location requirements. Note: For dual fuel applications, ESM AFR system will control the primary fuel source only.

BARRING DEVICE – Manual.

BATTERY BOX – Ship loose battery box designed to accommodate two Series 31 12 VDC batteries. Includes power disconnect switch and 20 foot (6.1 m) cable for connection to ESM® Power Distribution Box.

BEARINGS – Heavy duty, replaceable, precision type.

BREATHER – Self regulating, closed system.

CONNECTING RODS – Drop forged steel, rifle drilled.

CONTROL SYSTEM – Waukesha Engine System Manager (ESM®) integrates spark timing control, speed governing, detonation detection, start-stop control, diagnostic tools, fault logging and engine safeties. Engine Control Unit (ECU) is central brain of the control system and main customer interface. Interface with ESM is through 25 foot (7.6 m) harness to local panel, through MODBUS RTU slave connection RS-485 multidrop hardware, and through the Electronic Service Program (ESP). Customer connections are only required to the local panel, fuel valve, and 24V DC power supply. Compatible with Woodward load sharing module. ESM meets Canadian Standards Association Class I, Division 2, Group D, hazardous location requirements.

CRANKCASE – Integral crankcase and cylinder frame. Main bearing caps drilled and tapped for temperature sensors. Does not include sensors.

CRANKSHAFT – Counterweighted, forged steel, seven main bearings, and dynamically balanced.

CYLINDERS – Removable wet type bainitic cast iron cylinder liners, chrome plated on outer diameter.

CYLINDER HEADS – Twelve interchangeable. Two hard faced intake and two hard faced exhaust valves per cylinder. Hard faced intake and exhaust valve seat inserts. Roller valve lifters and hydraulic push rods.

ELECTRONIC SERVICE PROGRAM (ESP) – Microsoft® Windows-based program provided on CD-ROM for programming and interface to ESM. Includes E-Help for troubleshooting any ESM faults. Serial harness is provided for connection of a customer supplied laptop to the ECU RS-232 port.

ENGINE MONITORING DEVICES – Factory mounted and wired sensors for lube oil pressure and temperature; intake manifold temperature and pressure; overspeed; and jacket water temperature; all accessible through ESM®. ESM continually monitors combustion performance through accelerometers to provide detonation protection. Dual magnetic pick-ups are used for accurate engine speed monitoring. ESM provides predictive spark plug diagnostics as well as advanced diagnostics of engine and all ESM sensors and logs any faults into non-volatile flash memory.

ENGINE ROTATION – Counterclockwise when facing flywheel.

EXHAUST OUTLET – Single vertical at rear. Flexible stainless steel connection with 8" (203 mm) pipe flange.

FLYWHEEL – Approx. WR^2 = 155000 lb-in^2; with ring gear (208 teeth), machined to accept two drive adapters: 31.88" (810 mm) pilot bore, 30.25" (768 mm) bolt circle, (12) 0.75"–10 tapped holes; or 28.88" (734 mm) pilot bore, 27.25" (692 mm) bolt circle, (12) 0.625"–11 tapped holes and (12) 0.75"–10 tapped holes.

FLYWHEEL HOUSING – No. 00 SAE.

FUEL SYSTEM – Single 3" ANSI flange fuel inlet connection. Two natural gas, 4" (102 mm) updraft carburetors and two mounted Mooney Flowgrid 250, 2" (51 mm) gas regulators, 30 – 60 psi (207 – 414 kPa) fuel inlet pressure required. 10 foot (3 m) harness provided for ESM control of customer supplied fuel shutoff valve

GOVERNOR – Electric throttle actuator controlled by ESM with throttle position feedback. Governor tuning is performed using ESP. ESM includes option of a load-coming feature to improve engine response to step loads.

IGNITION – Ignition Power Module (IPM) controlled by ESM, with spark timing. Dual voltage energy levels automatically controlled by ESM to maximize spark plug life.

INTERCOOLER – Air–to–water.

LEVELING BOLTS

LIFTING EYES – Requires 9.5 ton Working Load Limit (W.L.L.) anchor shackles.

LUBRICATION – Full pressure, gear type pump. Engine mounted full flow lube oil micro-fiberglass filters. MICROSPIN® bypass filter, engine mounted. Air/gas motor driven prelube pump, requires final piping.

MANIFOLDS – Exhaust, (2) water cooled.

OIL COOLER – Shell and tube type, with thermostatic temperature controller and pressure regulating valve. Factory mounted.

OIL PAN – Deep sump type. 190 gallon (719 L) capacity including filter and cooler.

PAINT – Oilfield orange primer.

PISTONS – Aluminum with floating pin. Oil cooled.

SHIPPING SKID – For domestic truck or rail.

TURBOCHARGERS – Two dry type. Wastegate controlled.

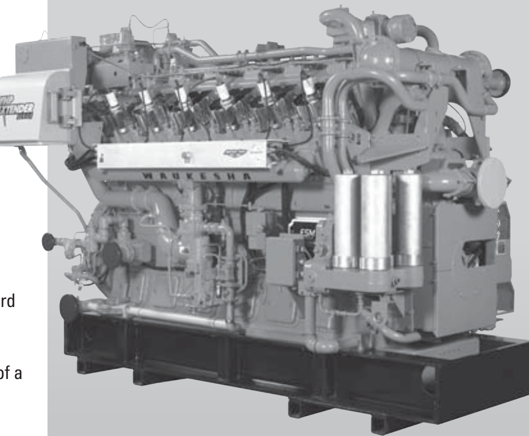
VIBRATION DAMPER – Viscous type. Guard included with remote mounted radiator or no radiator.

WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT – Belt driven water circulating high capacity pump for intercooler and lube oil cooler. See S6543-36 performance curve for use with standard 10 diameter crankshaft pulley.

WATER CIRCULATING SYSTEM, ENGINE JACKET – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full flow bypass type. Flange connections and mating flanges for (2) 4" (102 mm) inlets and (1) 5" (127 mm) outlet.

VHP® Series Gas Engine Extender Series®

987 - 1547 BHP
(736 - 1154 kWb)



Engine shown with options.

Model L7042GSI with ESM

Turbocharged and Intercooled, Twelve Cylinder, Four-Cycle Gas Fueled Engine

SPECIFICATIONS

Cylinders
V 12

Piston Displacement
7040 cu. in.
(115 L)

Bore & Stroke
9.375" x 8.5"
(238 x 216 mm)

Compression Ratio
8:1

Jacket Water System Capacity
107 gal. (405 L)

Lube Oil Capacity
190 gal. (719 L)

Starting System
125 - 150
psi air/gas
24 V electric

Dry Weight
21,000 lb.
(9525 kg)

POWER RATINGS: L7042GSI VHP® GAS ENGINE

Model	I.C. Water Inlet Temp. °F (°C) (Tcra)	C.R.	Brake Horsepower (kWb Output) 800 rpm	900 rpm	1000 rpm	1200 rpm
L7042GSI	85° (29°)	8:1	1031 (769)	1160 (865)	1289 (961)	1547 (1154)
	130° (54°)	8:1	987 (736)	1110 (828)	1233 (920)	1480 (1104)

Rating Standard: All models: Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and auxiliary water temperature Tcra (clause 10.1) as specified above limited to ± 10° F (± 5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

ISO Standard Power/Continuous Power Rating: The highest load and speed which can be applied 24 hours a day, seven days a week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or maximum load indicated by the intermittent rating, whichever is lower, for two hours in each 24 hour period.

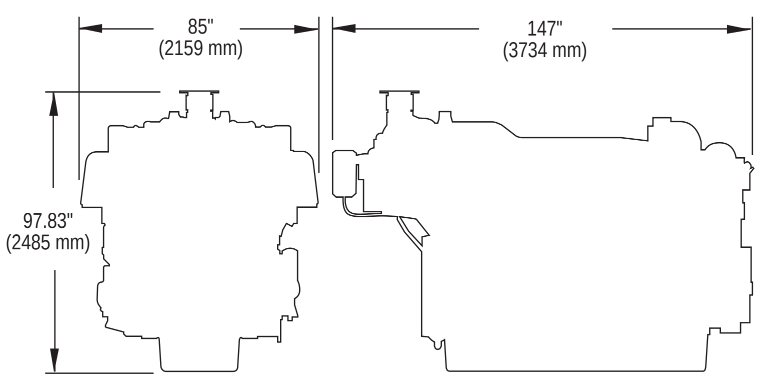
All natural gas engine ratings are based on a fuel of 900 Btu/ft^3 (35.3 MJ/nm^3) SLHV, with a 91 WKI®.

For conditions or fuels other than standard, contact the Dresser Waukesha Application Engineering Department.

PERFORMANCE: L7042GSI VHP® GAS ENGINE

English 130° F I.C. Water Temperature				Metric 54° C I.C. Water Temperature			
Catalyst Settings	RPM	1200	1000	Catalyst Settings	RPM	1200	1000
	Power (Bhp)	1480	1233		Power (kWb)	1104	920
	BSFC (Btu/bhp-hr)	7675	7440		BSFC (kJ/kW-hr)	10860	10525
	NOx (grams/bhp-hr)	16.0	16.0		NOx (g/nm^3)	5.9	5.9
	CO (grams/bhp-hr)	13.0	13.0		CO (g/nm^3)	4.8	4.8
	NMHC (grams/bhp-hr)	0.25	0.25		NMHC (g/nm^3)	0.1	0.1

NOTES:
1) Fuel consumption and exhaust emissions are based on ISO 3046/1-1995 standard reference conditions and commercial quality natural gas of 900 Btu/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) saturated lower heat value, Waukesha Knock Index® of 91 and 93% methane content by volume.
ISO 3046/1-1995 standard reference conditions are 77°F (25°C) ambient temperature, 29.54 inches Hg (100 kPa) barometric pressure, 30% relative humidity (1kPa/0.3 inches Hg water vapor pressure).
2) S.I. exhaust emissions are corrected to 5% O_2 (0°C and 101.325 kPa).
3) Data will vary due to variations in site conditions. For conditions and/or fuels other than standard, consult the Dresser Waukesha Application Engineering Department.
4) Fuel consumption based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/ft^3 saturated low heat valve



Bulletin 7011 1008

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DRESSER® Waukesha

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Prepared For:
Mike Johnson
WILLIAMS FIELD SERVICES

QUOTE: QUO-12840-G1T1

INFORMATION PROVIDED BY WAUKESHA

Engine:	L7042GSI
Horsepower:	1480
RPM:	1200
Compression Ratio:	8.0
Exhaust Flow Rate:	7056 CFM
Exhaust Temperature:	1126 °F
Reference:	6124-63
Fuel:	Natural Gas
Annual Operating Hours:	8760

Uncontrolled Emissions

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	13.00	42.42	185.79
CO:	9.00	29.37	128.62
THC:	2.00	6.53	28.58
NMHC	0.30	0.98	4.29
NMNEHC:	0.15	0.49	2.14
HCHO:	0.05	0.16	0.71
O2:	0.30 %		

POST CATALYST EMISSIONS

	g/bhp-hr	Lb/Hr	Tons/Year
NOx:	<0.80	<2.60	<11.40
CO:	<1.53	<5.00	<21.90
VOC:	<0.08	<0.25	<1.10
HCHO:	<0.01	<0.04	<0.17

CONTROL EQUIPMENT

Catalyst Housing

Model:	ELS-3550-1212F-4CE0-241
Manufacturer:	EMIT Technologies, Inc
Element Size:	Rectangle 24" x 15" x 3.5"
Housing Type:	4 Element Capacity
Catalyst Installation:	Accessible Housing
Construction:	10 gauge Carbon Steel
Sample Ports:	9 (0.5" NPT)
Inlet Connections:	12" Flat Face Flange
Outlet Connections:	12" Flat Face Flange
Configuration:	End In / Side Out
Silencer:	Integrated
Silencer Grade:	Critical
Insertion Loss:	25-30 dBA

Catalyst Element

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Group Metals
Substrate Type:	BRAZED
Manufacturer:	EMIT Technologies, Inc
Element Quantity:	2
Element Size:	Rectangle 24" x 15" x 3.5"

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WARRANTY

EMIT Technologies, Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of two (2) years from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from imprope use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with a HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 1 year from installation, or 8760 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures. In most cases, excluding thermal deactivation, catalyst performance is redeemable by means of proper washing (refer to EMIT Catalyst/Silencer Housing Manual for element wash information, or contact a local EMIT Sales representative).

The exhaust temperature operating range at the converter inlet is a minimum of 600°F for oxidation catalyst and 750 ˚F for NSCR catalyst, and a maximum of 1250°F.

If a properly functioning, high temperature shut down switch is not installed, thermal deactivation of catalyst at sustained temperatures above 1250˚F is not covered. If excessive exposure to over oxygenation of NSCR catalyst occurs due to improperly functioning or non-existent Air/Fuel ratio control, then deactivation of catalyst is not warranted.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent. Standard Oxidation Catalyst conversion efficiencies (% reduction) will be guaranteed for fuel gas containing less than 1.5% mole fraction of non-methane, non-ethane hydrocarbons. Applications where fuel gas exceeds this level will require a Premium Oxidation Catalyst to maintain guaranteed VOC conversion efficiencies.

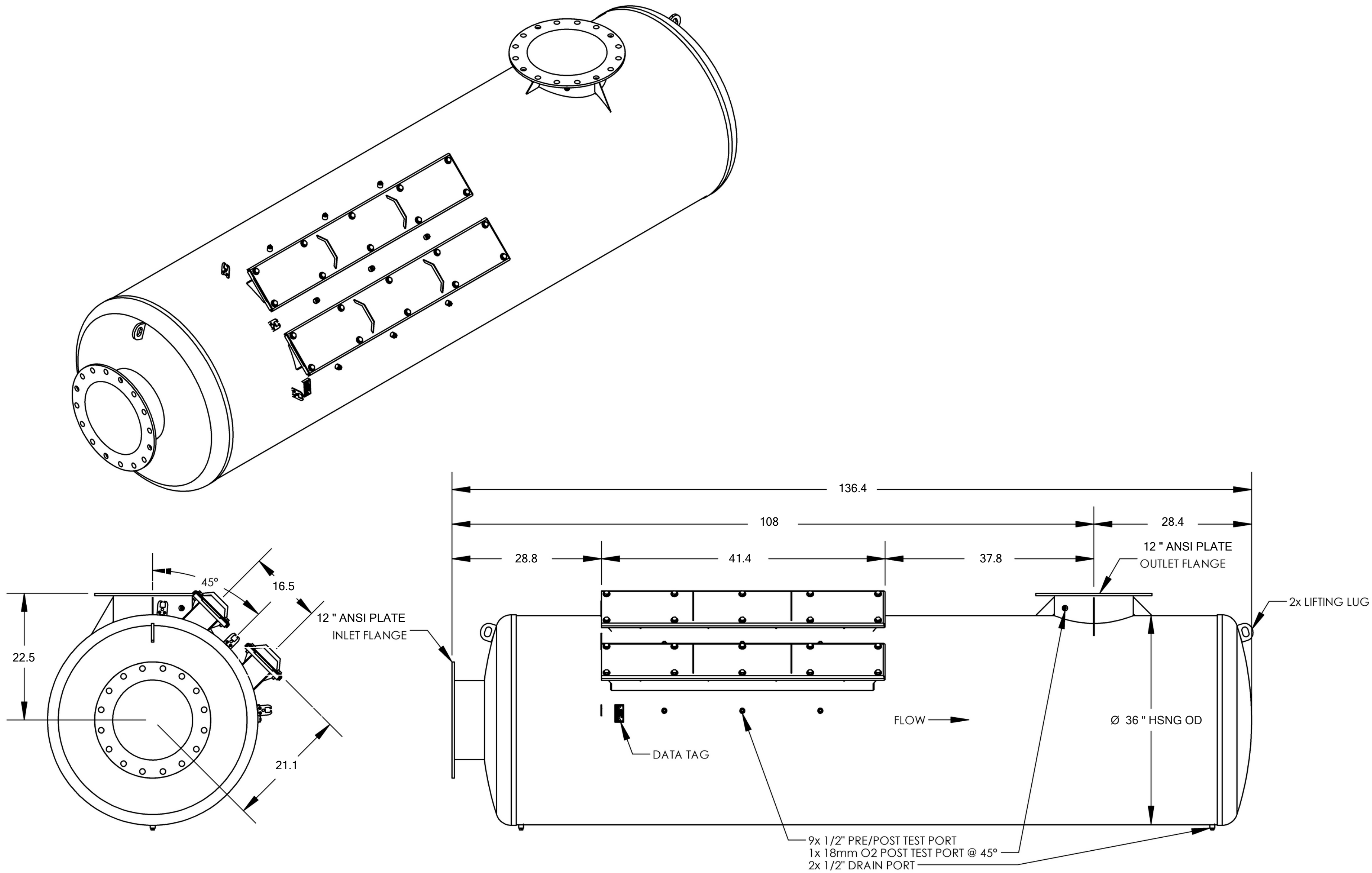
Engine lubrication oil shall contain less than 0.5 wt% Sulfated Ash with a maximum allowable specific oil consumption of 0.7 g/bhp-hr. The catalyst shall be limited to a maximum ash loading of 0.022 lb/ft3. Phosphorous and zinc additives are limited to 0.03 wt%. New or Reconstructed engines must operate for a minimum of 100 hours prior to catalyst installation, otherwise the warranty is void.

The catalyst must not be exposed to the following know poisoning agents, including: antimony, arsenic, chromium, copper, iron, lead, lithium, magnesium, mercury, nickel, phosphorous, potassium, silicon, sodium, sulfur, tin, and zinc. Total poison concentrations in the fuel gas must be limited to 0.25 ppm or less for catalyst to function properly.

Shipment - Promised shipping dates are approximate lead times from the point of manufacture and are not guaranteed. EMIT Technologies, Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies, Inc. shall not be responsible for goods damaged or lost in transit.

Terms: Credit is extended to purchaser for net 30 time period. If payment is not received in the net 30 timeframe, interest on the unpaid balance will accrue at a rate of 1.5% per month from the invoice date.

Order Cancellation Terms: Upon cancellation of an order once submittal of a Purchase Order has occurred, the customer will pay a 25% restocking fee for Catalyst Housings, Catalyst Elements, and Air/Fuel Ratio Controllers; 50% restocking fee for Cooler Top Solutions Exhaust System Accessories, and other Custom Built Products; 100% of all associated shipping costs incurred by EMIT; 100% of all project expenses incurred by EMIT for Field Services.



CASE NUMBER	EJN	CUSTOMER	DO NOT SCALE DRAWING
CHM		ENGINE	DIMENSIONS ARE IN INCHES TWO DECIMAL ± THREE DECIMAL ±
PROPRIETARY AND CONFIDENTIAL THIS DRAWING AND SPECIFICATIONS ARE THE PROPERTY OF EMIT TECHNOLOGIES AND SHALL NOT BE REPRODUCED, DISTRIBUTED, DISCLOSED OR USED FOR MANUFACTURE OR SALE WITHOUT THE PERMISSION OF EMIT TECHNOLOGIES.		COOLER	MATERIAL CARBON STEEL
		LOCATION	DRAWN BY
		SITE NAME	CHECKED BY
		UNIT NUMBER	DATE

NOTES

35.5 IN. CATALYST HOUSING, CRITICAL GRADE SILENCER, 12 & 12 IN. FLANGES.

DIMENSIONS NOT TO SCALE

EMIT TECHNOLOGIES

P.O. Box 6785
Sheridan, WY 82801
Ph. 307-673-0883
Fax 307-675-5977

DESCRIPTION:
ELS-3550-1212F-4CE0-241

SIZE	ITEM NO.	REV.
A		BB

SCALE:1:X	WEIGHT:	SHEET 1 OF 1

AT-GL EMISSION LEVELS ‡

MODEL	CARBURETOR SETTING	GRAMS/BHP-HR				% OBSERVED DRY		MASS AFR (2)	VOLUME AFR (2)	EXCESS AIR RATIO
		NOx (1)	CO	NMHC (4)	THC	CO	O_2			
AT25GL	Standard	1.0	2.25	1.0	8.0	0.06	9.8	28.0:1	16.8:1	1.74
AT27GL	Standard	1.5	1.7	0.5	5.0	0.06	9.8	28.0:1	16.8:1	1.74
	Ultra Lean	1.25	1.5	0.4	3.5	0.05	11.2	32.0:1	19.2:1	2.00

‡ The AT-GL emission levels are based on 900 – 1000 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

VHP EMISSION LEVELS

MODEL	CARBURETOR SETTING	GRAMS/BHP-HR				% OBSERVED DRY		MASS AFR (2)	VOLUME AFR (2)	EXCESS AIR RATIO
		NOx (1)	CO	NMHC (4)	THC	CO	O_2			
G, GSI	Lowest Manifold (Best Power)	8.5	32.0	0.35	2.3	1.15	0.30	15.5:1	9.3:1	0.97
	Equal NOx & CO	12.0	12.0	0.35	2.3	0.45	0.30	15.9:1	9.6:1	0.99
	Catalytic Conv. Input (3-way(3))	13.0	9.0	0.30	2.0	0.38	0.30	15.95:1	9.6:1	0.99
	Standard (Best Economy)	22.0	1.5	0.25	1.5	0.02	1.35	17.0:1	10.2:1	1.06
F3524GSI, L7044GSI	Equal NOx & CO	14.0	14.0	0.25	1.1	0.45	0.30	15.85:1	9.5:1	0.99
	Catalytic Conv. Input (3-way(3))	15.0	13.0	0.20	1.0	0.38	0.30	15.95:1	9.6:1	0.99
	Standard (Best Economy)	23.0	2.0	0.20	0.8	0.02	1.35	17.0:1	10.2:1	1.06
L5794GSI	Equal NOx & CO	13.5	13.5	0.45	3.0	0.45	0.30	15.85:1	9.5:1	0.99
	Catalytic Conv. Input (3-way(3))	14.5	11.0	0.45	2.9	0.38	0.30	15.95:1	9.6:1	0.99
	Standard (Best Economy)	22.0	3.0	0.35	2.4	0.02	1.35	17.0:1	10.2:1	1.06
GL	Standard	1.5	2.65	1.0	5.5	0.06	9.8	28.0:1	16.8:1	1.74
L5774LT#	Standard	2.6	2.0	0.60	4.0	0.04	8.0	24.7:1	14.8:1	1.54
L5794LT#	Standard	2.6	2.0	0.60	4.0	0.04	7.8	24.5:1	14.7:1	1.52

L5774LT and L5794LT emission levels are based on 1000 – 1200 rpm operation. For information at all other speeds contact Waukesha's Sales Engineering Department.

NOTE: The above tables indicate emission levels that are valid for new engines for the duration of the standard warranty period and are attainable by an engine in good operating condition running on commercial quality natural gas of 900 BTU/ft^3 (35.38 MJ/m^3 [25, V(0; 101.325)]) SLHV, Waukesha Knock Index™ of 91 or higher, 93% methane content by volume, and at ISO standard conditions. Emissions are based on standard engine timing at 91 WKI™ with an absolute humidity of 42 grains/lb. Refer to engine specific WKI™ Power & Timing curves for standard timing. Unless otherwise noted these emission levels can be achieved across the continuous duty speed range and from 75% to 110% of the ISO Standard Power (continuous duty) rating. ***Contact your local Waukesha representative or Waukesha's Sales Engineering Department for emission values which can be obtained on a case-by-case basis for specific ratings, fuels, and site conditions.***

Prepared For:
Michael Hannan
Williams

Date: September 19, 2017

APPLICATION INFORMATION

DRIVER

Make:	Waukesha
Model:	F2895GSI
Horsepower:	607
RPM:	1200
Compression Ratio:	8.2
Exhaust Flow Rate:	2829
Exhaust Temperature:	1083
Reference:	N/A
Fuel:	Custom
Annual Operating Hours:	8760

UNCONTROLLED EMISSIONS DATA

	g/bhp-hr	lb/hr	Tons/Year
NO_x:	13.00	17.40	76.20
CO:	9.00	12.04	52.75
THC:	2.00	2.68	11.72
NMHC:	0.30	0.40	1.76
NMNEHC:	N/A	N/A	N/A
HCHO:	0.05	0.07	0.29
Oxygen:	0.30%		

CATALYST ELEMENT

Model:	RT-2415-T
Catalyst Type:	NSCR, Standard Precious Metals Group
Substrate Type:	Brazed
Element Size:	Rectangle, 24" x 15" x 3.5"
Element Quantity:	2

POST CATALYST EMISSIONS DATA

	g/bhp-hr	lb/hr	Tons/Year
NO_x:	< 0.50	0.67	2.93
CO	< 2.00	2.68	11.72
VOC	< 0.20	0.27	1.17

****POST CATALYST EMISSIONS ARE ONLY GUARANTEED FOR CATALYST ELEMENTS SUPPLIED BY EMIT**

WARRANTY

EMIT Technologies,Inc. warrants that the goods supplied will be free from defects in workmanship by EMIT Technologies, Inc. for a period of one (1) year from date of shipment. EMIT Technologies, Inc. will not be responsible for any defects which result from improper use, neglect, failure to properly maintain or which are attributable to defects, errors or omissions in any drawings, specifications, plans or descriptions, whether written or oral, supplied to EMIT Technologies, Inc. by Buyer.

Catalyst performance using an EMIT Air/Fuel ratio controller is dependent upon properly defined set-points, variable with engine and fuel gas composition. Air/fuel ratio controller performance is guaranteed, but not limited, to fuel gas with an HHV content of 1400 BTU/SCF.

Catalyst performance will be guaranteed for a period of 1 year from installation, or 8760 operating hours, whichever comes first. The catalyst shall be operated with an automatic air/fuel ratio controller. The performance guarantee shall not cover the effects of excessive ash masking due to operation at low load, improper engine maintenance, or inappropriate lubrication oil. The performance guarantee shall not cover the effects of continuous engine misfires (cylinder or ignition) exposing the catalyst to excessive exothermic reaction temperatures.

Unless otherwise stated the exhaust temperature operating range at the converter inlet is 600°F minimum for oxidation catalyst and 750°F for NSCR catalyst and 1250°F maximum.

If a high temperature shut down switch is not installed, thermal deactivation of catalyst at temperatures above 1300 °F is not covered.

The catalyst conversion efficiencies (% reduction) will be guaranteed for engine loads of 50 to 100 percent.

Engine lubrication oil shall contain less than 0.6% ash (by weight) with a maximum allowable specific oil consumption of 0.01 gal/bhp-hr. The maximum ash loading on the catalyst shall be limited to 350 g/m3. Phosphorous and zinc additives are limited to 0.03% (by weight).

The catalyst must not be exposed to the following known poisoning agents, including: iron, nickel, sodium, chromium, arsenic, zinc, lead, phosphorous, silicon, potassium, magnesium, copper, tin, and mercury. Total poison concentrations in the gas are limited to 0.3 ppm.

Shipment - Promised shipping dates are approximate and are not guaranteed and are from the point of manufacture. EMIT Technologies,Inc. will not be liable for any loss, damage or delay in manufacture or delivery resulting from any cause beyond its control including, but not limited to a period equal to the time lost by reason of that delay. All products will be crated as per best practice to prevent any damage during shipment. Unless otherwise specified, Buyer will pay for any special packing and shipping requirements. Acceptance of goods by common carrier constitutes delivery to Buyer. EMIT Technologies,Inc. shall not be responsible for goods damaged or lost in transit.

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Order Cancellation Terms: Upon cancellation of an order once submittal of a Purchase Order has occurred, the customer will pay a 25% restocking fee for Catalyst Housings, Catalyst Elements, and Air/Fuel Ratio Controllers; 50% restocking fee for Cooler Top Solutions,Exhaust System Accessories, and other Custom Built Products; 100% of all associated shipping costs incurred by EMIT; 100% of all project expenses incurred by EMIT for Field Services.

HEAT REJECTION AND OPERATING DATA
MODEL F2895GSI
130° F (54° C) INTERCOOLER WATER TEMPERATURE
STOICHIOMETRIC AIR/FUEL RATIO

	BMEP (PSI)	ENGINE SPEED - RPM 600	700	800	900	1000	1100	1200
POWER (BHP)	172	377	440	503	566	628	691	754
	152	334	390	446	501	557	613	668
	138	304	354	405	455	506	557	607
	125	274	320	365	411	457	502	548
	100	219	256	292	329	365	402	438
	75	164	192	219	247	274	301	329
	50	110	128	146	164	183	201	219
BRAKE SPEC FUEL CONS. (BTU/BHP-HR)	172	7285	7336	7386	7447	7507	7609	7711
	152	7419	7468	7516	7574	7632	7734	7836
	138	7538	7584	7631	7687	7743	7845	7947
	125	7677	7722	7766	7820	7873	7976	8078
	100	8036	8075	8113	8161	8208	8311	8414
	75	8634	8663	8692	8729	8767	8870	8973
	50	9830	9839	9849	9866	9884	9988	10092
FUEL CONSUMPTION (BTU/HR x 1000)	172	2745	3230	3715	4215	4720	5265	5815
	152	2480	2915	3350	3800	4250	4745	5235
	138	2290	2690	3090	3505	3920	4370	4825
	125	2105	2470	2840	3215	3595	4010	4430
	100	1760	2065	2370	2685	3000	3345	3690
	75	1420	1665	1905	2155	2405	2675	2950
	50	1078	1259	1439	1625	1805	2010	2215
HEAT TO JACKET WATER (BTU/HR x 1000)	172	854	1007	1160	1304	1447	1570	1695
	152	781	920	1060	1190	1321	1435	1550
	138	729	858	988	1110	1232	1338	1445
	125	678	799	919	1032	1145	1245	1345
	100	585	688	790	887	984	1072	1161
	75	492	577	662	743	823	900	976
	50	399	466	533	598	663	727	791
HEAT TO LUBE OIL (BTU/HR x 1000)	172	101	118	135	151	167	184	200
	152	96	112	127	143	159	174	190
	138	92	107	122	137	152	167	182
	125	88	103	117	132	146	161	175
	100	81	95	108	122	135	148	161
	75	75	87	99	112	124	136	148
	50	68	79	90	101	113	124	134
HEAT TO INTERCOOLER (BTU/HR x 1000)	172	25	38	51	75	99	134	168
	152	16	26	36	52	68	94	120
	138	11	19	27	39	51	72	92
	125	7	14	20	29	37	54	70
	100	1	5	9	14	18	28	38
	75	-4	-1	1	4	7	12	17
	50	-10	-7	-4	-2	0	2	5

HEAT REJECTION AND OPERATING DATA
MODEL F2895GSI
130° F (54° C) INTERCOOLER WATER TEMPERATURE
STOICHIOMETRIC AIR/FUEL RATIO

	BMEP (PSI)	ENGINE SPEED - RPM 600	700	800	900	1000	1100	1200
HEAT TO RADIATION (BTU/HR x 1000)	172	226	236	245	257	269	296	322
	152	206	217	228	244	261	284	308
	138	194	205	217	234	252	275	299
	125	185	196	207	225	243	266	289
	100	171	181	191	207	224	247	271
	75	159	168	177	191	206	227	249
	50	147	155	163	178	192	207	222
TOTAL ENERGY IN EXHAUST (BTU/HR x 1000)	172	632	751	871	1005	1138	1337	1535
	152	535	645	756	883	1010	1181	1351
	138	479	581	683	801	920	1075	1231
	125	431	524	617	726	834	977	1120
	100	352	428	504	591	679	799	920
	75	277	335	393	461	528	623	718
	50	196	237	279	327	375	439	503
EXHAUST TEMP AFTER TURBINE (±50° F)	172	955	977	999	1016	1033	1079	1125
	152	905	934	963	990	1016	1058	1101
	138	876	908	939	969	999	1041	1083
	125	852	884	917	948	979	1022	1065
	100	812	844	876	906	937	983	1029
	75	772	804	835	864	893	939	985
	50	726	759	792	823	855	893	931
INDUCTION AIR FLOW (SCFM)	172	520	615	705	800	895	1000	1105
	152	465	550	630	715	800	895	985
	138	430	505	580	655	735	820	905
	125	395	460	530	600	670	750	825
	100	325	380	440	495	555	620	680
	75	260	305	350	395	440	490	540
	50	195	230	260	295	325	365	400
EXHAUST GAS FLOW (LBS/HR)	172	2375	2795	3210	3645	4080	4555	5030
	152	2130	2500	2875	3265	3650	4075	4500
	138	1955	2300	2640	2995	3350	3735	4125
	125	1790	2100	2415	2735	3060	3410	3765
	100	1485	1740	2000	2265	2525	2820	3110
	75	1185	1390	1590	1800	2005	2235	2465
	50	890	1040	1190	1340	1495	1660	1830

NOTES:

1. *All data are based on standard conditions of 29.54 inches Hg. (100 kPa) barometric pressure, 77° F (25° C) ambient and induction air temperature, 30% relative humidity (0.3 inches Hg. / 1 kPa water vapor pressure) and 180° F (82° C) engine jacket water outlet temperature.*
2. *Data are average values at the standard conditions and will vary for individual engines and with operating and ambient conditions. An adequate reserve should be used for cooling system or heat recovery calculations. See also Cooling System Guidelines S-6699-7.*
3. *For heat rejection changes due to engine jacket water outlet temperature different from standard (Note 1), refer to S-7613-3.*
4. *Exhaust flow (English):* $ACFM = \frac{(\text{Exh. flow, lb/hr}) \times (\text{Exh. temp. °F} + 460°)}{2250}$
5. *Stoichiometric, Lambda = 1.0, air/fuel ratio.*
6. *Reference C-238-8.*

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer **Williams**	Engine Model **MARS 90-12000S** **CS/MD 59F MATCH**
Job ID **El Cedro 12000S**	
Inquiry Number	Fuel Type: **SD NATURAL GAS** Water Injection: **NO**
Run By: **David A Pocengal** Date Run: **24-Feb-14**	Engine Emissions Data **REV. 0.0**

1	11647 HP 100.0% Load	Elev. 6450 ft	Rel. Humidity 60.0%	Temperature 0 Deg. F

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	58.92	47.20	13.52
lbm/MMBtu (Fuel LHV)	0.152	0.122	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	1.55	1.24	0.36
lbm/hr	13.45	10.78	3.09
g/(Hp-hr) (gas turbine shaft pwr)	0.52	0.42	0.12

2	10686 HP 100.0% Load	Elev. 6450 ft	Rel. Humidity 60.0%	Temperature 32.0 Deg. F

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	54.49	43.65	12.50
lbm/MMBtu (Fuel LHV)	0.152	0.122	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	1.56	1.25	0.36
lbm/hr	12.44	9.97	2.85
g/(Hp-hr) (gas turbine shaft pwr)	0.53	0.42	0.12

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer **Williams**	Engine Model **MARS 90-12000S** **CS/MD 59F MATCH**
Job ID **El Cedro 12000S**	
Inquiry Number	Fuel Type: **SD NATURAL GAS** Water Injection: **NO**
Run By: **David A Pocengal** Date Run: **24-Feb-14**	Engine Emissions Data **REV. 0.0**

3	9590 HP 100.0% Load	Elev. 6450 ft	Rel. Humidity 60.0%	Temperature 59.0 Deg. F

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	49.91	39.98	11.45
lbm/MMBtu (Fuel LHV)	0.151	0.121	0.035
lbm/(MW-hr) (gas turbine shaft pwr)	1.59	1.28	0.37
lbm/hr	11.39	9.13	2.61
g/(Hp-hr) (gas turbine shaft pwr)	0.54	0.43	0.12

4	8565 HP 100.0% Load	Elev. 6450 ft	Rel. Humidity 60.0%	Temperature 80.0 Deg. F

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	45.80	36.69	10.51
lbm/MMBtu (Fuel LHV)	0.150	0.120	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	1.64	1.31	0.38
lbm/hr	10.46	8.38	2.40
g/(Hp-hr) (gas turbine shaft pwr)	0.55	0.44	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar’s typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED EMISSION PERFORMANCE

Customer **Williams**	Engine Model **MARS 90-12000S** **CS/MD 59F MATCH**
Job ID **El Cedro 12000S**	
Inquiry Number	Fuel Type: **SD NATURAL GAS** Water Injection: **NO**
Run By: **David A Pocengal** Date Run: **24-Feb-14**	Engine Emissions Data **REV. 0.0**

5	7485 HP 100.0% Load	Elev. 6450 ft	Rel. Humidity 60.0%	Temperature 100.0 Deg. F

	NOx EMISSIONS	CO EMISSIONS	UHC EMISSIONS
PPMvd at 15% O2	38.00	50.00	25.00
ton/yr	41.45	33.20	9.51
lbm/MMBtu (Fuel LHV)	0.147	0.118	0.034
lbm/(MW-hr) (gas turbine shaft pwr)	1.70	1.36	0.39
lbm/hr	9.46	7.58	2.17
g/(Hp-hr) (gas turbine shaft pwr)	0.57	0.46	0.13

Notes

1. For short-term emission limits such as lbs/hr., Solar recommends using "worst case" anticipated operating conditions specific to the application and the site conditions. Worst case for one pollutant is not necessarily the same for another.
2. Solar's typical SoLoNOx warranty, for ppm values, is available for greater than 0 deg F, and between 50% and 100% load for gas fuel, and between 65% and 100% load for liquid fuel (except for the Centaur 40). An emission warranty for non-SoLoNOx equipment is available for greater than 0 deg F and between 80% and 100% load.
3. Fuel must meet Solar standard fuel specification ES 9-98. Emissions are based on the attached fuel composition, or, San Diego natural gas or equivalent.
4. If needed, Solar can provide Product Information Letters to address turbine operation outside typical warranty ranges, as well as non-warranted emissions of SO2, PM10/2.5, VOC, and formaldehyde.
5. Solar can provide factory testing in San Diego to ensure the actual unit(s) meet the above values within the tolerances quoted. Pricing and schedule impact will be provided upon request.
6. Any emissions warranty is applicable only for steady-state conditions and does not apply during start-up, shut-down, malfunction, or transient event.

Solar Turbines
A Caterpillar Company

PREDICTED ENGINE PERFORMANCE

Customer **Williams**	Model **MARS 90-12000S**
	Package Type **CS/MD**
Job ID **El Cedro 12000S**	Match **59F MATCH**
Run By **David A Pocengal** — Date Run **24-Feb-14**	Fuel System **GAS**
Engine Performance Code **REV. 4.11.1.12.6** — Engine Performance Data **REV. 0.1**	Fuel Type **SD NATURAL GAS**

DATA FOR NOMINAL PERFORMANCE

Elevation	feet	6450
Inlet Loss	in H2O	4.0
Exhaust Loss	in H2O	4.0
Accessory on GP Shaft	HP	27.8

		1	2	3	4	5
Engine Inlet Temperature	deg F	0	32.0	59.0	80.0	100.0
Relative Humidity	%	60.0	60.0	60.0	60.0	60.0
Driven Equipment Speed	RPM	9079	8915	8730	8539	8326
Specified Load	HP	FULL	FULL	FULL	FULL	FULL
Net Output Power	HP	11647	10686	9590	8565	7485
Fuel Flow	mmBtu/hr	88.44	81.98	75.48	69.87	64.18
Heat Rate	Btu/HP-hr	7594	7672	7871	8158	8575
Therm Eff	%	33.507	33.167	32.326	31.191	29.673
Engine Exhaust Flow	lbm/hr	264142	249977	233644	218008	200722
PT Exit Temperature	deg F	845	859	878	898	923
Exhaust Temperature	deg F	845	859	878	898	923

Fuel Gas Composition (Volume Percent)

Methane (CH4)	92.79
Ethane (C2H6)	4.16
Propane (C3H8)	0.84
N-Butane (C4H10)	0.18
N-Pentane (C5H12)	0.04
Hexane (C6H14)	0.04
Carbon Dioxide (CO2)	0.44
Hydrogen Sulfide (H2S)	0.0001
Nitrogen (N2)	1.51

Fuel Gas Properties

LHV (Btu/Scf)	939.2	Specific Gravity	0.5970	Wobbe Index at 60F	1215.6

This performance was calculated with a basic inlet and exhaust system. Special equipment such as low noise silencers, special filters, heat recovery systems or cooling devices will affect engine performance. Performance shown is "Expected" performance at the pressure drops stated, not guaranteed.

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor (lb/10^6 scf)	Emission Factor Rating	Emission Factor (lb/10^6 scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from 1b/10^6 scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_X emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_X emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6$ m^3, multiply by 16. To convert from $lb/10^6$ scf to 1b/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6$ scf$]$ = (3.67) (CON) (C)(D), where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2x10^4$ $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2.
Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

Table 3.1-2a. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM STATIONARY GAS TURBINES

Pollutant	Emission Factors[a] - Uncontrolled			
	Natural Gas-Fired Turbines[b]		Distillate Oil-Fired Turbines[d]	
	(lb/MMBtu)[c] (Fuel Input)	Emission Factor Rating	(lb/MMBtu)[e] (Fuel Input)	Emission Factor Rating
CO_2[f]	110	A	157	A
N_2O	0.003[g]	E	ND	NA
Lead	ND	NA	1.4 E-05	C
SO_2	0.94S[h]	B	1.01S[h]	B
Methane	8.6 E-03	C	ND	NA
VOC	2.1 E-03	D	4.1 E-04[j]	E
TOC[k]	1.1 E-02	B	4.0 E-03[l]	C
PM (condensible)	4.7 E-03[l]	C	7.2 E-03[l]	C
PM (filterable)	1.9 E-03[l]	C	4.3 E-03[l]	C
PM (total)	6.6 E-03[l]	C	1.2 E-02[l]	C

[a] Factors are derived from units operating at high loads ($\geq$80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at "www.epa.gov/ttn/chief". ND = No Data, NA = Not Applicable.

[b] SCCs for natural gas-fired turbines include 2-01-002-01, 2-02-002-01 & 03, and 2-03-002-02 & 03.

[c] Emission factors based on an average natural gas heating value (HHV) of 1020 Btu/scf at 60°F. To convert from (lb/MMBtu) to (lb/10^6 scf), multiply by 1020. Similarly, these emission factors can be converted to other natural gas heating values.

[d] SCCs for distillate oil-fired turbines are 2-01-001-01, 2-02-001-01, 2-02-001-03, and 2-03-001-02.

[e] Emission factors based on an average distillate oil heating value of 139 MMBtu/10^3 gallons. To convert from (lb/MMBtu) to (lb/10^3 gallons), multiply by 139.

[f] Based on 99.5% conversion of fuel carbon to CO_2 for natural gas and 99% conversion of fuel carbon to CO_2 for distillate oil. CO_2 (Natural Gas) [lb/MMBtu] = (0.0036 scf/Btu)(%CON)(C)(D), where %CON = weight percent conversion of fuel carbon to CO_2, C = carbon content of fuel by weight, and D = density of fuel. For natural gas, C is assumed at 75%, and D is assumed at 4.1 E+04 lb/10^6scf. For distillate oil, CO_2 (Distillate Oil) [lb/MMBtu] = (26.4 gal/MMBtu) (%CON)(C)(D), where C is assumed at 87%, and the D is assumed at 6.9 lb/gallon.

[g] Emission factor is carried over from the previous revision to AP-42 (Supplement B, October 1996) and is based on limited source tests on a single turbine with water-steam injection (Reference 5).

[h] All sulfur in the fuel is assumed to be converted to SO_2. S = percent sulfur in fuel. Example, if sulfur content in the fuel is 3.4 percent, then S = 3.4. If S is not available, use 3.4 E-03 lb/MMBtu for natural gas turbines, and 3.3 E-02 lb/MMBtu for distillate oil turbines (the equations are more accurate).

[j] VOC emissions are assumed equal to the sum of organic emissions.

[k] Pollutant referenced as THC in the gathered emission tests. It is assumed as TOC, because it is based on EPA Test Method 25A.

[l] Emission factors are based on combustion turbines using water-steam injection.

Table 3.2-2. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE LEAN-BURN ENGINES[a]
(SCC 2-02-002-54)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	4.08 E+00	B
NO_x[c] <90% Load	8.47 E-01	B
CO[c] 90 - 105% Load	3.17 E-01	C
CO[c] <90% Load	5.57 E-01	B
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	1.47 E+00	A
Methane[g]	1.25 E+00	C
VOC[h]	1.18 E-01	C
PM10 (filterable)[i]	7.71 E-05	D
PM2.5 (filterable)[i]	7.71 E-05	D
PM Condensable[j]	9.91 E-03	D
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[k]	<4.00 E-05	E
1,1,2-Trichloroethane[k]	<3.18 E-05	E
1,1-Dichloroethane	<2.36 E-05	E
1,2,3-Trimethylbenzene	2.30 E-05	D
1,2,4-Trimethylbenzene	1.43 E-05	C
1,2-Dichloroethane	<2.36 E-05	E
1,2-Dichloropropane	<2.69 E-05	E
1,3,5-Trimethylbenzene	3.38 E-05	D
1,3-Butadiene[k]	2.67E-04	D
1,3-Dichloropropene[k]	<2.64 E-05	E
2-Methylnaphthalene[k]	3.32 E-05	C
2,2,4-Trimethylpentane[k]	2.50 E-04	C
Acenaphthene[k]	1.25 E-06	C

Table 3.2-3. UNCONTROLLED EMISSION FACTORS FOR 4-STROKE RICH-BURN ENGINES[a]
(SCC 2-02-002-53)

Pollutant	Emission Factor (lb/MMBtu)[b] (fuel input)	Emission Factor Rating
Criteria Pollutants and Greenhouse Gases		
NO_x[c] 90 - 105% Load	2.21 E+00	A
NO_x[c] <90% Load	2.27 E+00	C
CO[c] 90 - 105% Load	3.72 E+00	A
CO[c] <90% Load	3.51 E+00	C
CO_2[d]	1.10 E+02	A
SO_2[e]	5.88 E-04	A
TOC[f]	3.58 E-01	C
Methane[g]	2.30 E-01	C
VOC[h]	2.96 E-02	C
PM10 (filterable)[i,j]	9.50 E-03	E
PM2.5 (filterable)[j]	9.50 E-03	E
PM Condensable[k]	9.91 E-03	E
Trace Organic Compounds		
1,1,2,2-Tetrachloroethane[l]	2.53 E-05	C
1,1,2-Trichloroethane[l]	<1.53 E-05	E
1,1-Dichloroethane	<1.13 E-05	E
1,2-Dichloroethane	<1.13 E-05	E
1,2-Dichloropropane	<1.30 E-05	E
1,3-Butadiene[l]	6.63 E-04	D
1,3-Dichloropropene[l]	<1.27 E-05	E
Acetaldehyde[l,m]	2.79 E-03	C
Acrolein[l,m]	2.63 E-03	C
Benzene[l]	1.58 E-03	B
Butyr/isobutyraldehyde	4.86 E-05	D
Carbon Tetrachloride[l]	<1.77 E-05	E

loading operation, resulting in high levels of vapor generation and loss. If the turbulence is great enough, liquid droplets will be entrained in the vented vapors.

A second method of loading is submerged loading. Two types are the submerged fill pipe method and the bottom loading method. In the submerged fill pipe method, the fill pipe extends almost to the bottom of the cargo tank. In the bottom loading method, a permanent fill pipe is attached to the cargo tank bottom. During most of submerged loading by both methods, the fill pipe opening is below the liquid surface level. Liquid turbulence is controlled significantly during submerged loading, resulting in much lower vapor generation than encountered during splash loading.

The recent loading history of a cargo carrier is just as important a factor in loading losses as the method of loading. If the carrier has carried a nonvolatile liquid such as fuel oil, or has just been cleaned, it will contain vapor-free air. If it has just carried gasoline and has not been vented, the air in the carrier tank will contain volatile organic vapors, which will be expelled during the loading operation along with newly generated vapors.

Cargo carriers are sometimes designated to transport only one product, and in such cases are practicing "dedicated service". Dedicated gasoline cargo tanks return to a loading terminal containing air fully or partially saturated with vapor from the previous load. Cargo tanks may also be "switch loaded" with various products, so that a nonvolatile product being loaded may expel the vapors remaining from a previous load of a volatile product such as gasoline. These circumstances vary with the type of cargo tank and with the ownership of the carrier, the petroleum liquids being transported, geographic location, and season of the year.

One control measure for vapors displaced during liquid loading is called "vapor balance service", in which the cargo tank retrieves the vapors displaced during product unloading at bulk plants or service stations and transports the vapors back to the loading terminal. Figure 5.2-5 shows a tank truck in vapor balance service filling a service station underground tank and taking on displaced gasoline vapors for return to the terminal. A cargo tank returning to a bulk terminal in vapor balance service normally is saturated with organic vapors, and the presence of these vapors at the start of submerged loading of the tanker truck results in greater loading losses than encountered during nonvapor balance, or "normal", service. Vapor balance service is usually not practiced with marine vessels, although some vessels practice emission control by means of vapor transfer within their own cargo tanks during ballasting operations, discussed below.

Emissions from loading petroleum liquid can be estimated (with a probable error of ±30 percent)[4] using the following expression:

$$L_L = 12.46 \frac{SPM}{T} \tag{1}$$

where:

L_L = loading loss, pounds per 1000 gallons ($lb/10^3$ gal) of liquid loaded

S = a saturation factor (see Table 5.2-1)
P = true vapor pressure of liquid loaded, pounds per square inch absolute (psia) (see Figure 7.1-5, Figure 7.1-6, and Table 7.1-2)
M = molecular weight of vapors, pounds per pound-mole (lb/lb-mole) (see Table 7.1-2)
T = temperature of bulk liquid loaded, °R (°F + 460)

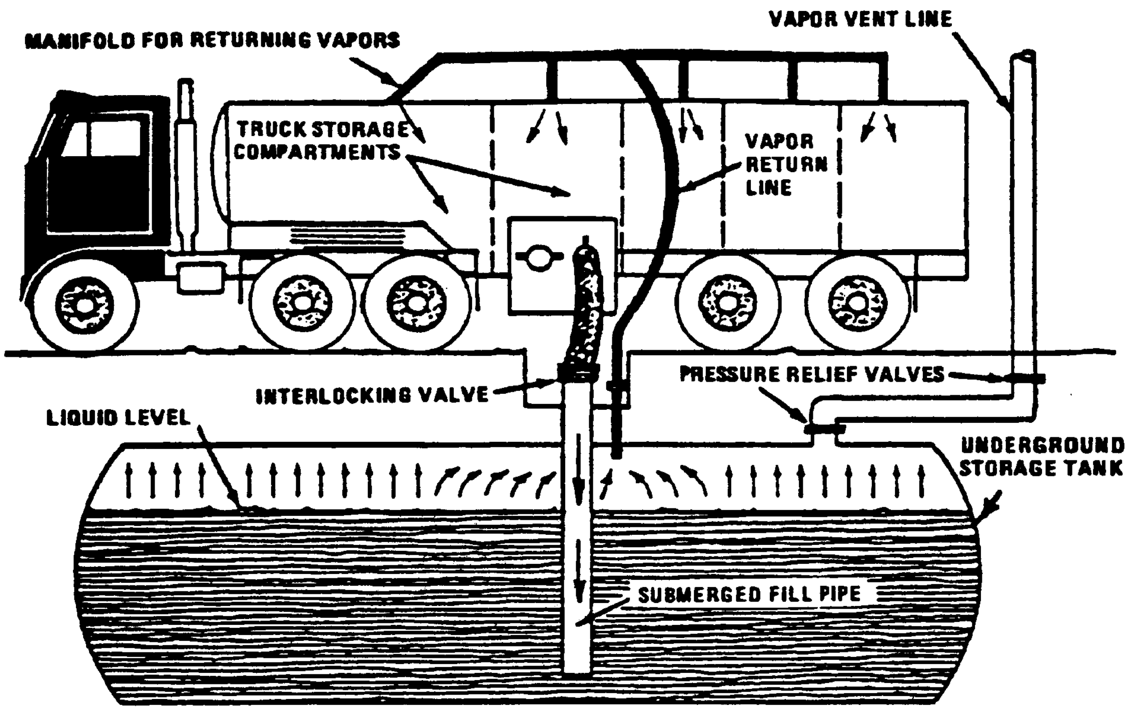

Figure 5.2-5. Tank truck unloading into a service station underground storage tank and practicing "vapor balance" form of emission control.

Table 5.2-1. SATURATION (S) FACTORS FOR CALCULATING PETROLEUM LIQUID LOADING LOSSES

Cargo Carrier	Mode Of Operation	S Factor
Tank trucks and rail tank cars	Submerged loading of a clean cargo tank	0.50
	Submerged loading: dedicated normal service	0.60
	Submerged loading: dedicated vapor balance service	1.00
	Splash loading of a clean cargo tank	1.45
	Splash loading: dedicated normal service	1.45
	Splash loading: dedicated vapor balance service	1.00
Marine vessels[a]	Submerged loading: ships	0.2
	Submerged loading: barges	0.5

[a] For products other than gasoline and crude oil. For marine loading of gasoline, use factors from Table 5.2-2. For marine loading of crude oil, use Equations 2 and 3 and Table 5.2-3.

2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: HM200008
Cust No: 33700-10420

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	Manzanares Inlet
Well Name:	El Cedro Station Manzanares Inlet	Well Flowing:	Y
County/State:	Rio Arriba NM	Pressure:	270 PSIG
Location:		Flow Temp:	45 DEG. F
Lease/PA/CA:		Ambient Temp:	40 DEG. F
Formation:		Flow Rate:	95 MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	02/07/2020
		Sample Time:	11.00 AM
		Sampled By:	Ryan Antonson
Heat Trace:	N	Sampled by (CO):	Harves Mid
Remarks:	Calculated Molecular Weight = 18.7762		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.0566	0.0585	0.0060	0.00	0.0005
CO2	8.9772	9.2850	1.5350	0.00	0.1364
Methane	89.7679	92.8460	15.2500	906.66	0.4972
Ethane	0.9558	0.9886	0.2560	16.92	0.0099
Propane	0.1715	0.1774	0.0470	4.32	0.0026
Iso-Butane	0.0262	0.0271	0.0090	0.85	0.0005
N-Butane	0.0266	0.0275	0.0080	0.87	0.0005
Neopentane 2,2 dmc3	0.0000	0.0000	0.0000	0.00	0.0000
I-Pentane	0.0073	0.0076	0.0030	0.29	0.0002
N-Pentane	0.0056	0.0058	0.0020	0.22	0.0001
Neohexane	0.0000	N/R	0.0000	0.00	0.0000
2-3-Dimethylbutane	0.0001	N/R	0.0000	0.00	0.0000
Cyclopentane	0.0001	N/R	0.0000	0.00	0.0000
2-Methylpentane	0.0005	N/R	0.0000	0.02	0.0000
3-Methylpentane	0.0002	N/R	0.0000	0.01	0.0000
C6	0.0005	0.0054	0.0000	0.02	0.0000
Methylcyclopentane	0.0001	N/R	0.0000	0.00	0.0000
Benzene	0.0002	N/R	0.0000	0.01	0.0000
Cyclohexane	0.0003	N/R	0.0000	0.01	0.0000
2-Methylhexane	0.0001	N/R	0.0000	0.01	0.0000
3-Methylhexane	0.0001	N/R	0.0000	0.01	0.0000
2-2-4-Trimethylpentane	0.0000	N/R	0.0000	0.00	0.0000
i-heptanes	0.0001	N/R	0.0000	0.01	0.0000
Heptane	0.0004	N/R	0.0000	0.02	0.0000

Methylcyclohexane	0.0008	N/R	0.0000	0.04	0.0000
Toluene	0.0006	N/R	0.0000	0.03	0.0000
2-Methylheptane	0.0002	N/R	0.0000	0.01	0.0000
4-Methylheptane	0.0001	N/R	0.0000	0.01	0.0000
i-Octanes	0.0001	N/R	0.0000	0.01	0.0000
Octane	0.0002	N/R	0.0000	0.01	0.0000
Ethylbenzene	0.0000	N/R	0.0000	0.00	0.0000
m, p Xylene	0.0002	N/R	0.0000	0.01	0.0000
o Xylene (& 2,2,4 tmc7)	0.0000	N/R	0.0000	0.00	0.0000
i-C9	0.0001	N/R	0.0000	0.01	0.0000
C9	0.0001	N/R	0.0000	0.01	0.0000
i-C10	0.0000	N/R	0.0000	0.00	0.0000
C10	0.0000	N/R	0.0000	0.00	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	103.429	17.116	930.38	0.6483

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY
**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBLITY FACTOR	(1/Z):	1.0023	CYLINDER #:	1332
BTU/CU.FT IDEAL:		932.5	CYLINDER PRESSURE:	283 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):		934.7	ANALYSIS DATE:	02/12/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):		918.4	ANALYIS TIME:	02:21:07 AM
DRY BTU @ 15.025:		953.4	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:		0.6495		

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.
GPA Standard: GPA 2286-14
GC: SRI Instruments 8610 **Last Cal/Verify: 02/14/2020**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: El Cedro Station Manzanares Inlet Manzanares Inlet 02/14/2020

Stn. No.: 33700-10420

Mtr. No.:

Smpl Date:	02/07/2020
Test Date:	02/12/2020
Run No:	HM200008
Nitrogen:	0.0566
CO2:	8.9772
Methane:	89.7679
Ethane:	0.9558
Propane:	0.1715
I-Butane:	0.0262
N-Butane:	0.0266
2,2 dmc3:	0.0000
I-Pentane:	0.0073
N-Pentane:	0.0056
Neohexane:	0.0000
2-3-	0.0001
Cyclopentane:	0.0001
2-Methylpentane:	0.0005
3-Methylpentane:	0.0002
C6:	0.0005
Methylcyclopentane:	0.0001
Benzene:	0.0002
Cyclohexane:	0.0003
2-Methylhexane:	0.0001
3-Methylhexane:	0.0000
2-2-4-	0.0000
i-heptanes:	0.0001
Heptane:	0.0004
Methylcyclohexane:	0.0008
Toluene:	0.0006
2-Methylheptane:	0.0002
4-Methylheptane:	0.0001
i-Octanes:	0.0001
Octane:	0.0002
Ethylbenzene:	0.0000
m, p Xylene:	0.0002
o Xylene (& 2,2,4	0.0000
i-C9:	0.0001
C9:	0.0001
i-C10:	0.0000
C10:	0.0000
i-C11:	0.0000
C11:	0.0000
C12P:	0.0000
BTU:	934.7
GPM:	17.1180
SPG:	0.6495

GAS ANALYSIS SERVICE
2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: HM200007
Cust No: 33700-10000

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	Inlet Piping
Well Name:	EL CEDRO TRUNK G INLET	Well Flowing:	Y
County/State:	RIO ARRIBA NM	Pressure:	35 PSIG
Location:		Flow Temp:	45 DEG. F
Lease/PA/CA:		Ambient Temp:	40 DEG. F
Formation:		Flow Rate:	40 MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	02/07/2020
		Sample Time:	11.00 AM
		Sampled By:	RYAN ANTONSON
Heat Trace:	N	Sampled by (CO):	HARVEST MID.
Remarks:	Calculated Molecular Weight = 21.6155		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.1786	0.1882	0.0200	0.00	0.0017
CO2	1.4996	1.5806	0.2570	0.00	0.0228
Methane	80.7532	85.1155	13.7400	815.61	0.4473
Ethane	7.4024	7.8023	1.9870	131.00	0.0769
Propane	3.5417	3.7330	0.9790	89.11	0.0539
Iso-Butane	0.7647	0.8060	0.2510	24.87	0.0153
N-Butane	1.0735	1.1315	0.3400	35.02	0.0215
Neopentane 2,2 dmc3	3.5478	3.7394	1.3680	141.37	0.0884
I-Pentane	0.3987	0.4202	0.1460	15.95	0.0099
N-Pentane	0.2746	0.2894	0.1000	11.01	0.0068
Neohexane	0.0028	N/R	0.0010	0.13	0.0001
2-3-Dimethylbutane	0.0032	N/R	0.0010	0.15	0.0001
Cyclopentane	0.0034	N/R	0.0010	0.13	0.0001
2-Methylpentane	0.0217	N/R	0.0090	1.03	0.0006
3-Methylpentane	0.0433	N/R	0.0180	2.06	0.0013
C6	0.1257	0.5959	0.0520	5.98	0.0037
Methylcyclopentane	0.0143	N/R	0.0050	0.64	0.0004
Benzene	0.0165	N/R	0.0050	0.62	0.0004
Cyclohexane	0.0470	N/R	0.0160	2.11	0.0014
2-Methylhexane	0.0197	N/R	0.0090	1.07	0.0007
3-Methylhexane	0.0181	N/R	0.0080	0.99	0.0006
2-2-4-Trimethylpentane	0.0063	N/R	0.0030	0.39	0.0002
i-heptanes	0.0126	N/R	0.0050	0.67	0.0004
Heptane	0.0492	N/R	0.0230	2.71	0.0017

Methylcyclohexane	0.0892	N/R	0.0360	4.65	0.0030
Toluene	0.0312	N/R	0.0100	1.40	0.0010
2-Methylheptane	0.0163	N/R	0.0080	1.01	0.0006
4-Methylheptane	0.0082	N/R	0.0040	0.51	0.0003
i-Octanes	0.0079	N/R	0.0040	0.48	0.0003
Octane	0.0172	N/R	0.0090	1.07	0.0007
Ethylbenzene	0.0006	N/R	0.0000	0.03	0.0000
m, p Xylene	0.0076	N/R	0.0030	0.39	0.0003
o Xylene (& 2,2,4 tmc7)	0.0007	N/R	0.0000	0.04	0.0000
i-C9	0.0011	N/R	0.0010	0.07	0.0000
C9	0.0013	N/R	0.0010	0.09	0.0001
i-C10	0.0002	N/R	0.0000	0.01	0.0000
C10	0.0001	N/R	0.0000	0.01	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	105.402	19.420	1292.37	0.7629

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY
**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBLITY FACTOR (1/Z):	1.0039	CYLINDER #:	1511
BTU/CU.FT IDEAL:	1295.4	CYLINDER PRESSURE:	38 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1300.4	ANALYSIS DATE:	02/12/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1277.8	ANALYIS TIME:	01:25:30 AM
DRY BTU @ 15.025:	1326.4	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:	0.7656		

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.
GPA Standard: GPA 2286-14
GC: SRI Instruments 8610 **Last Cal/Verify: 02/14/2020**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: EL CEDRO TRUNK G INLET   Inlet Piping   02/14/2020

Stn. No.:   33700-10000

Mtr. No.:

Smpl Date:	02/07/2020	08/29/2018
Test Date:	02/12/2020	10/30/2018
Run No:	HM200007	HM180001
Nitrogen:	0.1786	0.1900
CO2:	1.4996	1.4628
Methane:	80.7532	84.3319
Ethane:	7.4024	7.6724
Propane:	3.5417	3.4190
I-Butane:	0.7647	0.7273
N-Butane:	1.0735	0.9448
2,2 dmc3:	3.5478	0.0000
I-Pentane:	0.3987	0.3692
N-Pentane:	0.2746	0.2521
Neohexane:	0.0028	0.0160
2-3-	0.0032	0.0030
Cyclopentane:	0.0034	0.0031
2-Methylpentane:	0.0217	0.0201
3-Methylpentane:	0.0433	0.0447
C6:	0.1257	0.1118
Methylcyclopentane:	0.0143	0.0878
Benzene:	0.0165	0.0169
Cyclohexane:	0.0470	0.0432
2-Methylhexane:	0.0197	0.0177
3-Methylhexane:	0.0000	0.0000
2-2-4-	0.0063	0.0073
i-heptanes:	0.0126	0.0121
Heptane:	0.0492	0.0488
Methylcyclohexane:	0.0892	0.0866
Toluene:	0.0312	0.0319
2-Methylheptane:	0.0163	0.0156
4-Methylheptane:	0.0082	0.0086
i-Octanes:	0.0079	0.0085
Octane:	0.0172	0.0151
Ethylbenzene:	0.0006	0.0007
m, p Xylene:	0.0076	0.0071
o Xylene (& 2,2,4	0.0007	0.0007
i-C9:	0.0011	0.0015
C9:	0.0013	0.0017
i-C10:	0.0002	0.0007
C10:	0.0001	0.0008
i-C11:	0.0000	0.0000
C11:	0.0000	0.0000
C12P:	0.0000	0.0000
BTU:	1300.4	1190.8
GPM:	18.0730	18.6600
SPG:	0.7656	0.6940

2030 Afton Place
Farmington, NM 87401
(505) 325-6622

Analysis No: HM200006
Cust No: 33700-10085

Well/Lease Information

Customer Name:	HARVEST MIDSTREAM	Source:	PIPE RACK
Well Name:	TRUNK L CDP	Well Flowing:	
County/State:		Pressure:	60 PSIG
Location:		Flow Temp:	45 DEG. F
Lease/PA/CA:		Ambient Temp:	31 DEG. F
Formation:		Flow Rate:	40 MCF/D
Cust. Stn. No.:		Sample Method:	Purge & Fill
		Sample Date:	02/06/2020
		Sample Time:	11.00 AM
		Sampled By:	DAN WEYRANCH
Heat Trace:		Sampled by (CO):	HARVEST MID
Remarks:	Calculated Molecular Weight = 20.18		

Analysis

Component:	Mole%:	Unormalized %:	**GPM:	*BTU:	*SP Gravity:
Nitrogen	0.2947	0.2961	0.0330	0.00	0.0029
CO2	1.0334	1.0383	0.1770	0.00	0.0157
Methane	83.3290	83.7266	14.1700	841.62	0.4616
Ethane	8.6116	8.6527	2.3100	152.40	0.0894
Propane	3.6567	3.6741	1.0100	92.00	0.0557
Iso-Butane	0.7113	0.7147	0.2330	23.13	0.0143
N-Butane	1.0062	1.0110	0.3180	32.83	0.0202
Neopentane 2,2 dmc3	0.2224	0.2235	0.0860	8.86	0.0055
I-Pentane	0.3696	0.3714	0.1360	14.79	0.0092
N-Pentane	0.2568	0.2580	0.0930	10.29	0.0064
Neohexane	0.0179	N/R	0.0070	0.85	0.0005
2-3-Dimethylbutane	0.0041	N/R	0.0020	0.19	0.0001
Cyclopentane	0.0042	N/R	0.0010	0.16	0.0001
2-Methylpentane	0.0274	N/R	0.0110	1.30	0.0008
3-Methylpentane	0.0462	N/R	0.0190	2.19	0.0014
C6	0.1085	0.5108	0.0450	5.16	0.0032
Methylcyclopentane	0.0725	N/R	0.0260	3.26	0.0021
Benzene	0.0024	N/R	0.0010	0.09	0.0001
Cyclohexane	0.0361	N/R	0.0120	1.62	0.0010
2-Methylhexane	0.0151	N/R	0.0070	0.82	0.0005
3-Methylhexane	0.0134	N/R	0.0060	0.73	0.0005
2-2-4-Trimethylpentane	0.0038	N/R	0.0020	0.24	0.0001
i-heptanes	0.0103	N/R	0.0040	0.55	0.0004
Heptane	0.0357	N/R	0.0170	1.96	0.0012

Methylcyclohexane	0.0582	N/R	0.0230	3.04	0.0020
Toluene	0.0222	N/R	0.0070	0.99	0.0007
2-Methylheptane	0.0080	N/R	0.0040	0.50	0.0003
4-Methylheptane	0.0044	N/R	0.0020	0.27	0.0002
i-Octanes	0.0032	N/R	0.0020	0.19	0.0001
Octane	0.0081	N/R	0.0040	0.51	0.0003
Ethylbenzene	0.0004	N/R	0.0000	0.02	0.0000
m, p Xylene	0.0034	N/R	0.0010	0.18	0.0001
o Xylene (& 2,2,4 tmc7)	0.0004	N/R	0.0000	0.02	0.0000
i-C9	0.0012	N/R	0.0010	0.08	0.0001
C9	0.0007	N/R	0.0000	0.05	0.0000
i-C10	0.0006	N/R	0.0000	0.04	0.0000
C10	0.0001	N/R	0.0000	0.01	0.0000
i-C11	0.0000	N/R	0.0000	0.00	0.0000
C11	0.0000	N/R	0.0000	0.00	0.0000
C12P	0.0000	N/R	0.0000	0.00	0.0000
Total	100.00	100.477	18.770	1200.95	0.6968

* @ 14.730 PSIA DRY & UNCORRECTED FOR COMPRESSIBILITY
**@ 14.730 PSIA & 60 DEG. F.

COMPRESSIBLITY FACTOR (1/Z):	1.0033	CYLINDER #:	10
BTU/CU.FT IDEAL:	1203.7	CYLINDER PRESSURE:	60 PSIG
BTU/CU.FT (DRY) CORRECTED FOR (1/Z):	1207.7	ANALYSIS DATE:	02/12/2020
BTU/CU.FT (WET) CORRECTED FOR (1/Z):	1186.7	ANALYIS TIME:	11:19:41 AM
DRY BTU @ 15.025:	1231.9	ANALYSIS RUN BY:	PATRICIA KING
REAL SPECIFIC GRAVITY:	0.6988		

GPM, BTU, and SPG calculations as shown above are based on current GPA constants.
GPA Standard: GPA 2286-14
GC: SRI Instruments 8610 **Last Cal/Verify: 02/14/2020**
GC Method: C12+BTEX Gas

HARVEST MIDSTREAM

WELL ANALYSIS COMPARISON

Lease: TRUNK L CDP PIPE RACK 02/14/2020

Stn. No.: 33700-10085

Mtr. No.:

Smpl Date:	02/06/2020	12/26/2018
Test Date:	02/12/2020	12/27/2018
Run No:	HM200006	HM180018
Nitrogen:	0.2947	0.3129
CO2:	1.0334	0.9707
Methane:	83.3290	82.0921
Ethane:	8.6116	9.3910
Propane:	3.6567	4.0670
I-Butane:	0.7113	0.7823
N-Butane:	1.0062	1.1752
2,2 dmc3:	0.2224	0.0087
I-Pentane:	0.3696	0.4143
N-Pentane:	0.2568	0.2944
Neohexane:	0.0179	0.0145
2-3-	0.0041	0.0117
Cyclopentane:	0.0042	0.0122
2-Methylpentane:	0.0274	0.0789
3-Methylpentane:	0.0462	0.0348
C6:	0.1085	0.0930
Methylcyclopentane:	0.0725	0.0673
Benzene:	0.0024	0.0134
Cyclohexane:	0.0361	0.0305
2-Methylhexane:	0.0151	0.0116
3-Methylhexane:	0.0000	0.0000
2-2-4-	0.0038	0.0027
i-heptanes:	0.0103	0.0075
Heptane:	0.0357	0.0255
Methylcyclohexane:	0.0582	0.0440
Toluene:	0.0222	0.0153
2-Methylheptane:	0.0080	0.0051
4-Methylheptane:	0.0044	0.0029
i-Octanes:	0.0032	0.0018
Octane:	0.0081	0.0043
Ethylbenzene:	0.0004	0.0002
m, p Xylene:	0.0034	0.0018
o Xylene (& 2,2,4	0.0004	0.0002
i-C9:	0.0012	0.0004
C9:	0.0007	0.0003
i-C10:	0.0006	0.0001
C10:	0.0001	0.0002
i-C11:	0.0000	0.0000
C11:	0.0000	0.0001
C12P:	0.0000	0.0001
BTU:	1207.7	1220.7
GPM:	18.7070	18.9130
SPG:	0.6988	0.7062

ENERGYPTL, LLC
PRECISION TESTING AND LABORATORY

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro	Sample Pressure (psig)	55
Sample Source	Stabilizer Outlet	Sample Temp. (°F)	40
Sample Type	Spot	Atm Temp. (°F)	29
Meter #	N/A	Sample Date	2/14/2020
Sampled By	CS	Report Date	2/21/2020

ASTM D 6729 - Hydrocarbon PIANO

Oxygenates		**Mol %**	**Vol. %**	**Wt. %**
methanol	X	0.0000	0.0000	0.0000
ethanol	X	0.0000	0.0000	0.0000
Light Fractions (C1-C5)				
nitrogen		0.0196	0.0052	0.0059
carbon dioxide		0.0014	0.0006	0.0006
methane	P	0.2976	0.1214	0.0509
ethane	P	0.1545	0.0995	0.0495
propane	P	0.0944	0.0626	0.0444
iso-butane	I	0.0147	0.0116	0.0091
n-butane	p	0.0323	0.0245	0.0200
cyclopentane	N	0.0026	0.0018	0.0019
iso-pentane	I	0.3179	0.2799	0.2445
n-pentane	p	3.3944	2.9625	2.6108
Hexanes (C6's)				
n-hexane	P	12.5811	12.5524	11.5588
2,2-dimethylbutane	I	0.4716	0.4777	0.4332
2,3-dimethylbutane	I	0.8675	0.8616	0.7970
2-methylpentane	I	4.3108	4.3405	3.9606
3-methylpentane	I	5.7700	5.7135	5.3012
benzene	A	3.2832	2.2259	2.7339
methylcyclopentane	N	5.7077	4.8930	5.1210
cyclohexane	N	7.0112	5.7790	6.2905
1-hexene	O	0.0008	0.0008	0.0008
t-2-hexene	O	0.0018	0.0017	0.0016
2-methyl-2-pentene	O	0.0001	0.0001	0.0001
c-3-methyl-2-pentene	O	0.0005	0.0005	0.0004
c-2-hexene	O	0.0001	0.0001	0.0001
1-methylcyclopentene	O	0.0008	0.0006	0.0007

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro		

ASTM D 6729 - Hydrocarbon PIANO

Heptanes (C7's)		**Mol %**	**Vol. %**	**Wt. %**
n-heptane	P	10.4056	11.6331	11.1154
2,2-dimethylpentane	I	0.0178	0.0202	0.0190
2,4-dimethylpentane	I	0.0934	0.1061	0.0998
2,2,4-trimethylbutane	I	0.0044	0.0049	0.0048
2,2,3-trimethylbutane	I	0.0053	0.0059	0.0057
3,3-dimethylpentane	I	0.0222	0.0245	0.0238
2-methylhexane	I	3.9149	4.4012	4.1819
2,3-dimethylpentane	I	0.2714	0.2934	0.2899
3-methylhexane	I	5.2985	5.8959	5.6599
3-ethylpentane	I	0.0000	0.0000	0.0000
toluene	A	4.9515	4.0147	4.8637
1,1-dimethylcyclopentane	N	0.1023	0.0987	0.1071
1c,3-dimethylcyclopentane	N	0.2091	0.1958	0.2189
1t,3-dimethylcyclopentane	N	0.1602	0.1500	0.1676
1t,2-dimethylcyclopentane	N	0.2447	0.2291	0.2561
methylcyclohexane	N	17.1989	16.7327	18.0034
ethylcyclopentane	N	0.5072	0.5072	0.5309
1-heptene	O	0.0006	0.0006	0.0006
2,4-dimethyl-1-pentene	O	0.0007	0.0008	0.0007
t-3-heptene	O	0.0018	0.0019	0.0019
c-3-heptene	O	0.0004	0.0004	0.0004
t-2-heptene	O	0.0003	0.0003	0.0003
t-3-methyl-2-hexene	O	0.0002	0.0002	0.0002
c-2-heptene	O	0.0013	0.0014	0.0014
Octanes (C8's)				
n-octane	P	4.2085	5.2173	5.1250
3-methylheptane	I	1.8284	2.2603	2.2266
2,3,3-trimethylpentane	I	0.0489	0.0609	0.0596
3,3-dimethylhexane	I	0.0169	0.0205	0.0206
2,3-dimethylhexane	I	0.2046	0.2548	0.2492
2,2,3-trimethylpentane	I	0.1068	0.1345	0.1300
2,4-dimethylhexane & 2,5 dimethylhexane	I	0.2224	0.2765	0.2709

Client | Gas Analysis Services | 9753-2020021912.1
Sample Id. | El Cedro

ASTM D 6729 - Hydrocarbon PIANO

C8's (Continued)		Mol %	Vol. %	Wt. %
2-methylheptane & 4-methylheptane	I	2.2511	2.8106	2.7413
3-methyl-3-ethylpentane & 3,4-dimethylhexane	I	0.2669	0.3235	0.3251
2,2,4-trimethylpentane (isooctane)	I	0.0814	0.1027	0.0991
ethylbenzene	A	0.0089	0.0083	0.0101
m+p-xylene	A	0.0712	0.0667	0.0806
o-xylene	A	0.0311	0.0287	0.0352
1c,3-dimethylcyclohexane	N	0.0249	0.0267	0.0298
1c,2t,4-trimethylcyclopentane	N	0.1112	0.1190	0.1330
1t,2c,3-trimethylcyclopentane	N	0.0623	0.0666	0.0745
1,1,3-trimethylcyclopentane	N	0.0356	0.0381	0.0426
1c,2t,3-trimethylcyclopentane	N	0.0756	0.0809	0.0905
1t,4-dimethylcyclohexane	N	0.0489	0.0535	0.0585
1,1-dimethylcyclohexane	N	0.0623	0.0686	0.0745
3c-ethylmethylcyclopentane	N	0.0093	0.0107	0.0112
2t-ethylmethylcyclopentane & 3t-ethylmethylcyclopentane	N	0.0133	0.0153	0.0160
1,1-methylethylcyclopentane	N	0.0667	0.0763	0.0798
1t,2-dimethylcyclohexane	N	0.1246	0.1340	0.1490
isopropylcyclopentane	N	0.0098	0.0108	0.0117
1c,2-dimethylcyclohexane	N	0.0258	0.0278	0.0309
n-propylcyclopentane	N	0.1646	0.1690	0.1969
2-methyl-3-ethylpentane	O	0.0011	0.0013	0.0013
2-ethylhexene-1	O	0.0000	0.0000	0.0000
1-octene	O	0.0004	0.0005	0.0005
Ungrouped C8's	U	0.1157	0.1338	0.1392

Client	Gas Analysis Services	9753-2020021912.1	
Sample Id.	El Cedro		

Nonanes (C9's)		**Mol %**	**Vol. %**	**Wt. %**
n-nonane	P	0.5783	0.7758	0.7783
2,2,3-trimethylhexane	I	0.0267	0.0365	0.0365
2,4-dimethylheptane	I	0.0400	0.0560	0.0547
4,4-dimethylheptane	I	0.1112	0.1555	0.1521
2,5-dimethylheptane	I	0.1246	0.1741	0.1703
3,5-dimethylheptane	I	0.0245	0.0342	0.0335
2,6-dimethylheptane	I	0.0178	0.0249	0.0243
2,3-dimethylheptane	I	0.1112	0.1555	0.1521
3,4-dimethylheptane	I	0.0311	0.0435	0.0426
2-methyloctane & 4-methyloctane	I	0.3426	0.4694	0.4684
3-methyloctane	I	0.1691	0.2317	0.2311
3-ethylheptane	I	0.0036	0.0050	0.0049
isopropylbenzene	A	0.0067	0.0071	0.0086
n-propylbenzene	A	0.0032	0.0034	0.0040
m-ethyltoluene	A	0.0005	0.0006	0.0007
p-ethyltoluene	A	0.0002	0.0002	0.0002
1,3,5-trimethylbenzene	A	0.0008	0.0008	0.0010
o-ethyltoluene	A	0.0005	0.0006	0.0007
1,2,4-trimethylbenzene	A	0.0019	0.0020	0.0025
1,2,3-trimethylbenzene	A	0.0002	0.0002	0.0002
2,3-dihydroindene	A	0.0008	0.0007	0.0010
1,1,2-trimethylcyclohexane	N	0.0048	0.0058	0.0065
isobutylcyclopentane	N	0.0030	0.0036	0.0040
1,1,4-trimethylcyclohexane	N	0.0356	0.0428	0.0479
isopropylcyclohexane	N	0.0111	0.0134	0.0150
n-butylcyclopentane	N	0.0667	0.0803	0.0898
1c,2t,3c-trimethylcyclohexane	N	0.0160	0.0193	0.0216
1,1,3-trimethylcyclohexane	N	0.0036	0.0043	0.0048
1c,2t,4t-trimethylcyclohexane	N	0.0147	0.0177	0.0198
1c,3c,5c-trimethylcyclohexane	N	0.0125	0.0150	0.0168
c-nonene-2 & t-nonene-2	O	0.0012	0.0015	0.0016
t-nonene-2	O	0.0012	0.0016	0.0016
t-3-nonene & c-3-nonene	O	0.0000	0.0000	0.0000
Ungrouped C9's	U	0.0044	0.0056	0.0059

Client	Gas Analysis Services	9753-2020021912.1
Sample Id.	El Cedro	

ASTM D 6729 - Hydrocarbon PIANO

Decanes (C10's)		**Mol %**	**Vol. %**	**Wt. %**
n-decane	P	0.0934	0.1389	0.1417
2,4-dimethyloctane	I	0.0018	0.0028	0.0027
2,2-dimethyloctane	I	0.0031	0.0048	0.0047
2,5-dimethyloctane & 2,6-dimethyloctane	I	0.0338	0.0524	0.0513
3,3-dimethyloctane	I	0.0018	0.0028	0.0027
3,6-dimethyloctane	I	0.0005	0.0008	0.0007
3-methyl-5-ethylheptane	I	0.0006	0.0008	0.0009
4-methylnonane & 5-methylnonane	I	0.0017	0.0027	0.0026
2-methylnonane	I	0.0041	0.0064	0.0063
3-methylnonane	I	0.0007	0.0010	0.0010
3-ethyloctane	I	0.0002	0.0003	0.0003
tert-butylbenzene	A	0.0005	0.0006	0.0008
isobutylbenzene	A	0.0009	0.0011	0.0013
sec-butylbenzene	A	0.0003	0.0004	0.0004
1,3-methyl-i-propylbenzene	A	0.0004	0.0005	0.0006
1,2-methyl-i-propylbenzene	A	0.0001	0.0001	0.0001
1,3-diethylbenzene	A	0.0002	0.0003	0.0003
1,3-methyl-n-propylbenzene	A	0.0004	0.0004	0.0005
1,4-diethylbenzene	A	0.0008	0.0010	0.0011
1,4-methyl-n-propylbenzene	A	0.0003	0.0003	0.0004
1,3-dimethyl-5-ethylbenzene	A	0.0006	0.0007	0.0009
1,2-diethylbenzene & n-butylbenzene	A	0.0010	0.0012	0.0015
1,2-methyl-n-propylbenzene	A	0.0006	0.0007	0.0009
1,4-dimethyl-2-ethylbenzene	A	0.0002	0.0002	0.0002
1,2-dimethyl-3-ethylbenzene	A	0.0002	0.0002	0.0002
1,2,4,5-tetramethylbenzene	A	0.0004	0.0005	0.0006
1,2,3,5-tetramethylbenzene	A	0.0000	0.0000	0.0000
5-methylindan	A	0.0010	0.0011	0.0014
4-methylindan	A	0.0004	0.0005	0.0006
2-methyllindan	A	0.0002	0.0002	0.0003
tetrahydronaphthalene	A	0.0001	0.0001	0.0002

Client	Gas Analysis Services	9753-2020021912.1		
Sample Id.	El Cedro			

C10's Continued		Mol %	Vol. %	Wt. %
isobutylcyclohexane & t-butylcyclohexane	N	0.0005	0.0007	0.0007
1t-methyl-2-n-propylcyclohexane	N	0.0002	0.0003	0.0004
sec-butylcyclohexane	N	0.0003	0.0004	0.0004
n-butylcyclohexane	N	0.0001	0.0002	0.0002
2,3-dimethyloctene-2	O	0.0001	0.0002	0.0002
Ungrouped C10's	U	0.0007	0.0010	0.0011
Undecanes & Dodecanes (C11's & C12's)				
n-undecane	P	0.0012	0.0019	0.0019
1,4-methyl-t-butylbenzene	A	0.0001	0.0001	0.0002
1,2-ethyl-i-propylbenzene	A	0.0001	0.0001	0.0001
1,2-methyl-t-butylbenzene	A	0.0004	0.0005	0.0007
1,2-ethyl-n-propylbenzene	A	0.0001	0.0001	0.0001
1,3-methyl-n-butylbenzene	A	0.0003	0.0004	0.0005
sec-pentlybenzene	A	0.0005	0.0007	0.0008
n-pentylbenzene	A	0.0004	0.0005	0.0007
1,3-di-i-propylbenzene	A	0.0002	0.0003	0.0004
1,2-di-i-propylbenzene & 1,4-di-i-propylbenzene	A	0.0003	0.0004	0.0004
1,4-ethyl-t-butylbenzene & 1-t-butyl-3,5-dimethylbenzene	A	0.0001	0.0002	0.0002
1,3-di-n-propylbenzene	A	0.0006	0.0008	0.0010
dodecene-1	O	0.0002	0.0004	0.0004
C12+	U	0.0245	0.0445	0.0553
TOTAL		100.0000	100.0000	100.0000

SCF/Gal (C1-C5 Vapor)	1.0453
Specific Gravity	0.7156
Molecular Weight	93.8018
Vapor Pressure (psia)	18.61
Specific Gravity (C10+ Fraction)	0.7554
Molecular Weight (C10+ Fraction)	151.5734

Client	Gas Analysis Services	9753-2020021912.1			
Sample Id.	El Cedro				

PIANO

Whole Composition		**Mol %**	**Vol. %**	**Wt. %**
Oxygenates	X	0.0000	0.0000	0.0000
Paraffins	P	31.8414	33.5899	31.4969
Iso-Paraffins	I	27.4586	30.1424	28.5964
Aromatics	A	8.3723	6.3740	7.7598
Naphthenes	N	32.1480	29.6882	31.9243
Olefins	O	0.0136	0.0149	0.0148
Ungrouped	U	0.1453	0.1848	0.2015

PIANO

Less Unclassified Hydrocarbons				
Oxygenates	X	0.0000	0.0000	0.0000
Paraffins	P	31.8944	33.6540	31.5625
Iso-Paraffins	I	27.5043	30.1999	28.6560
Aromatics	A	8.3862	6.3862	7.7759
Naphthenes	N	32.2015	29.7449	31.9908
Olefins	O	0.0136	0.0150	0.0148

BTEX summary				
benzene	A	3.2832	2.2259	2.7339
toluene	A	4.9515	4.0147	4.8637
ethylbenzene	A	0.0089	0.0083	0.0101
m+p-xylene	A	0.0712	0.0667	0.0806
o-xylene	A	0.0311	0.0287	0.0352

Composition Summary			
Oxygenates	0.0000	0.0000	0.0000
Light Fractions (C1-C5)	4.3294	3.5697	3.0377
Hexanes (C6's)	40.0072	36.8475	36.1999
Heptanes (C7's)	43.4126	44.3191	45.5534
Octanes (C8's)	10.2995	12.5980	12.5133
Nonanes (C9's)	1.7701	2.3882	2.4027
Decanes (C10's)	0.1523	0.2267	0.2302
Undecanes & Dodecanes (C11's & C12's)	0.0290	0.0509	0.0628

ENERGYPTL, LLC
PRECISION TESTING AND LABORATORY

Client	Gas Analysis Services	9753-2020021912.1
Sample Id.	El Cedro	

Composition Summary Cont.	**Mol %**	**Vol. %**	**Wt. %**
Nitrogen (N2)	0.0196	0.0052	0.0059
Methane (CH4)	0.2976	0.1214	0.0509
Carbon Dioxide (CO2)	0.0014	0.0006	0.0006
Ethane (C2H6)	0.1545	0.0995	0.0495
Propane (C3H8)	0.0944	0.0626	0.0444
Iso Butane (C4H10)	0.0147	0.0116	0.0091
N Butane (C4H10)	0.0323	0.0245	0.0200
Iso Pentane (C5H12)	0.3179	0.2799	0.2445
N Pentane (C5H12)	3.3944	2.9625	2.6108
Hexanes	24.1455	22.0710	21.9091
n-hexane	12.5811	12.5524	11.5588
2,2,4 trimethylpentane	0.0814	0.1027	0.0991
benzene	3.2832	2.2259	2.7339
Heptanes	38.4612	40.3044	40.6897
toluene	4.9515	4.0147	4.8637
Octanes	10.1068	12.3916	12.2883
ethylbenzene	0.0089	0.0083	0.0101
xylenes	0.1023	0.0954	0.1158
Nonanes	1.7701	2.3882	2.4027
Decanes+	0.1813	0.2776	0.2930
TOTAL	100.0000	100.0000	100.0000

Physical Properties Calculated	**Sample**	**C10+ Fraction**
Specific Gravity (60°F)	0.7156	0.7554
API Gravity (60°F)	66.22	55.83
Molecular Weight	93.8018	151.5734
lbs/gal (vacuum)	5.9724	6.3038
lbs/gal (air)	5.9664	6.2975
SCF/gal (Vapor)	22.6628	15.0873

Pressure Base - 14.696

Color Visual	Prime White
Shrink Factor	0.9878
Flash Factor (cf/brl)	19.60

Client	Gas Analysis Services	9753-2020021912.1
Sample Id.	El Cedro	

Emmision Report

	Uncontroll	Controlled
	Tons/yr	Tons/yr
H2S	0.0000	0.0000
O2	0.0000	0.0000
CO2	0.0130	0.0130
N2	0.8570	0.8570
C1	2.4640	0.1232
C2	0.4240	0.0212
C3	0.1090	0.0055
iC4	0.0090	0.0004
nC4	0.0140	0.0007
iC5	0.0620	0.0031
NC5	0.4940	0.0247
C6	1.2690	0.0635
Benzene	0.1270	0.0063
Toluene	0.0640	0.0032
E-Benzene	0.0000	0.0000
Xylenes	0.0000	0.0000
N-C6	0.6710	0.0336
2,2,4 TMP	0.0020	0.0001
TOTAL VOCs	5.71	0.2855
TOTAL	6.58	1.1555

TABLE 2-4. OIL AND GAS PRODUCTION OPERATIONS AVERAGE EMISSION FACTORS (kg/hr/source)

Equipment Type	Service[a]	Emission Factor (kg/hr/source)[b]
Valves	Gas	4.5E-03
	Heavy Oil	8.4E-06
	Light Oil	2.5E-03
	Water/Oil	9.8E-05
Pump seals	Gas	2.4E-03
	Heavy Oil	NA
	Light Oil	1.3E-02
	Water/Oil	2.4E-05
Others[c]	Gas	8.8E-03
	Heavy Oil	3.2E-05
	Light Oil	7.5E-03
	Water/Oil	1.4E-02
Connectors	Gas	2.0E-04
	Heavy Oil	7.5E-06
	Light Oil	2.1E-04
	Water/Oil	1.1E-04
Flanges	Gas	3.9E-04
	Heavy Oil	3.9E-07
	Light Oil	1.1E-04
	Water/Oil	2.9E-06
Open-ended lines	Gas	2.0E-03
	Heavy Oil	1.4E-04
	Light Oil	1.4E-03
	Water/Oil	2.5E-04

[a]Water/Oil emission factors apply to water streams in oil service with a water content greater than 50%, from the point of origin to the point where the water content reaches 99%. For water streams with a water content greater than 99%, the emission rate is considered negligible.

[b]These factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities. "NA" indicates that not enough data were available to develop the indicated emission factor.

[c]The "other" equipment type was derived from compressors, diaphrams, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods, relief valves, and vents. This "other" equipment type should be applied for any equipment type other than connectors, flanges, open-ended lines, pumps, or valves.

PS Memo 09-02

To: **Stationary Sources Program, Local Agencies, and Regulated Community**

From: **Chris Laplante and Roland C. Hea, Colorado Air Pollution Control Division**

Date: **February 8, 2010**

Subject: **Oil & Gas Produced Water Tank Batteries**
Regulatory Definitions and Permitting Guidance

This guidance document is intended to answer frequently asked questions concerning oil and gas industry produced water tank batteries. This document does not address any other equipment types that may be part of a common facility with a tank battery. Nothing in this guidance should be construed regarding Air Pollution Control Division (Division) permitting of evaporation ponds or water treatment facilities. Please consult with the Division for information regarding the permitting of evaporation ponds or water treatment facilities.

Revision History

October 1, 2009	Initial issuance.
February 8, 2010	First revision. This guidance document replaces the October 1, 2009 version. Revised language to clarify APEN fee structure, definition of modification, APEN submittals, and produced water exemption.

Topic — Page

3. EMISSION FACTORS AND SITE SPECIFIC SAMPLING Q&A

3.1. ***What are the State approved default emission factors for produced water tanks?***

County	Produced Water Tank Default Emission Factors[1] (lb/bbl)[2]		
	VOC	**Benzene**	**n-Hexane**
Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer, & Weld	0.262	0.007	0.022
Garfield, Mesa, Rio Blanco, & Moffat	0.178	0.004	0.010
Remainder of Colorado[3]	0.262	0.007	0.022

[1] Testing may be performed at any site to determine site-specific emissions factors. These default emission factors may be revised by the Division in the future, pending approved data and testing results.

[2] Units of lb/bbl means pounds of emissions per barrel of produced water throughput

[3] For counties not listed in this table, use the emissions factors listed as a conservative measure or perform testing to determine a site-specific emission factor

3.2. ***What type of emissions are included in the produced water tank state default emission factors?***

State default emission factors for produced water tanks include flash, working, and breathing losses.

3.3. ***Are there limits as to when produced water tank state default emission factors may be used?***

State default emission factors may be used at all oil and gas industry tank batteries. The Division intends to work with industry to refine emission factors and may develop separate emission factors for E&P and non-E&P sites.

3.4. ***When are site-specific emission factors required for tank batteries?***

Site-specific emission factors may be developed and used on a voluntary basis for any tank battery. The Division reserves the authority to require site-specific emission factors at any time. Site-specific emission factors may only be applied at the tank battery for which they were developed, unless otherwise approved by the Division.

3.5. ***How is a site-specific emission factor developed?***

A site-specific emission factor for tank batteries is developed by performing a Division approved stack test. A test protocol must be submitted and approved by the Division prior to performing the test. Once a test protocol has been approved by the Division, subsequent testing may be performed following the approved protocol without submittal to the Division.

The Division must be notified of the site specific testing at least 30-days prior to the actual test date.

Emission Factor Determination for Produced Water Storage Tanks

TCEQ Project 2010-29

Prepared for:
Texas Commission on Environmental Quality
Austin, Texas

Prepared by:
ENVIRON International Corporation
Novato, California

Date:
August 2010

ENVIRON Project Number:
06-17477T

Executive Summary

The overall purpose of this Study is to evaluate volatile organic compounds (VOC), speciated VOC and hazardous air pollutant (HAP) emissions from produced water and/or saltwater storage tanks servicing oil and gas wells and to develop appropriate VOC and HAP emission factors. The emission factors are to be used for emission inventory development purposes.

The primary source of information for this study was testing conducted by the Texas Commission on Environmental Quality (TCEQ) under Work Order 522-7-84005-FY10-25, *Upstream Oil & Gas Tank Measurements*, TCEQ Project 2010-39. As part of this referenced testing project, pressurized produced water samples were taken at seven different tank batteries located in Johnson, Wise and Tarrant Counties, Texas (all part of the Eastern Barnett Shale region) and analyzed for flash gas volume and composition. The sample collection and analysis conducted as part of TCEQ Project 2010-39 was done according to strict sampling and quality assurance procedures. In addition to TCEQ Project 2010-39 data, a thorough review of publically-available information sources identified a limited amount of data on produced water emissions. This was supplemented by data provided by two natural gas producers and one petroleum engineering services company. Other than TCEQ Project 2010-39 data, however, it could not be confirmed that any of the data had undergone a rigorous quality assurance process and therefore is considered secondary data, used to support conclusions drawn using the primary data but not used directly in deriving the produced water emission factors.

Emissions from produced water storage tanks consist of flash emissions, working losses and breathing losses. Flash emissions are determined using flash gas analysis. Working and breathing losses are estimated using EPA TANKS 4.09d software. Using this approach and the assumptions detailed within this report, it is determined that working and breathing losses associated with primary data source sites are very small compared to flash emissions and can be ignored without affecting the overall emission factor determination.

Table ES-1 presents the recommended emission factors for VOC and four HAPs – benzene, toluene, ethylbenzene and xylenes – derived from the primary data source sites. For comparative purposes, average emissions from Texas and non-Texas secondary sites are also presented in Table ES-1.

Table ES-1. Recommended Emission Factors and Comparative Data

Pollutant	Average Produced Water Emission Factor by Data Set (lb/bbl)		
	Recommended Emission Factor	Secondary Data – Texas	Secondary Data – Non-Texas
VOC	0.01	0.012	0.18
Benzene	0.0001	0.0012	0.004
Toluene	0.0003	0.0012	0.009
Ethylbenzene	0.000006	0.0001	0.0007
Xylenes	0.00006	0.0003	0.006

Table A-1 to Subpart A of Part 98—Global Warming Potentials

GLOBAL WARMING POTENTIALS

[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Carbon dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	[a]25
Nitrous oxide	10024-97-2	N_2O	[a]298
HFC-23	75-46-7	CHF_3	[a]14,800
HFC-32	75-10-5	CH_2F_2	[a]675
HFC-41	593-53-3	CH_3F	[a]92
HFC-125	354-33-6	C_2HF_5	[a]3,500
HFC-134	359-35-3	$C_2H_2F_4$	[a]1,100
HFC-134a	811-97-2	CH_2FCF_3	[a]1,430
HFC-143	430-66-0	$C_2H_3F_3$	[a]353
HFC-143a	420-46-2	$C_2H_3F_3$	[a]4,470
HFC-152	624-72-6	CH_2FCH_2F	53
HFC-152a	75-37-6	CH_3CHF_2	[a]124
HFC-161	353-36-6	CH_3CH_2F	12
HFC-227ea	431-89-0	C_3HF_7	[a]3,220
HFC-236cb	677-56-5	$CH_2FCF_2CF_3$	1,340
HFC-236ea	431-63-0	CHF_2CHFCF_3	1,370
HFC-236fa	690-39-1	$C_3H_2F_6$	[a]9,810
HFC-245ca	679-86-7	$C_3H_3F_5$	[a]693
HFC-245fa	460-73-1	$CHF_2CH_2CF_3$	1,030
HFC-365mfc	406-58-6	$CH_3CF_2CH_2CF_3$	794
HFC-43-10mee	138495-42-8	$CF_3CFHCFHCF_2CF_3$	[a]1,640
Sulfur hexafluoride	2551-62-4	SF_6	[a]22,800
Trifluoromethyl sulphur pentafluoride	373-80-8	SF_5CF_3	17,700
Nitrogen trifluoride	7783-54-2	NF_3	17,200
PFC-14 (Perfluoromethane)	75-73-0	CF_4	[a]7,390
PFC-116 (Perfluoroethane)	76-16-4	C_2F_6	[a]12,200
PFC-218 (Perfluoropropane)	76-19-7	C_3F_8	[a]8,830
Perfluorocyclopropane	931-91-9	$C\text{-}C_3F_6$	17,340
PFC-3-1-10 (Perfluorobutane)	355-25-9	C_4F_{10}	[a]8,860
PFC-318 (Perfluorocyclobutane)	115-25-3	$C\text{-}C_4F_8$	[a]10,300
PFC-4-1-12 (Perfluoropentane)	678-26-2	C_5F_{12}	[a]9,160
PFC-5-1-14 (Perfluorohexane, FC-72)	355-42-0	C_6F_{14}	[a]9,300
PFC-9-1-18	306-94-5	$C_{10}F_{18}$	7,500
HCFE-235da2 (Isoflurane)	26675-46-7	$CHF_2OCHClCF_3$	350
HFE-43-10pccc (H-Galden 1040x, HG-11)	E1730133	$CHF_2OCF_2OC_2F_4OCHF_2$	1,870

HFE-125	3822-68-2	CHF_2OCF_3	14,900
HFE-134 (HG-00)	1691-17-4	CHF_2OCHF_2	6,320
HFE-143a	421-14-7	CH_3OCF_3	756
HFE-227ea	2356-62-9	$CF_3CHFOCF_3$	1,540
HFE-236ca12 (HG-10)	78522-47-1	$CHF_2OCF_2OCHF_2$	2,800
HFE-236ea2 (Desflurane)	57041-67-5	$CHF_2OCHFCF_3$	989
HFE-236fa	20193-67-3	$CF_3CH_2OCF_3$	487
HFE-245cb2	22410-44-2	$CH_3OCF_2CF_3$	708
HFE-245fa1	84011-15-4	$CHF_2CH_2OCF_3$	286
HFE-245fa2	1885-48-9	$CHF_2OCH_2CF_3$	659
HFE-254cb2	425-88-7	$CH_3OCF_2CHF_2$	359
HFE-263fb2	460-43-5	$CF_3CH_2OCH_3$	11
HFE-329mcc2	134769-21-4	$CF_3CF_2OCF_2CHF_2$	919
HFE-338mcf2	156053-88-2	$CF_3CF_2OCH_2CF_3$	552
HFE-338pcc13 (HG-01)	188690-78-0	$CHF_2OCF_2CF_2OCHF_2$	1,500
HFE-347mcc3 (HFE-7000)	375-03-1	$CH_3OCF_2CF_2CF_3$	575
HFE-347mcf2	171182-95-9	$CF_3CF_2OCH_2CHF_2$	374
HFE-347pcf2	406-78-0	$CHF_2CF_2OCH_2CF_3$	580
HFE-356mec3	382-34-3	$CH_3OCF_2CHFCF_3$	101
HFE-356pcc3	160620-20-2	$CH_3OCF_2CF_2CHF_2$	110
HFE-356pcf2	50807-77-7	$CHF_2CH_2OCF_2CHF_2$	265
HFE-356pcf3	35042-99-0	$CHF_2OCH_2CF_2CHF_2$	502
HFE-365mcf3	378-16-5	$CF_3CF_2CH_2OCH_3$	11
HFE-374pc2	512-51-6	$CH_3CH_2OCF_2CHF_2$	557
HFE-449s1 (HFE-7100)	163702-07-6	$C_4F_9OCH_3$	297
Chemical blend	163702-08-7	$(CF_3)_2CFCF_2OCH_3$	
HFE-569sf2 (HFE-7200)	163702-05-4	$C_4F_9OC_2H_5$	59
Chemical blend	163702-06-5	$(CF_3)_2CFCF_2OC_2H_5$	
Sevoflurane (HFE-347mmz1)	28523-86-6	$CH_2FOCH(CF_3)_2$	345
HFE-356mm1	13171-18-1	$(CF_3)_2CHOCH_3$	27
HFE-338mmz1	26103-08-2	$CHF_2OCH(CF_3)_2$	380
(Octafluorotetramethy-lene) hydroxymethyl group	NA	$X\text{-}(CF_2)_4CH(OH)\text{-}X$	73
HFE-347mmy1	22052-84-2	$CH_3OCF(CF_3)_2$	343
Bis(trifluoromethyl)-methanol	920-66-1	$(CF_3)_2CHOH$	195
2,2,3,3,3-pentafluoropropanol	422-05-9	$CF_3CF_2CH_2OH$	42
PFPMIE (HT-70)	NA	$CF_3OCF(CF_3)CF_2OCF_2OCF_3$	10,300

[a]The GWP for this compound is different than the GWP in the version of Table A-1 to subpart A of part 98 published on October 30, 2009.

Table C-1 to Subpart C of Part 98—Default CO_2 Emission Factors and High Heat Values for Various Types of Fuel

DEFAULT CO_2 EMISSION FACTORS AND HIGH HEAT VALUES FOR VARIOUS TYPES OF FUEL

Fuel type	Default high heat value	Default CO_2 emission factor
Coal and coke	mmBtu/short ton	kg CO_2/mmBtu
Anthracite	25.09	103.69
Bituminous	24.93	93.28
Subbituminous	17.25	97.17
Lignite	14.21	97.72
Coal Coke	24.80	113.67
Mixed (Commercial sector)	21.39	94.27
Mixed (Industrial coking)	26.28	93.90
Mixed (Industrial sector)	22.35	94.67
Mixed (Electric Power sector)	19.73	95.52
Natural gas	mmBtu/scf	kg CO_2/mmBtu
(Weighted U.S. Average)	1.026×10^{-3}	53.06
Petroleum products	mmBtu/gallon	kg CO_2/mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.140	72.93
Residual Fuel Oil No. 6	0.150	75.10
Used Oil	0.138	74.00
Kerosene	0.135	75.20
Liquefied petroleum gases (LPG)[1]	0.092	61.71
Propane[1]	0.091	62.87
Propylene[2]	0.091	67.77
Ethane[1]	0.068	59.60
Ethanol	0.084	68.44
Ethylene[2]	0.058	65.96
Isobutane[1]	0.099	64.94
Isobutylene[1]	0.103	68.86
Butane[1]	0.103	64.77
Butylene[1]	0.105	68.72
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.110	66.88
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.110	70.02

Petrochemical Feedstocks	0.125	71.02
Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34
Unfinished Oils	0.139	74.54
Heavy Gas Oils	0.148	74.92
Lubricants	0.144	74.27
Motor Gasoline	0.125	70.22
Aviation Gasoline	0.120	69.25
Kerosene-Type Jet Fuel	0.135	72.22
Asphalt and Road Oil	0.158	75.36
Crude Oil	0.138	74.54
Other fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Municipal Solid Waste	9.95[3]	90.7
Tires	28.00	85.97
Plastics	38.00	75.00
Petroleum Coke	30.00	102.41
Other fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Blast Furnace Gas	0.092×10^{-3}	274.32
Coke Oven Gas	0.599×10^{-3}	46.85
Propane Gas	2.516×10^{-3}	61.46
Fuel Gas[4]	1.388×10^{-3}	59.00
Biomass fuels—solid	mmBtu/short ton	kg CO_2/mmBtu
Wood and Wood Residuals (dry basis)[5]	17.48	93.80
Agricultural Byproducts	8.25	118.17
Peat	8.00	111.84
Solid Byproducts	10.39	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO_2/mmBtu
Landfill Gas	0.485×10^{-3}	52.07
Other Biomass Gases	0.655×10^{-3}	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO_2/mmBtu
Ethanol	0.084	68.44
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.120	81.55

[1]The HHV for components of LPG determined at 60 °F and saturation pressure with the exception of ethylene.

[2]Ethylene HHV determined at 41 °F (5 °C) and saturation pressure.

[3]Use of this default HHV is allowed only for: (a) Units that combust MSW, do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.

[4]Reporters subject to subpart X of this part that are complying with §98.243(d) or subpart Y of this part may only use the default HHV and the default CO_2 emission factor for fuel gas combustion under the conditions prescribed in §98.243(d)(2)(i) and (d)(2)(ii) and §98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.

[5]Use the following formula to calculate a wet basis HHV for use in Equation C-1: $HHV_w = ((100 - M)/100)*HHV_d$ where HHV_w = wet basis HHV, M = moisture content (percent) and HHV_d = dry basis HHV from Table C-1.

[78 FR 71950, Nov. 29, 2013]

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Table C-2 to Subpart C of Part 98—Default CH_4 and N_2O Emission Factors for Various Types of Fuel

Fuel type	Default CH_4 emission factor (kg CH_4/mmBtu)	Default N_2O emission factor (kg N_2O/mmBtu)
Coal and Coke (All fuel types in Table C-1)	1.1×10^{-02}	1.6×10^{-03}
Natural Gas	1.0×10^{-03}	1.0×10^{-04}
Petroleum (All fuel types in Table C-1)	3.0×10^{-03}	6.0×10^{-04}
Fuel Gas	3.0×10^{-03}	6.0×10^{-04}
Municipal Solid Waste	3.2×10^{-02}	4.2×10^{-03}
Tires	3.2×10^{-02}	4.2×10^{-03}
Blast Furnace Gas	2.2×10^{-05}	1.0×10^{-04}
Coke Oven Gas	4.8×10^{-04}	1.0×10^{-04}
Biomass Fuels—Solid (All fuel types in Table C-1, except wood and wood residuals)	3.2×10^{-02}	4.2×10^{-03}
Wood and wood residuals	7.2×10^{-03}	3.6×10^{-03}
Biomass Fuels—Gaseous (All fuel types in Table C-1)	3.2×10^{-03}	6.3×10^{-04}
Biomass Fuels—Liquid (All fuel types in Table C-1)	1.1×10^{-03}	1.1×10^{-04}

Note: Those employing this table are assumed to fall under the IPCC definitions of the “Energy Industry” or “Manufacturing Industries and Construction”. In all fuels except for coal the values for these two categories are identical. For coal combustion, those who fall within the IPCC “Energy Industry” category may employ a value of 1g of CH_4/mmBtu.

Table W-1A of Subpart W of Part 98—Default Whole Gas Emission Factors for Onshore Petroleum and Natural Gas Production

Onshore petroleum and natural gas production	Emission factor (scf/hour/ component)
Eastern U.S.	
Population Emission Factors—All Components, Gas Service[1]	
Valve	0.027
Connector	0.003
Open-ended Line	0.061
Pressure Relief Valve	0.040
Low Continuous Bleed Pneumatic Device Vents[2]	1.39
High Continuous Bleed Pneumatic Device Vents[2]	37.3
Intermittent Bleed Pneumatic Device Vents[2]	13.5
Pneumatic Pumps[3]	13.3
Population Emission Factors—All Components, Light Crude Service[4]	
Valve	0.05
Flange	0.003
Connector	0.007
Open-ended Line	0.05
Pump	0.01
Other[5]	0.30
Population Emission Factors—All Components, Heavy Crude Service[6]	
Valve	0.0005
Flange	0.0009
Connector (other)	0.0003
Open-ended Line	0.006
Other[5]	0.003
Western U.S.	
Population Emission Factors—All Components, Gas Service[1]	
Valve	0.121
Connector	0.017
Open-ended Line	0.031
Pressure Relief Valve	0.193
Low Continuous Bleed Pneumatic Device Vents[2]	1.39
High Continuous Bleed Pneumatic Device Vents[2]	37.3
Intermittent Bleed Pneumatic Device Vents[2]	13.5
Pneumatic Pumps[3]	13.3
Population Emission Factors—All Components, Light Crude Service[4]	
Valve	0.05
Flange	0.003

Connector (other)	0.007
Open-ended Line	0.05
Pump	0.01
Other[5]	0.30
Population Emission Factors—All Components, Heavy Crude Service[6]	
Valve	0.0005
Flange	0.0009
Connector (other)	0.0003
Open-ended Line	0.006
Other[5]	0.003

[1]For multi-phase flow that includes gas, use the gas service emissions factors.

[2]Emission Factor is in units of "scf/hour/device."

[3]Emission Factor is in units of "scf/hour/pump."

[4]Hydrocarbon liquids greater than or equal to 20°API are considered "light crude."

[5]"Others" category includes instruments, loading arms, pressure relief valves, stuffing boxes, compressor seals, dump lever arms, and vents.

[6]Hydrocarbon liquids less than 20°API are considered "heavy crude."

Material Safety Data Sheet

Baker Hughes
Baker Petrolite

Section 1. Chemical Product and Company Identification

Product Name	**CGO49 CORROSION INHIBITOR**	**Code**	CGO49
Supplier	Baker Petrolite A Baker Hughes Company 12645 W. Airport Blvd. (77478) P.O. Box 5050 Sugar Land, TX 77487-5050 For Product Information/MSDSs Call: 800-231-3606 (8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400	**Version**	4.0
Material Uses	Corrosion Inhibitor	**Effective Date**	**6/10/2004**
24 Hour Emergency Numbers	CHEMTREC 800-424-9300 (U.S. 24 hour) Baker Petrolite 800-231-3606 (001)281-276-5400 CANUTEC 613-996-6666 (Canada 24 hours) CHEMTREC Int'l 01-703-527-3887 (International 24 hour)	**Print Date**	6/10/2004

National Fire Protection Association (U.S.A.)

Flammability: 3
Health: 2
Reactivity: 0
Specific Hazard

Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	Exposure Limits
1-Dodecanethiol	112-55-0	0.1-1	**ACGIH TLV (United States, 2004). Sensitizer skin** TWA: 0.1 ppm 8 hour(s).
Light aromatic naphtha	64742-95-6	10-30	Not available.
1,2,4-Trimethylbenzene	95-63-6	10-30	Not available.
1,2,3-Trimethylbenzene	526-73-8	1-5	Not available.
1,3,5-Trimethylbenzene	108-67-8	5-10	Not available.
Xylene	1330-20-7	1-5	**ACGIH (United States).** TWA: 434 mg/m^3 STEL: 651 mg/m^3 TWA: 100 ppm STEL: 150 ppm **OSHA (United States).** TWA: 100 ppm STEL: 150 ppm TWA: 435 mg/m^3 STEL: 655 mg/m^3
Methanol	67-56-1	10-30	**ACGIH (United States). Skin** TWA: 262 mg/m^3 8 hour(s). STEL: 328 mg/m^3 15 minute(s). TWA: 200 ppm 8 hour(s). STEL: 250 ppm 15 minute(s).

Continued on Next Page

			OSHA (United States). Skin TWA: 200 ppm 8 hour(s). STEL: 250 ppm 15 minute(s). TWA: 260 mg/m^3 8 hour(s). STEL: 325 mg/m^3 15 minute(s).

While 1,2,4-trimethylbenzene does not have exposure limits, trimethylbenzene (mixed isomers)(CAS No. 25551-13-7) has TWA value of 25 ppm for both ACGIH and OSHA (revoked limit).

Section 3. Hazards Identification

Physical State and Appearance	State: Liquid., Color: Light Amber., Odor: Mercaptan.
CERCLA Reportable Quantity	Xylene 1007 gal. Methanol 2586 gal.
Hazard Summary	WARNING. May cause chronic effects. Flammable liquid. Vapors can form an ignitable or explosive mixture with air. Can form explosive mixtures at temperatures at or above the flash point. Vapors can flow along surfaces to a distant ignition source and flash back. Static discharges can cause ignition or explosion when container is not bonded. May be irritating to eyes, skin and respiratory tract. May be toxic by skin absorption. May cause central nervous system (CNS) effects if inhaled.
Routes of Exposure	Skin (Permeator), Skin (Contact), Eyes, Inhalation.
Potential Acute Health Effects	
Eyes	May be severely irritating to the eyes.
Skin	May be severely irritating to the skin. May cause burns on prolonged contact. May be toxic if absorbed through the skin.
Inhalation	May cause central nervous system (CNS) effects if inhaled. May be severely irritating to the lungs.
Ingestion	Not considered a likely route of exposure, however, may be toxic if swallowed.
Medical Conditions aggravated by Exposure	Exposure to this product may aggravate medical conditions involving the following: blood system, kidneys, nervous system, liver, gastrointestinal tract, respiratory tract, skin/epithelium, eyes.
See Toxicological Information (section 11)	
Additional Hazard Identification Remarks	May be harmful if ingested. This product may be aspirated into the lungs during swallowing or vomiting of swallowed material. Aspiration into the lungs may produce chemical pneumonitis, pulmonary edema, and hemorrhaging. Repeated or prolonged contact may cause dermatitis (inflammation) and defatting of the skin (dryness). Draize Test Eye (Rabbit): Moderate Irritant. Draize Test Skin (Rabbit): Extreme Irritant.

Section 4. First Aid Measures

Eye Contact	Flush eyes with plenty of water for 15 minutes, occasionally lifting upper and lower eyelids. Get medical attention immediately.
Skin Contact	Remove contaminated clothing and shoes immediately. Wash affected area with soap and mild detergent and large amounts of lukewarm, gently flowing water until no evidence of chemical remains (for at least 20-60 minutes). Get medical attention if irritation occurs.
Inhalation	Remove to fresh air. Oxygen may be administered if breathing is difficult. If not breathing, administer artificial respiration and seek medical attention. Get medical attention if symptoms appear.

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Ingestion	Get medical attention immediately. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Wash out mouth with water if person is conscious. Never induce vomiting or give anything by mouth to a victim who is unconscious or having convulsions.
Notes to Physician	Not available.
Additional First Aid Remarks	Not available.

Section 5. Fire Fighting Measures

Flammability of the Product	Flammable liquid. Vapors can form an ignitable or explosive mixture with air. Can form explosive mixtures at temperatures at or above the flash point. Vapors can flow along surfaces to a distant ignition source and flash back. Static discharges can cause ignition or explosion when container is not bonded.
OSHA Flammability Class	IB
Autoignition temperature	Not available.
Flash Points	Closed cup: 11°C (51.8°F). (SFCC)
Flammable Limits	L.E.L. Not available. U.E.L. Not available.
Products of Combustion	These products are carbon oxides (CO, CO_2) nitrogen oxides (NO, NO_2...) Sulfur oxides (SO_2, SO_3...).
Fire Hazards in Presence of Various Substances	Open Flames/Sparks/Static. Heat.
Fire Fighting Media and Instructions	In case of fire, use foam, dry chemicals, or CO_2 fire extinguishers. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and public waterways. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances and flash back if ignited.
Protective Clothing (Fire)	Do not enter fire area without proper personal protective equipment, including NIOSH approved self-contained breathing apparatus.
Special Remarks on Fire Hazards	Not available.

Section 6. Accidental Release Measures

Spill	Put on appropriate personal protective equipment. Keep personnel removed and upwind of spill. Shut off all ignition sources; no flares, smoking, or flames in hazard area. Approach release from upwind. Shut off leak if it can be done safely. Contain spilled material. Keep out of waterways. Dike large spills and use a non-sparking or explosion-proof means to transfer material to an appropriate container for disposal. For small spills add absorbent (soil may be used in the absence of other suitable materials) scoop up material and place in a sealed, liquid-proof container. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances from spill and flash back, if ignited. Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Other Statements	If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.
Additional Accidental Release Measures Remarks	Not available.

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Section 7. Handling and Storage

Handling and Storage	Put on appropriate personal protective equipment. Avoid contact with eyes, skin, and clothing. Avoid breathing vapors or spray mists. Use only with adequate ventilation. Store in a dry, cool and well ventilated area. Keep away from heat, sparks and flame. Keep away from incompatibles. Keep container tightly closed and dry. To avoid fire or explosion, ground container equipment and personnel before handling product.
Additional Handling and Storage Remarks	Not available.

Section 8. Exposure Controls/Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors or particles below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection

Personal Protective Equipment recommendations are based on anticipated known manufacturing and use conditions. These conditions are expected to result in only incidental exposure. A thorough review of the job tasks and conditions by a safety professional is recommended to determine the level of personal protective equipment appropriate for these job tasks and conditions.

Eyes	Chemical safety goggles.
Body	Wear long sleeves to prevent repeated or prolonged skin contact.
Respiratory	Respirator use is not expected to be necessary under normal conditions of use. In poorly ventilated areas, emergency situations or if exposure levels are exceeded, use NIOSH approved full face respirator.
Hands	Chemical resistant gloves.
Feet	Chemical resistant boots or overshoes.
Other information	Nitrile or neoprene gloves.

Additional Exposure Control Remarks Not available.

Section 9. Typical Physical and Chemical Properties

Physical State and Appearance	Liquid.	**Odor**	Mercaptan.
pH	Not available.	**Color**	Light Amber.
Specific gravity	0.854 - 0.866 @ 16°C (60°F)		
Density	7.11 - 7.21 lbs/gal @ 16°C (60°F)		
Vapor Density	>1 (Air = 1)		
Vapor Pressure	142.2 - mmHg @ 22°C (72°F)		
Evaporation Rate	Not Available or Not Applicable for Solids.		
VOC	Not available.		
Viscosity	7 - 8 cps @ 16°C (61°F)		
Pour Point	-40ºC (-40ºF)		
Solubility (Water)	Dispersible		
Boiling Point	Not available.		
Physical Chemical Comments	Not available.		

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Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable.
Conditions of Instability	Not available.
Incompatibility with Various Substances	Oxidizing material.
Hazardous Decomposition Products	Not applicable.
Hazardous Polymerization	Hazardous polymerization is not expected to occur.
Special Stability & Reactivity Remarks	Not available.

Section 11. Toxicological Information

Component Toxicological Information

Acute Animal Toxicity

1-Dodecanethiol	Not available.
Light aromatic naphtha	ORAL (LD50): Acute: 2900 mg/kg [Rat]. 8400 mg/kg [Rat].
1,2,4-Trimethylbenzene	ORAL (LD50): Acute: 5000 mg/kg [Rat]. VAPOR (LC50): Acute: 18000 mg/m^3 4 hour(s) [Rat].
1,2,3-Trimethylbenzene	Not available.
1,3,5-Trimethylbenzene	VAPOR (LC50): Acute: 24000 mg/m^3 4 hour(s) [Rat].
Xylene	ORAL (LD50): Acute: 4300 mg/kg [Rat]. 3523 mg/kg [Male rat]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit]. VAPOR (LC50): Acute: 5000 ppm 4 hour(s) [Rat].
Methanol	ORAL (LD50): Acute: 5628 mg/kg [Rat]. 7300 mg/kg [Mouse]. DERMAL (LD50): Acute: 15800 mg/kg [Rabbit]. VAPOR (LC50): Acute: 64000 ppm 4 hour(s) [Rat].

Chronic Toxicity Data

1) 1-Dodecanethiol

1-Dodecanetriol is a component of this product. Workers exposed to a mixture of 1-dodecanethiol with polychloroprene latexes have shown a significant increase in frequency of chromosomal aberrations in the peripheral blood. [HSDB]

2) Light aromatic naphtha

Solvent naphtha (petroleum), light aromatic is a component of this product. Solvent naphtha (petroleum), light aromatic may cause damage to the peripheral nerves, resulting in numbness or tingling of the extremities with chronic (long term) exposure to high concentrations. (Micromedex) Rats exposed for 4 months to 1700 ppm of a solvent similar to this product showed evidence of mild damage to the liver, lungs and kidneys. These effects were not seen in rats exposed for one year to 350 ppm of another similar solvent. Rats exposed to vapors of a similar solvent during pregnancy showed embryo/fetotoxicity at concentrations producing maternal toxicity.

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In response to a TSCA test rule, several studies of a solvent similar to this product were completed. Mutagenicity studies and a rat inhalation neurotoxicity study were negative. In a mouse developmental effects study, reduced fetal body weight was seen but no teratogenicity. A rat reproductive effects study demonstrated toxicity but little effect on reproductive parameters. (Vendor MSDS)

3) 1,2,4-Trimethylbenzene

Not available.

4) 1,2,3-Trimethylbenzene

Not available.

5) 1,3,5-Trimethylbenzene

1,3,5-Trimethylbenzene (Mysitylene) is a component of this product. Chronic asthmatic-like bronchitis may be a delayed chronic hazard (EPA, 1985; Laham, 1987; HSDB, 1997). Nervousness, tension, and anxiety have been noted in chronically exposed workers with exposure to a mixture of solvents including mesitylene (HSDB, 1997). Elevated alkaline phosphates and SGOT(liver enzymes) levels have been noted in chronic animal inhalation studies (Clayton & Clayton, 1994). These effects have not been reported in exposed humans. (Reprotext)

Thrombocytopenia (a lack of platelets in the blood) with bleeding from the gums and nose and mild anemia may occur with chronic exposure to mesitylene as a component of the commercial solvent mixture, "Fleet-X-DV-99" (Plunkett, 1976; Finkel, 1983; HSDB, 1997). Coagulation (clotting of the blood) times were delayed by about 40% in a group of workers chronically exposed to a mixture of solvents containing about 30% mesitylene (Laham, 1987). These hematological disorders may have been due to a contaminant, such as benzene (Hathaway et al, 1996). Thrombocytosis (an increase of platelets in the blood) and thrombocytopenia have been noted in rabbits (Clayton & Clayton, 1994). (Reprotext)

1,3,5-Trimethylbenzene has been positive in a mutagenicity assay (Lewis, 1992). (Reprotext)

6) Xylene

Xylene (mixed isomers) is a component of this product. Effects of chronic exposure to xylene are similar to those of acute exposure, but may be more severe. Chronic inhalation reportedly was associated with headache, tremors, apprehension, memory loss, weakness, dizziness, loss of appetite, nausea, ringing in the ears, irritability, thirst, anemia, mucosal bleeding, enlarged liver, and hyperplasia, but not destruction of the bone marrow (Clayton & Clayton, 1994; ILO, 1983). Some earlier reports of effects of chronic exposure to xylene have been questioned, as exposures were not limited to xylene alone.

Effects on the blood have been reported from chronic exposure to as little as 50 mg/m3 (Pap & Varga, 1987). Repeated exposure can damage bone marrow, causing low blood cell count and can damage the liver and kidneys (NJ Department of Health, Hazardous Substance Fact Sheet). Chronic xylene exposure (usually mixed with other solvents) has produced irreversible damage to the CNS (ILO, 1983). CNS effects may be exacerbated by ethanol abuse (Savolainen, 1980). Xylene may damage hearing or enhance sensitivity to noise in chronic occupational exposures (Morata et al, 1994), probably from neurotoxic mechanism. Tolerance to xylene can occur over the work week and disappear over the weekend. (ACGIH, 1992).

Inhalation exposure has produced fetotoxicity and postnatal developmental toxicity in laboratory animals. (API, 1978, Kensington, MD, EPA/OTS Document No. 878210350 and Hass, U., et al, 1995, Neurotoxicology and Teratology 17: 341-349 and 1997, Neurotoxicology 18: 547-552)

7) Methanol

Methanol is a component of this product. Because methanol is eliminated from the body more slowly than ethanol, it can have cumulative toxicity with repeated exposures (ACGIH, 1992).

Acute dermal, oral, and inhalation exposure to methanol can cause optic nerve effects, diminished vision, and brain effects (necrosis and hemorrhaging). (Bennett, I.L. et al, 1953)

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Ingestion of methanol can cause Central Nervous System depression, blurred vision and blindness, and gastrointestinal effects. (Clayton, G.D. and Clayton, F.E., 1982, Patty's Industrial Hygiene and Toxicology, Vol2C) Dermal exposure to methanol can cause Central Nervous System depression, blurred vision, and gastrointestinal effects. (Downie, A et al, 1992, Occupational Medicine, 42, pp 47-9) Chronic inhalation of methanol can cause Central Nervous System depression, blurred vision, and gastrointestinal effects. (Frederick, L.J. et al, 1984, AIHA Journal, 45, pp 51-5)

Methanol has produced in vivo mutagenicity in animal studies. (Pereira, M.A. et al, 1982) and (Ward, J. B. et al, 1983)

Methanol was mutagenic in yeast (RTECS). Methanol has caused chromosome aberrations in yeast (RTECS) and grasshoppers (Saha & Khudabaksh, 1974).

Methanol has caused birth defects in rats exposed by the oral (Infurna et al, 1981) and inhalation (Nelson et al, 1984; Nelson et al, 1985) routes. Exencephaly (a defect in the skull bone structure that leaves the brain exposed) and cleft palate (a fissure or unformed bone structure in the roof of the mouth (palate), lip, or facial area, occurring during the embryonic stage of development) were increased in fetal mice exposed to methanol at an airborne concentration of 5,000 ppm or higher for 7 hours/day on days 6 to 15 of gestation.

Embryotoxicity and fetotoxicity were seen with maternal exposure to airborne concentrations of 7,500 ppm and above, and reduced fetal weights with concentrations of 10,000 ppm or greater. The NOAEL was 1,000 ppm. Effects similar to those seen in the 10,000 ppm dosage group were also seen in offspring of mice given a dose of 4 g/kg orally (Rogers et al, 1993).

Product Toxicological Information

Acute Animal Toxicity	ORAL (LD50): Acute: 10600 mg/kg [Rat]. DERMAL (LD50): Acute: >2000 mg/kg [Rabbit].
Target Organs	blood system, kidneys, nervous system, liver, gastrointestinal tract, respiratory tract, skin/epithelium, eyes.
Other Adverse Effects	Not available.

Section 12. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Biodegradable/OECD	Not available.
Toxicity of the Products of Biodegradation	Not available.
Special Remarks	Not available.

Section 13. Disposal Considerations

Responsibility for proper waste disposal rests with the generator of the waste. Dispose of any waste material in accordance with all applicable federal, state and local regulations. Note that these regulations may also apply to empty containers, liners and rinsate. Processing, use, dilution or contamination of this product may cause its physical and chemical properties to change.

Additional Waste Remarks	Not available.

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Section 14. Transport Information

DOT Classification	FLAMMABLE LIQUID, N.O.S. (Contains: Methanol, Light aromatic naphtha), 3, UN1993, II
DOT Reportable Quantity	Xylene 1007 gal. Methanol 2586 gal.
Marine Pollutant	Not applicable.
Additional DOT information	Not available.
Emergency Response Guide Page Number	128

Section 15. Regulatory Information

HCS Classification	Target organ effects. Flammable liquid. Irritant.
U.S. Federal Regulations	
Environmental Regulations	Extremely Hazardous Substances: Not applicable to any components in this product. SARA 313 Toxic Chemical Notification and Release Reporting: 1,2,4-Trimethylbenzene; Xylene; Methanol; SARA 302/304 Emergency Planning and Notification substances: Not applicable to any components in this product. Hazardous Substances (CERCLA 302): Xylene 1007 gal.; Methanol 2586 gal.; SARA 311/312 MSDS distribution - chemical inventory - hazard identification: fire; immediate health hazard; delayed health hazard; Clean Water Act (CWA) 307 Priority Pollutants: Not applicable to any components in this product. Clean Water Act (CWA) 311 Hazardous Substances: Xylene; Clean Air Act (CAA) 112(r) Accidental Release Prevention Substances: Not applicable to any components in this product.
Threshold Planning Quantity (TPQ)	Not applicable.
TSCA Inventory Status	All components are included or are exempted from listing on the US Toxic Substances Control Act Inventory. This product contains the following components that are subject to the reporting requirements of TSCA Section 12(b) if exported from the United States: Xylene; Naphthalene.
State Regulations	State specific information is available upon request from Baker Petrolite.
International Regulations	
Canada	Not all components are included on the Canadian Domestic Substances List.
WHMIS (Canada)	B-2, D-1B, D-2A, D-2B
European Union	Not all components are included on the European Inventory of Existing Commercial Chemical Substances or the European List of Notified Chemical Substances.

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	International inventory status information is available upon request from Baker Petrolite for the following countries: Australia, China, Korea (TCCL), Philippines (RA6969), or Japan.
Harmonized Tariff Code	Not available.
Other Regulatory Information	No further regulatory information is available.

Section 16. Other Information

Other Special Considerations	123 10/10/02 - Changes to Sections 2 and 9. 04/28/04 - Changes to Sections 2 and 15. 06/10/04 - Changes to Sections 8 and 15.

Baker Petrolite Disclaimer

NOTE: The information on this MSDS is based on data which is considered to be accurate. Baker Petrolite, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This MSDS was prepared and is to be used for this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Material Safety Data Sheet
Surfatron® DN-100

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Surfatron® DN-100
Product use	Surfactant
Manufacturer	Champion Technologies, Inc. P.O. Box 450499 Houston, TX, 77245 USA
Telephone	1-281-431-2561 (Champion)
In case of emergency	1-800-424-9300 (CHEMTREC) 1-703-527-3887 (CHEMTREC - International)

2. HAZARDS IDENTIFICATION

Physical state	liquid
Color	Clear. Brown.
Odor	Hydrocarbon.
Emergency overview	DANGER! Flammable. Harmful. Irritant. Keep away from heat, sparks and flame. Contains material which may cause cancer. See toxicological information (section 11)

Potential health effects

Inhalation	Harmful by inhalation. Irritating to respiratory system.
Ingestion	Harmful if swallowed. Irritating to mouth, throat and stomach.
Skin	Irritating to skin.
Eyes	Irritating to eyes.
Chronic effects	No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure	Frequent or prolonged contact with product may defat and dry the skin, leading to discomfort and dermatitis.

See toxicological information (section 11)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS no.	wt. %
Organic Acid Salt	Proprietary	10 - 30
Benzene, tetrapropylene-	25265-78-5	1 - 5
Naphthalene	91-20-3	1 - 5
Xylene	1330-20-7	1 - 5
Cumene	98-82-8	1 - 5
Diethylbenzene	25340-17-4	1 - 5
Toluene	108-88-3	1 - 5
1,3,5-Trimethylbenzene	108-67-8	1 - 5
Isopropyl Alcohol	67-63-0	1 - 5

Heavy aromatic solvent naphtha	64742-94-5	5 - 10
1,2,4-Trimethylbenzene	95-63-6	10 - 30
Light aromatic solvent naphtha	64742-95-6	30 - 60
Petroleum naphtha	64741-68-0	30 - 60

4. FIRST AID MEASURES

Eye contact Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

Skin contact Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Ingestion Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention. Never give anything by mouth to an unconscious person.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. FIRE-FIGHTING MEASURES

Flash point 74 °F (23.3 °C), Pensky-Martens. Closed cup

Flammability of the product Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Extinguishing media

Suitable Use dry chemical, CO_2, water spray (fog) or foam.

Not suitable Do not use water jet.

Special exposure hazards Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products carbon dioxide, carbon monoxide

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Special remarks on fire hazards Not available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental precautions Avoid contact of spilled material with soil and prevent runoff entering surface waterways. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Methods for cleaning up

Small spill Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Large spill Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Handling Use only with adequate ventilation. Put on appropriate personal protective equipment (see section 8). Wear appropriate respirator when ventilation is inadequate. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Avoid release to the environment. Do not enter storage areas and confined spaces unless adequately ventilated. Eliminate all ignition sources. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. Workers should wash hands and face before eating, drinking and smoking.

Storage Store in accordance with local regulations. Store in a segregated and approved area. Keep container in a well-ventilated area. Store in the original container or an approved alternative made from a compatible material. Keep tightly closed when not in use. Separate from oxidizing materials. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection

Hands Use chemical-resistant, impervious gloves.

Eyes Safety eyewear should be used when there is a likelihood of exposure.

Body Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Occupational exposure limits

Component	Source	Type	PPM	MG/M3	Notes
Naphthalene					
	OSHA PEL	TWA	10 ppm	50 mg/m3	

	NIOSH REL	TWA	10 ppm	50 mg/m3	
	NIOSH REL	STEL	15 ppm	75 mg/m3	
	ACGIH TLV	TWA	10 ppm	52 mg/m3	
	ACGIH TLV	STEL	15 ppm	79 mg/m3	
Xylene					
	OSHA PEL	TWA	100 ppm	435 mg/m3	
	ACGIH TLV	TWA	100 ppm	434 mg/m3	
	ACGIH TLV	STEL	150 ppm	651 mg/m3	
Cumene					
	OSHA PEL	TWA	50 ppm	245 mg/m3	SKIN
	NIOSH REL	TWA	50 ppm	245 mg/m3	SKIN
	ACGIH TLV	TWA	50 ppm		
Diethylbenzene					
	AIHA WEEL	TWA	5 ppm		
Toluene					
	OSHA PEL Z2	TWA	200 ppm		
	OSHA PEL Z2	CEIL	300 ppm		
	OSHA PEL Z2	CEIL	500 ppm		
	NIOSH REL	TWA	100 ppm	375 mg/m3	
	NIOSH REL	STEL	150 ppm	560 mg/m3	
	ACGIH TLV	TWA	20 ppm		
1,3,5-Trimethylbenzene					
	NIOSH REL	TWA	25 ppm	125 mg/m3	
	ACGIH TLV	TWA	25 ppm	123 mg/m3	
Isopropyl Alcohol					
	OSHA PEL	TWA	400 ppm	980 mg/m3	
	NIOSH REL	TWA	400 ppm	980 mg/m3	
	NIOSH REL	STEL	500 ppm	1,225 mg/m3	
	ACGIH TLV	TWA	200 ppm		
	ACGIH TLV	STEL	400 ppm		
1,2,4-Trimethylbenzene					
	NIOSH REL	TWA	25 ppm	125 mg/m3	
	ACGIH TLV	TWA	25 ppm	123 mg/m3	

SKIN - Skin absorption can contribute significantly to overall exposure.

Engineering measures Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Emergency baths, showers, or other equipment appropriate for the potential level of exposure should be located close to the workstation location.

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state liquid

Color Clear. Brown.

Odor Hydrocarbon.

Odor threshold Not available.

Boiling/condensation point	Not available.
Pour point	-40 °F (-40.0 °C)
Flash point	74 °F (23.3 °C), Pensky-Martens. Closed cup
Flammable limits	Lower: Not available. Upper: Not available.
Auto-ignition temperature	Not available.
pH	7.0 - 9.0
Evaporation rate	Not available.
Solubility	oil
Vapor density	Not available.
Relative density	0.9411 - 0.9811 @ 60 °F (15.6 °C)
Vapor pressure	Not available.
Viscosity	Dynamic: 50 - 150 cPs @ 75 °F (23.9 °C)
Octanol/water partition coefficient (LogPow)	Not available.

Note: Typical values only - not to be interpreted as sales specifications

10. STABILITY AND REACTIVITY

Stability	The product is stable.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid release to the environment. Refer to special instructions/safety data sheet.
Materials to avoid	oxidizing materials
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Substance	Test type	Species	Dose	Exposure
Naphthalene				
	LD50 Oral	Mouse	316 mg/kg	-
	LD50 Oral	Rat	490 mg/kg	-
	LD50 Oral	Guinea pig	1,200 mg/kg	-
	LC50 inhalation	Rat	340 mg/m3	1 h
	LD50 Dermal	Rabbit	2,000 mg/kg	-
	LD50 Dermal	Rat	2,500 mg/kg	-
Xylene				
	LD50 Oral	Mouse	2,119 mg/kg	-
	LD50 Oral	Rat	4,300 mg/kg	-
	LC50 inhalation	Rat	5000 ppm	4 h
	LD50 Dermal	Rabbit	1,700 mg/kg	-
Cumene				

	LD50 Oral	Rat	1,400 mg/kg	-
	LD50 Oral	Mouse	12,750 mg/kg	-
	LC50 inhalation	Mouse	15.3 g/m3	2 h
	LC50 inhalation	Rat	39 g/m3	4 h
	LD50 Dermal	Rabbit	12,300 mg/kg	-
Toluene				
	LD50 Oral	Rat	636 mg/kg	-
	LC50 inhalation	Rat	8000 ppm	4 h
	LC50 inhalation	Mouse	30,000 mg/m3	2 h
	LD50 Dermal	Rabbit	14,100 mg/kg	-
1,3,5-Trimethylbenzene				
	LD50 Oral	Rat	5,000 mg/kg	-
	LC50 inhalation	Rat	24,000 mg/m3	4 h
Isopropyl Alcohol				
	LD50 Oral	Mouse	3,600 mg/kg	-
	LD50 Oral	Rat	5,000 mg/kg	-
	LD50 Oral	Rabbit	6,410 mg/kg	-
	LC50 inhalation	Rat	72,600 mg/m3	-
	LD50 Dermal	Rabbit	12,800 mg/kg	-
Heavy aromatic solvent naphtha				
	LC50 inhalation	Rat	590 mg/m3	4 h
	LD50 Dermal	Rabbit	2,000 mg/kg	-
1,2,4-Trimethylbenzene				
	LD50 Oral	Rat	5,000 mg/kg	-
	LD50 Oral	Mouse	6,900 mg/kg	-
	LC50 inhalation	Rat	18,000 mg/m3	4 h
Light aromatic solvent naphtha				
	LD50 Oral	Rat	8,400 mg/kg	-
Petroleum naphtha				
	LD50 Oral	Rat	4,800 mg/kg	-
	LC50 inhalation	Rat	> 5 g/m3	4 h

Conclusion/Summary Not available.

Chronic toxicity

Conclusion/Summary Not available.

Irritation/Corrosion

Conclusion/Summary

Skin Not available.
Eyes Not available.
Respiratory Not available.

Sensitizer

Conclusion/Summary

Skin Not available.
Respiratory Not available.

Carcinogenicity

Conclusion/Summary Not available.

Component	IARC	NTP	OSHA
Naphthalene	2B	Possible	

2B - IARC Group 2B, possibly carcinogenic to humans
Possible - NTP reasonably anticipated to be carcinogenic

Mutagenicity

Conclusion/Summary Not available.

Teratogenicity

Conclusion/Summary Not available.

Reproductive toxicity

Conclusion/Summary Not available.

12. ECOLOGICAL INFORMATION

Environmental effects Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic ecotoxicity

Conclusion/Summary Not available.

Other adverse effects No known significant effects or critical hazards.

13. DISPOSAL CONSIDERATIONS

Waste disposal The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. TRANSPORT INFORMATION

Refer to the bill of lading or container label for DOT or other transportation hazard classification. Additionally, be aware that shipping descriptions may vary based on mode of transport, shipment volume or weight, container size or type, and/or origin and destination. Consult your company's Hazardous Materials / Dangerous Goods expert or your legal counsel for information specific to your situation.

15. REGULATORY INFORMATION

HCS Classification

Component	Classification
Petroleum naphtha	Harmful.
Light aromatic solvent naphtha	Harmful.
Organic Acid Salt	Harmful., Irritant.
1,2,4-Trimethylbenzene	Harmful., Irritant., Occupational exposure limits
Heavy aromatic solvent naphtha	Harmful.
Isopropyl Alcohol	Irritant., Occupational exposure limits
1,3,5-Trimethylbenzene	Irritant., Occupational exposure limits
Toluene	Harmful., Irritant., Target organ effects, Occupational exposure limits
Diethylbenzene	Irritant., Occupational exposure limits
Cumene	Harmful., Irritant., Occupational exposure limits
Xylene	Harmful., Irritant., Occupational exposure limits
Naphthalene	Carcinogen, Harmful., Occupational exposure limits
Benzene, tetrapropylene-	Irritant.

U.S. Federal regulations

CERCLA - Reportable quantity:

SUBSTANCE	REPORTABLE QUANTITY
Naphthalene	100 lbs

Xylene	100 lbs
Cumene	5000 lbs
Toluene	1000 lbs

SUBSTANCE	**PRODUCT REPORTABLE QUANTITY**
Xylene	8,226 lb, 1,031 gal US

Product spills equal to or exceeding the threshold above trigger the reporting requirements under CERCLA for the listed hazardous substance. Report the spill or release to the National Response Center (NRC) at (800) 424-8802.

TSCA 12(b) one-time export:
The following components are listed: Naphthalene.

SARA Title III Section 302 Extremely hazardous substances (40 CFR Part 355):
None of the components are listed.

SARA CERCLA: Hazardous substances:
None of the components are listed.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Immediate (acute) health hazard, Delayed (chronic) health hazard, Fire hazard

Clean Water Act (CWA) 307:
The following components are listed: Toluene. Naphthalene. Ethylbenzene. Benzene.

Clean Water Act (CWA) 311:
The following components are listed: Toluene. Xylene. Naphthalene. Potassium hydroxide. Ethylbenzene. Benzene.

Clean Air Act (CAA) 112 accidental release prevention:
None of the components are listed.

Clean Air Act (CAA) 112 regulated flammable substances:
None of the components are listed.

Clean Air Act (CAA) 112 regulated toxic substances:
None of the components are listed.

SARA 313 - Supplier notification

Component	CAS no.	wt. %
Naphthalene	91-20-3	1 - 5
Xylene	1330-20-7	1 - 5
Cumene	98-82-8	1 - 5
Toluene	108-88-3	1 - 5
Isopropyl Alcohol	67-63-0	1 - 5
1,2,4-Trimethylbenzene	95-63-6	10 - 30

State regulations

Massachusetts Substances: The following components are listed: 1,3,5-Trimethylbenzene. Toluene. Cumene. Xylene. Naphthalene. Isopropyl Alcohol. 1,2,4-Trimethylbenzene.
New Jersey Hazardous Substances: The following components are listed: 1,3,5-Trimethylbenzene. Toluene. Diethylbenzene. Cumene. Xylene. Naphthalene. Isopropyl Alcohol. 1,2,4-Trimethylbenzene.
Pennsylvania RTK Hazardous Substances: The following components are listed: 1,3,5-Trimethylbenzene. Toluene. Cumene. Xylene. Naphthalene. Isopropyl Alcohol. 1,2,4-Trimethylbenzene.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Component	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Toluene	No.	Yes.	No.	13000 µg/day
	No.	Yes.	No.	7000 µg/day
Naphthalene	Yes.	No.	5.8 µg/day	No.

Ethylbenzene	Yes.	No.	No.	No.
Benzene	Yes.	Yes.	6.4 µg/day	No.
	Yes.	Yes.	No.	24 µg/day
	Yes.	Yes.	No.	49 µg/day
	Yes.	Yes.	13 µg/day	No.

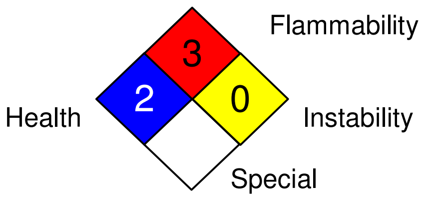
International regulations

United States inventory (TSCA 8b): All components are listed or exempted.

Canada inventory (DSL): At least one component is not listed in DSL but all such components are listed in NDSL.

16. OTHER INFORMATION

National Fire Protection Association (U.S.A.):



Date of issue 07/13/2009

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Version 3.0

Prepared by Product Stewardship

Disclaimer

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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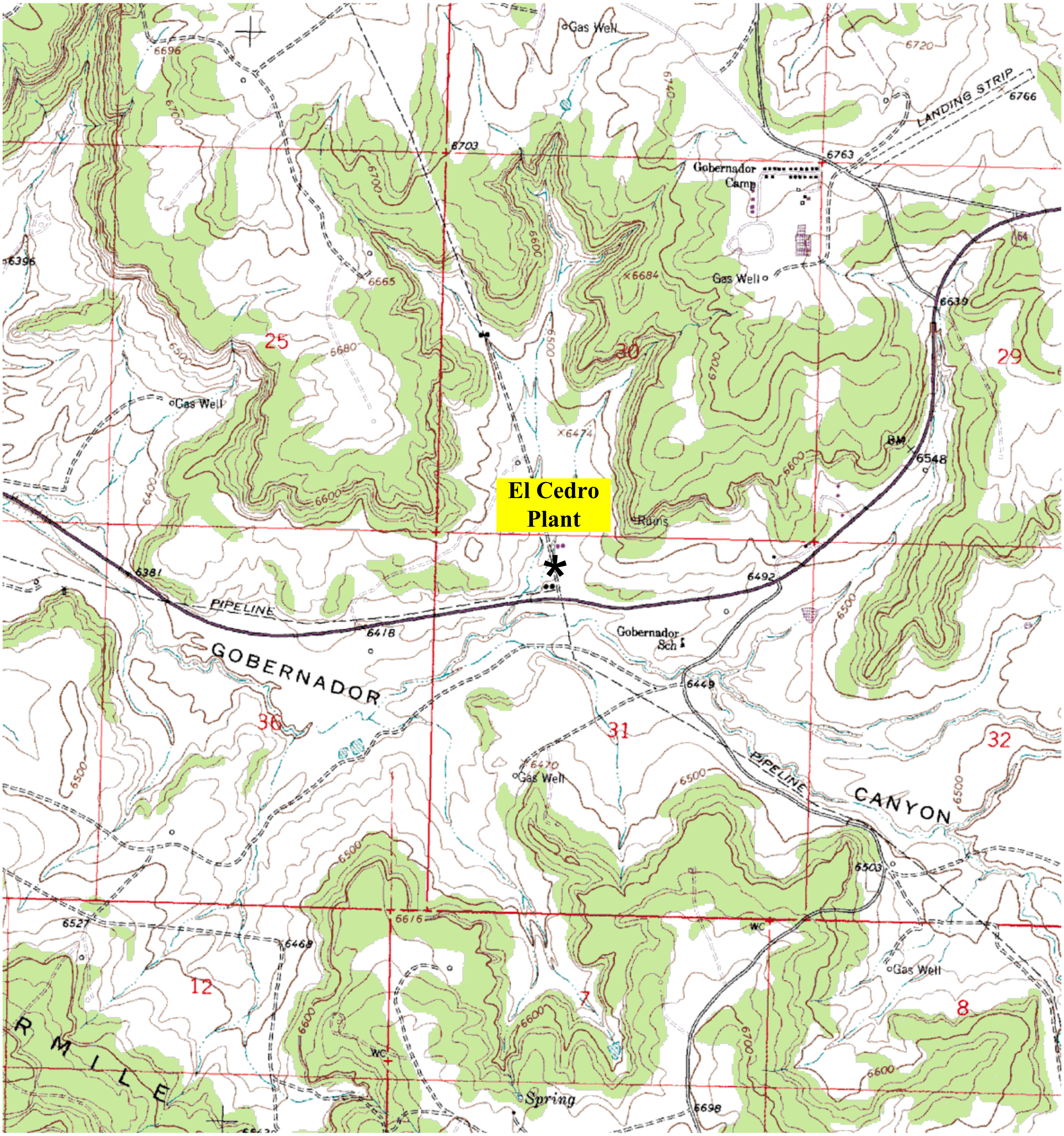
Section 8

Map(s)

A map such as a 7.5 minute topographic quadrangle showing the exact location of the source. The map shall also include the following:

The UTM or Longitudinal coordinate system on both axes	An indicator showing which direction is north
A minimum radius around the plant of 0.8km (0.5 miles)	Access and haul roads
Topographic features of the area	Facility property boundaries
The name of the map	The area which will be restricted to public access
A graphical scale	

A map is provided in this section. Please see the following page.



Source: USGS Fourmile Canyon, New Mexico Quadrangle

0 2000
Scale (Feet)

Figure 1 Site Vicinity / Topographic Map
El Cedro Plant
Section 31, Township 29N Range 5W
Rio Arriba County, New Mexico

Section 9

Proof of Public Notice

(for NSR applications submitting under 20.2.72 or 20.2.74 NMAC)
(This proof is required by: 20.2.72.203.A.14 NMAC "Documentary Proof of applicant's public notice")

☐ **I have read the AQB "Guidelines for Public Notification for Air Quality Permit Applications"**
This document provides detailed instructions about public notice requirements for various permitting actions. It also provides public notice examples and certification forms. Material mistakes in the public notice will require a re-notice before issuance of the permit.

Unless otherwise allowed elsewhere in this document, the following items document proof of the applicant's Public Notification. Please include this page in your proof of public notice submittal with checkmarks indicating which documents are being submitted with the application.

New Permit and **Significant Permit Revision** public notices must include all items in this list.

Technical Revision public notices require only items 1, 5, 9, and 10.

Per the Guidelines for Public Notification document mentioned above, include:

1. ☐ A copy of the certified letter receipts with post marks (20.2.72.203.B NMAC).
2. ☐ A list of the places where the public notice has been posted in at least four publicly accessible and conspicuous places, including the proposed or existing facility entrance. (e.g: post office, library, grocery, etc.).
3. ☐ A copy of the property tax record (20.2.72.203.B NMAC).
4. ☐ A sample of the letters sent to the owners of record.
5. ☐ A sample of the letters sent to counties, municipalities, and Indian tribes.
6. ☐ A sample of the public notice posted and a verification of the local postings.
7. ☐ A table of the noticed citizens, counties, municipalities and tribes and to whom the notices were sent in each group.
8. ☐ A copy of the public service announcement (PSA) sent to a local radio station and documentary proof of submittal.
9. ☐ A copy of the classified or legal ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
10. ☐ A copy of the display ad including the page header (date and newspaper title) or its affidavit of publication stating the ad date, and a copy of the ad. When appropriate, this ad shall be printed in both English and Spanish.
11. ☐ A map with a graphic scale showing the facility boundary and the surrounding area in which owners of record were notified by mail. This is necessary for verification that the correct facility boundary was used in determining distance for notifying land owners of record.

Not applicable, as this is a Title V application.

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Section 10

Written Description of the Routine Operations of the Facility

<u>A written description of the routine operations of the facility</u>. Include a description of how each piece of equipment will be operated, how controls will be used, and the fate of both the products and waste generated. For modifications and/or revisions, explain how the changes will affect the existing process. In a separate paragraph describe the major process bottlenecks that limit production. The purpose of this description is to provide sufficient information about plant operations for the permit writer to determine appropriate emission sources.

The El Cedro Compressor Station receives gas from two gathering systems: the San Juan Conventional (SJC) gathering system and Manzanares gathering system. The SJC stream is a high BTU gas, rich in heavier hydrocarbon components.

SJC Stream

The SJC gas must be compressed before it can be sent on to the Ignacio Plant. This is currently accomplished using six (6) reciprocating compressor packages, each driven by Waukesha 7042GL engines. Due to the high liquid hydrocarbon (condensate) content of the SJC stream, routine "pigging" is required. The hydrocarbon liquids captured by "pigging" are treated in a stabilizer unit and then transferred to storage tanks where they await transport to market.

Manzanares Stream

The Manzaneres gas must also be compressed before it is sent downstream. This is currently accomplished using seven (7) compressor packages, driven by two (2) Solar MARS 90-12000S turbines and five (5) Waukesha 7042GL engines.

Note: Two of the six reciprocating compressor packages identified for use with the SJC Stream are also included in the count of seven compressor packages identified for use with the Manzanares Stream. These two packages provide compression for both the SJC Stream and the Manzanares Stream, as required.

General

The El Cedro Compressor Station generates its own electrical power for use at the plant. It is permitted to operate two (2) generators: powered by one (1) Waukesha L7042G engine and one (1) Waukesha L7042GSI or one (1) F2895GSI engine. The plant is also equipped with one (1) emergency generator, driven by a Waukesha F2895GSI engine.

Fuel for the internal combustion engines, turbines and heaters is typically obtained from the Manzanares system.

It is estimated the plant will operate 24 hours per day, seven days per week, 52 weeks per year.

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Section 11

Source Determination

(Source submitting under 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC)

Sources applying for a construction permit, PSD permit, or operating permit shall evaluate surrounding and/or associated sources (including those sources directly connected to this source for business reasons) and complete this section. Responses to the following questions shall be consistent with the Air Quality Bureau's permitting guidance, Single Source Determination Guidance, which may be found on the Applications Page in the Permitting Section of the Air Quality Bureau website.

Typically, buildings, structures, installations, or facilities that have the same SIC code, that are under common ownership or control, and that are contiguous or adjacent constitute a single stationary source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes. Submission of your analysis of these factors in support of the responses below is optional, unless requested by NMED.

A. Identify the emission sources evaluated in this section (list and describe)**:**

El Cedro Compressor Station – compresses pipeline natural gas

B. Apply the 3 criteria for determining a single source:

SIC Code: Surrounding or associated sources belong to the same 2-digit industrial grouping (2-digit SIC code) as this facility, OR surrounding or associated sources that belong to different 2-digit SIC codes are support facilities for this source.

☑ **Yes** ☐ **No**

Common Ownership or Control: Surrounding or associated sources are under common ownership or control as this source.

☑ **Yes** ☐ **No**

Contiguous or Adjacent: Surrounding or associated sources are contiguous or adjacent with this source.

☑ **Yes** ☐ **No**

C. Make a determination:

☑ The source, as described in this application, constitutes the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes. If in "A" above you evaluated only the source that is the subject of this application, all "**YES**" boxes should be checked. If in "A" above you evaluated other sources as well, you must check **AT LEAST ONE** of the boxes "**NO**" to conclude that the source, as described in the application, is the entire source for 20.2.70, 20.2.72, 20.2.73, and 20.2.74 NMAC applicability purposes.

☐ The source, as described in this application, **does not** constitute the entire source for 20.2.70, 20.2.72, 20.2.73, or 20.2.74 NMAC applicability purposes (A permit may be issued for a portion of a source). The entire source consists of the following facilities or emissions sources (list and describe):

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Section 12.A

PSD Applicability Determination for All Sources

(Submitting under 20.2.72, 20.2.74 NMAC)

A PSD applicability determination for all sources. For sources applying for a significant permit revision, apply the applicable requirements of 20.2.74.AG and 20.2.74.200 NMAC and to determine whether this facility is a major or minor PSD source, and whether this modification is a major or a minor PSD modification. It may be helpful to refer to the procedures for Determining the Net Emissions Change at a Source as specified by Table A-5 (Page A.45) of the EPA New Source Review Workshop Manual to determine if the revision is subject to PSD review.

A. This facility is:

- ☐ a minor PSD source before and after this modification (if so, delete C and D below).
- ☐ a major PSD source before this modification. This modification will make this a PSD minor source.
- ☐ an existing PSD Major Source that has never had a major modification requiring a BACT analysis.
- ☐ an existing PSD Major Source that has had a major modification requiring a BACT analysis
- ☐ a new PSD Major Source after this modification.

B. This facility [is or is not] one of the listed 20.2.74.501 Table I – PSD Source Categories. The "project" emissions for this modification are [significant or not significant]. [Discuss why.] The "project" emissions listed below [do or do not] only result from changes described in this permit application, thus no emissions from other [revisions or modifications, past or future] to this facility. Also, specifically discuss whether this project results in "de-bottlenecking", or other associated emissions resulting in higher emissions. The project emissions (before netting) for this project are as follows [see Table 2 in 20.2.74.502 NMAC for a complete list of significance levels]:

a. NOx: XX.X TPY
b. CO: XX.X TPY
c. VOC: XX.X TPY
d. SOx: XX.X TPY
e. PM: XX.X TPY
f. PM10: XX.X TPY
g. PM2.5: XX.X TPY
h. Fluorides: XX.X TPY
i. Lead: XX.X TPY
j. Sulfur compounds (listed in Table 2): XX.X TPY
k. GHG: XX.X TPY

C. Netting [is required, and analysis is attached to this document.] OR [is not required (project is not significant)] OR [Applicant is submitting a PSD Major Modification and chooses not to net.]

D. BACT is [not required for this modification, as this application is a minor modification.] OR [required, as this application is a major modification. List pollutants subject to BACT review and provide a full top down BACT determination.]

E. If this is an existing PSD major source, or any facility with emissions greater than 250 TPY (or 100 TPY for 20.2.74.501 Table 1 – PSD Source Categories), determine whether any permit modifications are related, or could be considered a single project with this action, and provide an explanation for your determination whether a PSD modification is triggered.

Not applicable, as this is a Title V application.

Section 12.B

Special Requirements for a PSD Application

(Submitting under 20.2.74 NMAC)

Prior ***to Submitting a PSD application*****, the permittee shall:**

- ☐ Submit the BACT analysis for review prior to submittal of the application. No application will be ruled complete until the final determination regarding BACT is made, as this determination can ultimately affect information to be provided in the application. A pre-application meeting is recommended to discuss the requirements of the BACT analysis.
- ☐ Submit a modeling protocol prior to submitting the permit application. **[Except for GHG]**
- ☐ Submit the monitoring exemption analysis protocol prior to submitting the application. **[Except for GHG]**

For PSD applications, the permittee shall also include the following:

- ☐ Documentation containing an analysis on the impact on visibility. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on soil. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on vegetation, including state and federal threatened and endangered species. **[Except for GHG]**
- ☐ Documentation containing an analysis on the impact on water consumption and quality. **[Except for GHG]**
- ☐ Documentation that the federal land manager of a Class I area within 100 km of the site has been notified and provided a copy of the application, including the BACT and modeling results. The name of any Class I Federal area located within one hundred (100) kilometers of the facility.

Not applicable, as this is a Title V application.

Section 13

Determination of State & Federal Air Quality Regulations

This section lists each state and federal air quality regulation that may apply to your facility and/or equipment that are stationary sources of regulated air pollutants. Not all state and federal air quality regulations are included in this list. Go to the Code of Federal Regulations (CFR) or to the Air Quality Bureau's regulation page to see the full set of air quality regulations.

Required Information for Specific Equipment:

For regulations that apply to specific source types, in the 'Justification' column **provide any information needed to determine if the regulation does or does not apply**. **For example**, to determine if emissions standards at 40 CFR 60, Subpart IIII apply to your three identical stationary engines, we need to know the construction date as defined in that regulation; the manufacturer date; the date of reconstruction or modification, if any; if they are or are not fire pump engines; if they are or are not emergency engines as defined in that regulation; their site ratings; and the cylinder displacement.

Required Information for Regulations that Apply to the Entire Facility:

See instructions in the 'Justification' column for the information that is needed to determine if an 'Entire Facility' type of regulation applies (e.g. 20.2.70 or 20.2.73 NMAC).

Regulatory Citations for Regulations That Do Not, but Could Apply:

If there is a state or federal air quality regulation that does not apply, but you have a piece of equipment in a source category for which a regulation has been promulgated, you must **provide the low level regulatory citation showing why your piece of equipment is not subject to or exempt from the regulation. For example** if you have a stationary internal combustion engine that is not subject to 40 CFR 63, Subpart ZZZZ because it is an existing 2 stroke lean burn stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, your citation would be 40 CFR 63.6590(b)(3)(i). **We don't want a discussion of every non-applicable regulation, but if it is possible a regulation could apply, explain why it does not. For example,** if your facility is a power plant, you do not need to include a citation to show that 40 CFR 60, Subpart OOO does not apply to your non-existent rock crusher.

Regulatory Citations for Emission Standards:

For each unit that is subject to an emission standard in a source specific regulation, such as 40 CFR 60, Subpart OOO or 40 CFR 63, Subpart HH, include the low level regulatory citation of that emission standard. Emission standards can be numerical emission limits, work practice standards, or other requirements such as maintenance. **Here are examples:** a glycol dehydrator is subject to the general standards at 63.764C(1)(i) through (iii); an engine is subject to 63.6601, Tables 2a and 2b; a crusher is subject to 60.672(b), Table 3 and all transfer points are subject to 60.672(e)(1)

Federally Enforceable Conditions:

All federal regulations are federally enforceable. All Air Quality Bureau State regulations are federally enforceable except for the following: affirmative defense portions at 20.2.7.6.B, 20.2.7.110(B)(15), 20.2.7.11 through 20.2.7.113, 20.2.7.115, and 20.2.7.116; 20.2.37; 20.2.42; 20.2.43; 20.2.62; 20.2.63; 20.2.86; 20.2.89; and 20.2.90 NMAC. Federally enforceable means that EPA can enforce the regulation as well as the Air Quality Bureau and federally enforceable regulations can count toward determining a facility's potential to emit (PTE) for the Title V, PSD, and nonattainment permit regulations.

INCLUDE ANY OTHER INFORMATION NEEDED TO COMPLETE AN APPLICABILITY DETERMINATION OR THAT IS RELEVENT TO YOUR FACILITY'S NOTICE OF INTENT OR PERMIT.

EPA Applicability Determination Index for 40 CFR 60, 61, 63, etc: http://cfpub.epa.gov/adi/

State Regulations

Applicable state requirements are embodied in the New Mexico SIP, the New Mexico Administrative Code (NMAC), and the terms and conditions of any preconstruction permits issued pursuant to regulations promulgated through rulemaking under Title I of the CAA.

Table for STATE REGULATIONS:

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
20.2.1 NMAC	General Provisions	Yes	Facility	This regulation is applicable because it establishes procedures for protecting confidential information, procedures for seeking a variance, NMAQB's authority to require sampling equipment, severability, and the effective date for conformance with the NMACs, and prohibits the violation of other requirements in attempting to comply with the NMACs.
20.2.3 NMAC	Ambient Air Quality Standards NMAAQS	Yes	Facility	This is a State Implementation Plan (SIP) approved regulation that limits the maximum allowable concentrations of Total Suspended Particulates, Sulfur Compounds, Carbon Monoxide and Nitrogen Dioxide.
20.2.7 NMAC	Excess Emissions	Yes	Facility	This regulation is applicable because it prohibits excess emissions unless proper notification procedures are followed.
20.2.8 NMAC	Emissions Leaving New Mexico	Yes	Facility	This regulation is applicable because it establishes prohibitions on the release of pollutants that cross New Mexico State boundaries.
20.2.14 NMAC	Particulate Emissions from Coal Burning Equipment	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.14.5 NMAC).
20.2.18 NMAC	Oil Burning Equipment - Particulate Matter	No	N/A	This regulation is not applicable because the facility does not burn oil (see 20.2.18.5 NMAC).
20.2.31 NMAC	Coal Burning Equipment – Sulfur Dioxide	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.31.6 NMAC).
20.2.32 NMAC	Coal Burning Equipment – Nitrogen Dioxide,	No	N/A	This regulation is not applicable because the facility does not burn coal (see 20.2.32.6 NMAC).
20.2.33 NMAC	Gas Burning Equipment - Nitrogen Dioxide	No	N/A	This regulation is not applicable because the facility is not equipped with external gas burning equipment which have heat input rates exceeding the trigger level (one million MMBtu/year) established by the regulation (see 20.2.33.108 NMAC).
20.2.34 NMAC	Oil Burning Equipment: NO_2	No	N/A	This regulation is not applicable because the facility does not burn oil (see 20.2.34.6 NMAC).
20.2.35 NMAC	Natural Gas Processing Plant – Sulfur	No	N/A	This regulation is not applicable because the facility is not a natural gas processing plant (see 20.2.35.6 NMAC).
20.2.38 NMAC	Hydrocarbon Storage Facility	No	N/A	This regulation is not applicable because the Facility does not store hydrocarbons containing hydrogen sulfide, nor is there a tank battery storing hydrocarbon liquids with a capacity greater than or equal to 65,000 gallons (see 20.2.38.112 NMAC). Note that the condensate tank battery is limited to a useable capacity of just under 63,000 gallons (see the documentation at the end of this section).
20.2.39 NMAC	Sulfur Recovery Plant - Sulfur	No	N/A	This regulation is not applicable because the facility is not equipped with a sulfur recovery plant (see 20.2.39.6 NMAC).

STATE REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
20.2.61.109 NMAC	Smoke & Visible Emissions	Yes	1-10, 15-20 & 28	This regulation is applicable because the facility is equipped with stationary combustion sources. Emissions from these combustion sources are limited to less than 20% opacity (see 20.2.61.109 NMAC). The regulation is not applicable to the Title V insignificant heaters (see 20.2.61.111.D NMAC).
20.2.70 NMAC	Operating Permits	Yes	Facility	This regulation is applicable because the facility is a major source of NO_2, CO, VOC & HAP emissions (see 20.2.70.200 NMAC).
20.2.71 NMAC	Operating Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.70 NMAC (see 20.2.71.6 NMAC).
20.2.72 NMAC	Construction Permits	Yes	Facility	This regulation is applicable because the facility has potential emission rates (PER) greater than 10 pph or 25 tpy for pollutants subject to a state or federal ambient air quality standards (does not include VOCs or HAPs).
20.2.73 NMAC	NOI & Emissions Inventory Requirements	Yes	Facility	The Notice of Intent portion of this regulation does not apply because the facility is subject to 20.2.72 NMAC. The emissions inventory portion of this regulation is applicable since the facility is a Title V major source (see 20.2.73.300.B(1) & (2)).
20.2.74 NMAC	Permits – Prevention of Significant Deterioration (PSD)	Yes	Facility	This regulation is applicable because the facility is a PSD major source, the NOX, CO and VOC potential to emit are each greater than 250 tpy (see 20.2.74.200 NMAC). Note, however, that this is a Title V application and not a PSD application.
20.2.75 NMAC	Construction Permit Fees	Yes	Facility	This regulation is applicable because the facility is subject to 20.2.72 NMAC and it establishes the fee schedule associated with the filing of construction permits (see 20.2.75.6 NMAC).
20.2.77 NMAC	New Source Performance	Yes	15 & 16	This regulation is applicable because it adopts by reference the federal NSPS codified in 40 CFR 60 (see 20.2.77.6 NMAC). The facility is subject to 40 CFR 60, Subparts A & GG.
20.2.78 NMAC	Emission Standards for HAPS	No		This regulation is not applicable because it incorporates by reference the NESHAPs codified under 40 CFR 61 (see 20.2.78.6 NMAC). The facility is not subject to 40 CFR 61.
20.2.79 NMAC	Permits – Nonattainment Areas	No		This regulation is not applicable because the facility is neither located in nor has a significant impact on a nonattainment area (see 20.2.79.6 NMAC).
20.2.80 NMAC	Stack Heights	Yes	1-10, 15-20 & 28	This regulation is applicable because it establishes guidelines for the selection of an appropriate stack height for the purposes of atmospheric dispersion modeling (see 20.2.80.6 NMAC).
20.2.82 NMAC	MACT Standards for Source Categories of HAPS	Yes	1-10 & 17-19	This regulation is applicable because it adopts by reference the federal MACT Standards for source categories codified in 40 CFR 63 (see 20.2.82.6 NMAC). The affected units at the facility are subject to 40 CFR 63, Subparts A & ZZZZ.

Federal Regulations

Federal standards and requirements are embodied in Title 40 (Protection of the Environment), Subchapter C (Air Programs) of the CFR, Parts 50 through 99.

FEDERAL REGULATIONS APPLICABILITY CHECKLIST

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
40 CFR 50	NAAQS	Yes	Facility	This regulation applies because the facility is subject to 20.2.70, 20.2.72 and 20.2.74 NMAC.
40 CFR 52	Approval and Promulgation of Implementation Plans	Yes	Facility	40 CFR 52.21 *Prevention of Significant Deterioration of Air Quality* is applicable because the facility is a major Prevention of Significant Deterioration source. The remainder of 40 CFR 52 is not applicable because it addresses approval and promulgation of implementation plans.
NSPS 40 CFR 60, Subpart A	General Provisions	Yes	15 & 16	This regulation applies because 40 CFR 60, Subpart GG applies (see §60.1(a)).
NSPS 40 CFR 60, Subpart K	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978	No	N/A	This regulation is not applicable because the petroleum liquids storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110(a)).
NSPS 40 CFR 60, Subpart Ka	Standards of Performance for Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984	No	N/A	This regulation is not applicable because the storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 40,000 gallons (see §60.110a(a)).
NSPS 40 CFR 60, Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984	No	N/A	This regulation is not applicable because all storage tanks at the facility have capacities less than the minimum applicability threshold capacity of 75 cubic meters (19,812 gallons), and/or were installed prior to the applicability date, and/or contain condensate prior to custody transfer (§60.110b(a) & §60.110b(d)(4)). For tank capacities, installation dates and contents, see Tables 2-K and 2-L in section 2 of this application. The changes proposed in this registration are not modifications as defined in §60.14(e). (e) The following shall not, by themselves, be considered modifications under this part: (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
NSPS 40 CFR 60 Subpart GG	Standards of Performance for Stationary Gas Turbines	Yes	15 & 16	This regulation is applicable because the turbines (Units 15 & 16) at the facility were constructed after the applicability date of October 3, 1977 and have a peak input load greater than the applicability threshold of 10.15 MMBtu/hr (see Table 2-A in Section 2 of this application) (see §60.330). The units must comply with the NO_X emission limitation of 150 ppmv at 15% O2 on a dry basis (see §60.332(a)(2)). The units must comply with the SO_2 emissions limitation of 0.015% by volume at 15% O2 on a dry basis or use a fuel that does not contain sulfur in excess of 0.8 percent by weight (8,000 ppmw) (see §60.333).

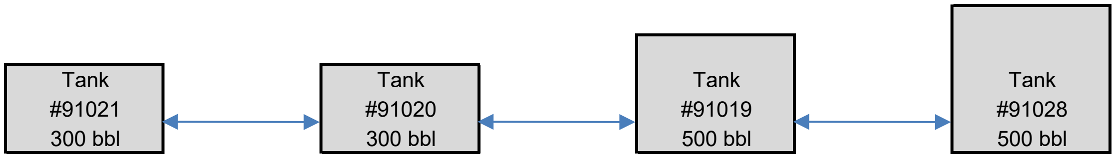
FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
NSPS 40 CFR 60, Subpart KKK	Standards of Performance for Equipment Leaks of VOC from Onshore Gas Plants	No	N/A	This regulation is not applicable because the facility is not an onshore natural gas processing plant as defined by the subpart (see §60.630(a)(1)). Natural gas processing plant (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both (see §60.631).
NSPS 40 CFR 60, Subpart LLL	Standards of Performance for Onshore Natural Gas Processing: SO_2 Emissions	No	N/A	This regulation is not applicable because the facility is not a natural gas processing plant as defined by the subpart. It is not equipped with a sweetening unit (see §60.640(a)).
NSPS 40 CFR 60, Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	No	N/A	This regulation does not apply because the facility is not equipped with stationary CI ICE (see §60.4200(a)).
NSPS 40 CFR 60, Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines	Potentially Subject	N/A	This regulation is not applicable because the facility is does not have affected equipment. The subpart is not applicable to the 4SLB stationary SI ICE at the facility (Units 1-9). They commenced construction prior to June 12, 2006. They have maximum engine powers between 500 and 1,350 hp and they were manufactured prior to January 1, 2008 (see Table 2-A in Section 2 of this application) (see §60.4230(a)(4)(ii)). The subpart is not applicable to the 4SRB stationary SI ICE at the facility (Units 17, 18 & 18a). They have maximum engine powers greater than or equal to 500 hp. They commenced construction prior to June 12, 2006 and/or were manufactured prior to July 1, 2007 (see Table 2-A in Section 2 of this application) (see §60.4230(a)(4)(i)). The subpart is not applicable to the emergency engine (Unit 19). It has a maximum engine power greater than 25 hp. It was constructed prior to June 12, 2006 and was manufactured prior to January 1, 2009 (see Table 2-A in Section 2 of this application) (see §60.4230(a)(4)(iv)).
NSPS 40 CFR 60, Subpart KKKK	Standards of Performance for Stationary Combustion Turbines	No	N/A	This regulation is not applicable because none of the turbines at the facility were constructed, modified, or reconstructed after February 18, 2005 (see Table 2-A in Section 2 of this application) (see §60.4305(a)).
NSPS 40 CFR 60, Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution for which Construction, Modification or Reconstruction Commenced After August 23, 2011 and On or Before September 18, 2015	Potentially Subject	N/A	This regulation is not applicable because the facility will not be equipped with "affected" sources that are constructed, modified, or reconstructed after Aug 23, 2011 and on or before September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, and storage vessels (see §60.5365). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430).

FEDERAL REGU-LATIONS CITATION	**Title**	**Applies? Enter Yes or No**	**Unit(s) or Facility**	**JUSTIFICATION:**
NSPS 40 CFR 60, Subpart OOOOa	Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015	Potentially Subject	N/A	This regulation is not applicable because the facility will not be equipped with "affected" sources that were constructed, modified, or reconstructed after September 18, 2015: gas wells, centrifugal or reciprocating compressors, pneumatic controllers, storage vessels, pneumatic pumps, and equipment leaks (see §60.5365a). Note that the facility is not a natural gas processing plant as defined by the subpart (see §60.5430a). The changes proposed in this registration are not modifications as defined in §60.14(e). (e) The following shall not, by themselves, be considered modifications under this part: (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
NESHAP 40 CFR 61, Subpart A	General Provisions	No	N/A	This regulation is not applicable because none of the other 40 CFR Part 61 subparts apply (see §61.01(c)).
NESHAP 40 CFR 61, Subpart V	National Emission Standards for Equipment Leaks (Fugitive Emission Sources)	No	N/A	This regulation is not applicable because none of the listed equipment at the facility is in VHAP service. The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, and control devices or systems required by this subpart (see §61.240(a)). VHAP service means a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight of VHAP. VHAP means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been promulgated (see §61.241).
MACT 40 CFR 63, Subpart A	General Provisions	Yes	1-10 & 17-19	This regulation is applicable because 40 CFR 63, Subpart ZZZZ applies (see §63.1(b)).
MACT 40 CFR 63, Subpart HH	National Emission Standards for Hazardous Air Pollutants For Oil and Natural Gas Production Facilities	No	N/A	This regulation is not applicable because the facility is not equipped with dehydrators. The facility is an area HAP source as defined by the subpart. Since it is a production field facility (located prior to the point of custody transfer), only HAP emissions from glycol dehydration units and storage vessels are aggregated for a major source determination. Storage vessels include crude oil tanks, condensate tanks, intermediate hydrocarbon liquid tanks, and produced water tanks (see §63.761). Because the facility is an area HAP source, TEG dehydrators are the only potentially affected equipment (see §63.760(b)(2)).
MACT 40 CFR 63, Subpart HHH	National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities	No	N/A	This regulation is not applicable because the facility is not a natural gas transmission and storage facility as defined by the subpart. A compressor station that transports natural gas prior to the point of custody transfer or to a natural gas processing plant (if present) is not considered a part of the natural gas transmission and storage source category (see §63.1270(a)).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63, Subpart YYYY	National Emission Standards for Hazardous Air Pollutants From Stationary Combustion Turbines	Yes	15 & 16	This regulation is applicable because the facility is both equipped with stationary combustion turbines (Units 15 & 16) and is a HAP major source (see §63.6090(a)). The facility is a major HAP source as defined by the subpart. Since it is a production field facility, only HAP emissions from dehydrators, storage vessels with the potential for flash emissions, combustion turbines and RICE are aggregated for a major source determination (see §63.6175). There are no applicable requirements for the turbines, because they were constructed or reconstructed prior to January 14, 2003 (see Table 2-A in Section 2 of this application) (see §63.6090(b)(4)).
MACT 40 CFR 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE MACT)	Potentially Subject	1-10 & 17-19	This regulation is applicable because the facility is equipped with stationary RICE (see §63.6585). The facility is a major HAP source as defined by the subpart. Since it is a production field facility, only HAP emissions from dehydrators, storage vessels with the potential for flash emissions, combustion turbines and RICE are aggregated for a major source determination (see §63.6675). Except for initial notification requirements, there are no requirements for the 4-stroke lean burn compressor engines (Units 1-9). They have site ratings greater than 500 hp and commenced construction or reconstruction before December 19, 2002 (see Table 2-A in Section 2 of this application). The Subpart may be applicable to Unit 10, if it is installed and if it is constructed or reconstructed on or after December 19, 2002 (see §63.6590(a)(1)(i) and §63.6590(b)(3)(ii)). The 4-stroke rich burn generator engines (Units 17 & 18 or 18a) all have site ratings greater than 500 hp. Consequently, they must be equipped with catalysts to reduce formaldehyde emissions by 76 percent or to limit formaldehyde emissions to 350 ppbvd or less at 15% O2. The catalyst must be maintained so that the pressure drop across the catalyst does not change by more than 2 inches of water at 100 percent load plus or minus 10 percent from the pressure drop across the catalyst measured during the initial performance test. The temperature of your stationary RICE exhaust must be maintained so that the catalyst inlet temperature is greater than or equal to 750 °F and less than or equal to 1250 °F (based on a 4-hour rolling average). CPMS must be installed to monitor the catalyst inlet temperatures. Also, the engine's time spent at idle must be minimized and the engine's startup time at startup must be minimized to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply (see §63.6600(a), Table 1a, and Table 1b). There are no requirements for the emergency generator engine (Unit 19). It has a site rating greater than 500 hp and commenced construction or reconstruction before December 19, 2002 (see Table 2-A in Section 2 of this application). Also, the generator does not operate and is not contractually obligated to be available for emergency demand response and deviations of voltage (see §63.6590(b)(3)(iii).
MACT 40 CFR 63, Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Major Industrial, Commercial, and Institutional Boilers & Process Heaters	No	N/A	This regulation is not applicable because the facility is an area HAP source as defined by the subpart (see §63.7480). Since the facility is a natural gas production facility, only HAP emissions from dehydrators and storage vessels with the potential for flash emissions are aggregated for a major source determination (see §63.7575).

FEDERAL REGU-LATIONS CITATION	Title	Applies? Enter Yes or No	Unit(s) or Facility	JUSTIFICATION:
MACT 40 CFR 63, Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities	No	N/A	This regulation is not applicable to the gasoline storage tank because the facility is a major HAP source as defined by the subpart (see §63.11111(a)).
40 CFR 64	Compliance Assurance Monitoring	Yes	17 & 18	This regulation is applicable to two of the rich burn engines (Units 17 & 18) because they are equipped with control devices used to achieve compliance with emission limits or standards where pre control emissions equal or exceed the major source threshold (see §64.2(a)).
40 CFR 68	Chemical Accident Prevention	No	N/A	This regulation is not applicable because the facility does not store any of the identified toxic and flammable substances in quantities exceeding the applicability thresholds (see §68.10(a), §68.115(a), and §68.130 Tables 1-4).
40 CFR 70	State Operating Permit Programs	No	N/A	This regulation is not applicable, as the requirements associated with Title V are delegated to the State of New Mexico and implemented under 20 NMAC 2.70.
40 CFR 82	Protection of Stratospheric Ozone	No	N/A	This regulation is not applicable because the facility does not produce, transform, destroy, import, or export ozone-depleting substances (see §82.1(b),); does not service motor vehicle air conditioning units (see §82.30(b)); and does not sell, distribute, or offer for sale or distribution any product that contains ozone-depleting substances (see §82.64).

Applicability Determination for 20.2.38 NMAC
(Capacity of El Cedro Condensate Tank Battery)



Since all four tanks are tied together, Units 91019 & 91028 are limited to holding 15 vertical feet of condensate or Units 91020 & 91021 will spill over.

Tank T91019

15.5	ft	Diameter	Nameplate
16.0	ft	Height	Nameplate
22,584	gal	Volume	3.1416 x (Diameter (ft)/2)^2) x Height (ft) x 7.4805 gal/ft^3
1.0	ft	Additional Height (Above T91020)	Height (ft)(T91019) - Height (ft)(T91020)
1,412	gal	Unusable Volume:	3.1416 x (Diameter (ft)/2)^2) x Additional Height (ft) x 7.4805 gal/ft^3
21,173	gal	Usable Volume	Volume (gal) - Unusable Volume (gal)

Note: The nameplate nominal volume of the tank is 500 bbl (21,000 gal)

Tanks T91020 & T91021

12.0	ft	Diameter	Nameplate
15.0	ft	Height	Nameplate
12,690	gal each	Volume	3.1416 x (Diameter (ft)/2)^2) x Height (ft) x 7.4805 gal/ft^3

Note: The nameplate nominal volumes of the tanks are 300 bbl (12,600 gal)

Tank T91028

13.6	ft	Diameter	Nameplate
20.0	ft	Height	Nameplate
21,733	gal	Volume	3.1416 x (Diameter (ft)/2)^2) x Height (ft) x 7.4805 gal/ft^3
5.0	ft	Additional Height (Above T91020)	Height (ft)(T91028) - Height (ft)(T91020)
5,433	gal	Unusable Volume:	3.1416 x (Diameter (ft)/2)^2) x Additional Height (ft) x 7.4805 gal/ft^3
16,300	gal	Usable Volume	Volume (gal) - Unusable Volume (gal)

Note: The nameplate nominal volume of the tank is 500 bbl (21,000 gal)

Battery Capacity

62,854	gal	Total Usable Volume	Sum of Usable Volumes

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Section 14

Operational Plan to Mitigate Emissions

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

☑ **Title V Sources** (20.2.70 NMAC)**:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Emissions During Startups, Shutdowns, and Emergencies** defining the measures to be taken to mitigate source emissions during startups, shutdowns, and emergencies as required by 20.2.70.300.D.5(f) and (g) NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has developed an **Operational Plan to Mitigate Source Emissions During Malfunction, Startup, or Shutdown** defining the measures to be taken to mitigate source emissions during malfunction, startup, or shutdown as required by 20.2.72.203.A.5 NMAC. This plan shall be kept on site to be made available to the Department upon request. This plan should not be submitted with this application.

☑ **Title V** (20.2.70 NMAC)**, NSR** (20.2.72 NMAC)**, PSD** (20.2.74 NMAC) **& Nonattainment** (20.2.79 NMAC) **Sources:** By checking this box and certifying this application the permittee certifies that it has established and implemented a Plan to Minimize Emissions During Routine or Predictable Startup, Shutdown, and Scheduled Maintenance through work practice standards and good air pollution control practices as required by 20.2.7.14.A and B NMAC. This plan shall be kept on site or at the nearest field office to be made available to the Department upon request. This plan should not be submitted with this application.

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Section 15

Alternative Operating Scenarios

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

Alternative Operating Scenarios: Provide all information required by the department to define alternative operating scenarios. This includes process, material and product changes; facility emissions information; air pollution control equipment requirements; any applicable requirements; monitoring, recordkeeping, and reporting requirements; and compliance certification requirements. Please ensure applicable Tables in this application are clearly marked to show alternative operating scenario.

Construction Scenarios: When a permit is modified authorizing new construction to an existing facility, NMED includes a condition to clearly address which permit condition(s) (from the previous permit and the new permit) govern during the interval between the date of issuance of the modification permit and the completion of construction of the modification(s). There are many possible variables that need to be addressed such as: Is simultaneous operation of the old and new units permitted and, if so for example, for how long and under what restraints? In general, these types of requirements will be addressed in Section A100 of the permit, but additional requirements may be added elsewhere. Look in A100 of our NSR and/or TV permit template for sample language dealing with these requirements. Find these permit templates at: https://www.env.nm.gov/aqb/permit/aqb_pol.html. Compliance with standards must be maintained during construction, which should not usually be a problem unless simultaneous operation of old and new equipment is requested.

In this section, under the bolded title "Construction Scenarios", specify any information necessary to write these conditions, such as: conservative-realistic estimated time for completion of construction of the various units, whether simultaneous operation of old and new units is being requested (and, if so, modeled), whether the old units will be removed or decommissioned, any PSD ramifications, any temporary limits requested during phased construction, whether any increase in emissions is being requested as SSM emissions or will instead be handled as a separate Construction Scenario (with corresponding emission limits and conditions, etc.

In accordance with the current NSR permit, Unit 18a is authorized to be used in the place of Unit 18 and these units are not authorized to operate simultaneously.

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Section 16

Air Dispersion Modeling

1) Minor Source Construction (20.2.72 NMAC) and Prevention of Significant Deterioration (PSD) (20.2.74 NMAC) ambient impact analysis (modeling): Provide an ambient impact analysis as required at 20.2.72.203.A(4) and/or 20.2.74.303 NMAC and as outlined in the Air Quality Bureau's Dispersion Modeling Guidelines found on the Planning Section's modeling website. If air dispersion modeling has been waived for one or more pollutants, attach the AQB Modeling Section modeling waiver approval documentation.
2) SSM Modeling: Applicants must conduct dispersion modeling for the total short term emissions during routine or predictable startup, shutdown, or maintenance (SSM) using realistic worst case scenarios following guidance from the Air Quality Bureau's dispersion modeling section. Refer to "Guidance for Submittal of Startup, Shutdown, Maintenance Emissions in Permit Applications (http://www.env.nm.gov/aqb/permit/app_form.html) for more detailed instructions on SSM emissions modeling requirements.
3) Title V (20.2.70 NMAC) ambient impact analysis: Title V applications must specify the construction permit and/or Title V Permit number(s) for which air quality dispersion modeling was last approved. Facilities that have only a Title V permit, such as landfills and air curtain incinerators, are subject to the same modeling required for preconstruction permits required by 20.2.72 and 20.2.74 NMAC.

What is the purpose of this application?	Enter an X for each purpose that applies
New PSD major source or PSD major modification (20.2.74 NMAC). See #1 above.	
New Minor Source or significant permit revision under 20.2.72 NMAC (20.2.72.219.D NMAC). See #1 above. **Note:** Neither modeling nor a modeling waiver is required for VOC emissions.	
Reporting existing pollutants that were not previously reported.	
Reporting existing pollutants where the ambient impact is being addressed for the first time.	
Title V application (new, renewal, significant, or minor modification. 20.2.70 NMAC). See #3 above.	X
Relocation (20.2.72.202.B.4 or 72.202.D.3.c NMAC)	
Minor Source Technical Permit Revision 20.2.72.219.B.1.d.vi NMAC for like-kind unit replacements.	
Other: i.e. SSM modeling. See #2 above.	
This application does not require modeling since this is a No Permit Required (NPR) application.	
This application does not require modeling since this is a Notice of Intent (NOI) application (20.2.73 NMAC).	
This application does not require modeling according to 20.2.70.7.E(11), 20.2.72.203.A(4), 20.2.74.303, 20.2.79.109.D NMAC and in accordance with the Air Quality Bureau's Modeling Guidelines.	

Check each box that applies:

☐ See attached, approved modeling **waiver for all** pollutants from the facility.
☐ See attached, approved modeling **waiver for some** pollutants from the facility.
☐ Attached in Universal Application Form 4 (UA4) is a **modeling report for all** pollutants from the facility.
☐ Attached in UA4 is a **modeling report for some** pollutants from the facility.
☑ No modeling is required.

A modeling report for NO_2, CO and particulate was submitted with the October 2015 permit application for 340-M12.

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Section 17

Compliance Test History

(Submitting under 20.2.70, 20.2.72, 20.2.74 NMAC)

To show compliance with existing NSR permits conditions, you must submit a compliance test history. The table below provides an example.

Compliance Test History Table

Unit No.	Test Description	Test Date
1-9	Testing for NO_X and CO emissions	05/23/2019
10	Not applicable, as this unit is not installed.	N/A
15	Testing for NO_X and CO emissions	09/20/2016
16	Testing for NO_X and CO emissions	05/23/2019
17	Testing for NO_X and CO emissions	05/23/2019
17	Testing for formaldehyde emissions in accordance with Subpart ZZZZ	03/24/2014
18	Testing for NO_X and CO emissions	03/18/2020
18	Testing for formaldehyde emissions in accordance with Subpart ZZZZ	06/17/2015
18a	Testing for NO_X and CO emissions	03/18/2020
18a	Testing for formaldehyde emissions in accordance with Subpart ZZZZ	03/18/2020
19	Not applicable, as testing is not required for this unit	N/A

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Section 18

Addendum for Streamline Applications

Streamline Applications do not require a complete application. Submit Sections 1-A, 1-B, 1-D, 1-F, 1-G, 2-A, 2-C thru L, Sections 3 thru 8, Section 13, Section 18, Section 22, and Section 23 (Certification). Other sections may be required at the discretion of the Department. 20.2.72.202 NMAC Exemptions do not apply to Streamline sources. 20.2.72.219 NMAC revisions and modifications do not apply to Streamline sources, thus 20.2.72.219 type actions require a complete new application submittal. Please do not print sections of a streamline application that are not required.

Not applicable, as this is not a streamline application.

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Section 19

Requirements for Title V Program

Who Must Use this Attachment:

* Any major source as defined in 20.2.70 NMAC.
* Any source, including an area source, subject to a standard or other requirement promulgated under Section 111 - Standards of Performance for New Stationary Sources, or Section 112 Hazardous Air Pollutants, of the 1990 federal Clean Air Act ("federal Act"). Non-major sources subject to Sections 111 or 112 of the federal Act are exempt from the obligation to obtain an 20.2.70 NMAC operating permit until such time that the EPA Administrator completes rulemakings that require such sources to obtain operating permits. In addition, sources that would be required to obtain an operating permit solely because they are subject to regulations or requirements under Section 112(r) of the federal Act are exempt from the requirement to obtain an Operating Permit.
* Any Acid Rain source as defined under title IV of the federal Act. The Acid Rain program has additional forms. See http://www.env.nm.gov/aqb/index.html. Sources that are subject to both the Title V and Acid Rain regulations are encouraged to submit both applications simultaneously.
* Any source in a source category designated by the EPA Administrator ("Administrator"), in whole or in part, by regulation, after notice and comment.

19.1 - 40 CFR 64, Compliance Assurance Monitoring (CAM) (20.2.70.300.D.10.e NMAC)

Any source subject to 40CFR, Part 64 (Compliance Assurance Monitoring) must submit all the information required by section 64.7 with the operating permit application. The applicant must prepare a separate section of the application package for this purpose; if the information is already listed elsewhere in the application package, make reference to that location. Facilities not subject to Part 64 are invited to submit periodic monitoring protocols with the application to help the AQB to comply with 20.2.70 NMAC. Sources subject to 40 CFR Part 64, must submit a statement indicating your source's compliance status with any enhanced monitoring and compliance certification requirements of the federal Act.

The rich burn engines (Units 17 & 18) at the El Cedro Compressor Station are subject to 40 CFR, Part 64, Compliance Assurance Monitoring (CAM); consequently, a monitoring protocol is required with this application. The CAM plan is provided in Section 20 of this application.

19.2 - Compliance Status (20.2.70.300.D.10.a & 10.b NMAC)

Describe the facility's compliance status with each applicable requirement at the time this permit application is submitted. This statement should include descriptions of or references to all methods used for determining compliance. This statement should include descriptions of monitoring, recordkeeping and reporting requirements and test methods used to determine compliance with all applicable requirements. Refer to Section 2, Tables 2-N and 2-O of the Application Form as necessary. (20.2.70.300.D.11 NMAC) For facilities with existing Title V permits, refer to most recent Compliance Certification for existing requirements. Address new requirements such as CAM, here, including steps being taken to achieve compliance.

The El Cedro Compressor Station is in compliance with all applicable requirements affecting the facility. A copy Part 1 (Permit Requirements Certification Table) of the 2019 annual compliance certification is provided in Section 20, Other Relevant Information. It identifies all the requirements of the current Title V operating permit and the methods and data used to determine compliance. It is assumed that compliance with the Title V operating permit ensures compliance with the construction permit and New Mexico regulations.

19.3 - Continued Compliance (20.2.70.300.D.10.c NMAC)

Provide a statement that your facility will continue to be in compliance with requirements for which it is in compliance at the time of permit application. This statement must also include a commitment to comply with other applicable requirements as they come into effect during the permit term. This compliance must occur in a timely manner or be consistent with such schedule expressly required by the applicable requirement.

The El Cedro Compressor Station will continue to be in compliance with applicable requirements for which it is in compliance at the time of this permit application. In addition, the station will, in a timely manner or consistent with such schedule expressly required by the applicable requirement, comply with other applicable requirements as they come into effect during the permit term.

19.4 - Schedule for Submission of Compliance (20.2.70.300.D.10.d NMAC)

You must provide a proposed schedule for submission to the department of compliance certifications during the permit term. This certification must be submitted annually unless the applicable requirement or the department specifies a more frequent period. A sample form for these certifications will be attached to the permit.

The submittal of compliance certifications during the five-year term of the operating permit will occur annually.

19.5 - Stratospheric Ozone and Climate Protection

In addition to completing the four (4) questions below, you must submit a statement indicating your source's compliance status with requirements of Title VI, Section 608 (National Recycling and Emissions Reduction Program) and Section 609 (Servicing of Motor Vehicle Air Conditioners).

---

1. Does your facility have any air conditioners or refrigeration equipment that uses CFCs, HCFCs or other ozone-depleting substances? ☐ **Yes** ☑ **No**

2. Does any air conditioner(s) or any piece(s) of refrigeration equipment contain a refrigeration charge greater than 50 lbs? ☐ **Yes** ☑ **No**

   (If the answer is yes, describe the type of equipment and how many units are at the facility.)

3. Do your facility personnel maintain, service, repair, or dispose of any motor vehicle air conditioners (MVACs) or appliances ("appliance" and "MVAC" as defined at 82. 152)? ☐ **Yes** ☑ **No**

4. Cite and describe which Title VI requirements are applicable to your facility (i.e. 40 CFR Part 82, Subpart A through G). **None**

The station does not produce, manufacture, transform, destroy, import, or export any stratospheric ozone-depleting substances (CFCs, HCFCs); does not maintain or service motor vehicle air conditioning units or refrigeration equipment; and does not sell, distribute, or offer for sale any product that may contain stratospheric ozone-depleting substances.

HFC shall continue to maintain compliance with the conditions stipulated in 40 CFR 82, Subparts A-G of the Stratospheric Ozone Protection Program (Title VI of the Clean Air Act Amendments).

19.6 - Compliance Plan and Schedule

Applications for sources, which are not in compliance with all applicable requirements at the time the permit application is submitted to the department, must include a proposed compliance plan as part of the permit application package. This plan shall include the information requested below:

A. Description of Compliance Status: (20.2.70.300.D.11.a NMAC)
A narrative description of your facility's compliance status with respect to all applicable requirements (as defined in 20.2.70 NMAC) at the time this permit application is submitted to the department.

B. Compliance plan: (20.2.70.300.D.11.B NMAC)
A narrative description of the means by which your facility will achieve compliance with applicable requirements with which it is not in compliance at the time you submit your permit application package.

C. Compliance schedule: (20.2.70.300D.11.c NMAC)
A schedule of remedial measures that you plan to take, including an enforceable sequence of actions with milestones, which will lead to compliance with all applicable requirements for your source. This schedule of compliance must be at least as stringent as that contained in any consent decree or administrative order to which your source is subject. The obligations of any consent decree or administrative order are not in any way diminished by the schedule of compliance.

D. Schedule of Certified Progress Reports: (20.2.70.300.D.11.d NMAC)
A proposed schedule for submission to the department of certified progress reports must also be included in the compliance schedule. The proposed schedule must call for these reports to be submitted at least every six (6) months.

E. Acid Rain Sources: (20.2.70.300.D.11.e NMAC)
If your source is an acid rain source as defined by EPA, the following applies to you. For the portion of your acid rain source subject to the acid rain provisions of title IV of the federal Act, the compliance plan must also include any additional requirements under the acid rain provisions of title IV of the federal Act. Some requirements of title IV regarding the schedule and methods the source will use to achieve compliance with the acid rain emissions limitations may supersede the requirements of title V and 20.2.70 NMAC. You will need to consult with the Air Quality Bureau permitting staff concerning how to properly meet this requirement.

NOTE: The Acid Rain program has additional forms. See http://www.env.nm.gov/aqb/index.html. Sources that are subject to both the Title V and Acid Rain regulations are **encouraged** to submit both applications **simultaneously**.

The El Cedro Compressor Station is in compliance with all applicable requirements; consequently, a compliance plan, a compliance schedule, and a schedule of certified progress reports is not required.

The El Cedro Compressor Station is not equipped with any acid rain sources; consequently, compliance with the acid rain provisions is not required as a part of this permit application.

19.7 - 112(r) Risk Management Plan (RMP)

Any major sources subject to section 112(r) of the Clean Air Act must list all substances that cause the source to be subject to section 112(r) in the application. The permittee must state when the RMP was submitted to and approved by EPA.

The El Cedro Compressor Station is not subject to 40 CFR 68, Chemical Accident Prevention Provisions; consequently, a Risk Management Plan is not required.

19.8 - Distance to Other States, Bernalillo, Indian Tribes and Pueblos

Will the property on which the facility is proposed to be constructed or operated be closer than 80 km (50 miles) from other states, local pollution control programs, and Indian tribes and pueblos (20.2.70.402.A.2 and 20.2.70.7.B NMAC)?

(If the answer is yes, state which apply and provide the distances.)

The El Cedro Compressor Station is located within 50 miles of the following states, local pollution control programs, Indian tribes and pueblos:

Colorado (~20 miles)
Southern Ute Indian Reservation (~20 miles)
Navajo Indian Reservation (~47 miles)
Jicarilla Apache Indian Reservation (~10 miles)
Ute Mountain Indian Reservation (~48 miles)

19.9 - Responsible Official

Provide the Responsible Official as defined in 20.2.70.7.AD NMAC:

The responsible official for the El Cedro Compressor Station is Travis Jones.

Section 20

Other Relevant Information

Other relevant information. Use this attachment to clarify any part in the application that you think needs explaining. Reference the section, table, column, and/or field. Include any additional text, tables, calculations or clarifying information.

Additionally, the applicant may propose specific permit language for AQB consideration. In the case of a revision to an existing permit, the applicant should provide the old language and the new language in track changes format to highlight the proposed changes. If proposing language for a new facility or language for a new unit, submit the proposed operating condition(s), along with the associated monitoring, recordkeeping, and reporting conditions. In either case, please limit the proposed language to the affected portion of the permit.

This section contains both a Compliance Assurance Monitoring Plan for the rich burn engines (Units 17 & 18) and Part 1 (Permit Requirements Certification Table) of the 2019 annual compliance certification. Please see the following pages.

COMPLIANCE ASSURANCE MONITORING PLAN
HARVEST FOUR CORNERS, LLC
EL CEDRO COMPRESSOR STATION
CATALYTIC CONVERTER FOR CONTROL OF NO_X AND CO

I. Introduction

Under Subpart ZZZZ, the rich burn engines (Units 17 & 18) at the El Cedro Compressor Station must be equipped with catalysts to control formaldehyde emissions. These catalysts also control nitrogen oxide (NO_X) and carbon monoxide (CO) emissions. As this facility is a major source required to obtain a Part 70 permit, the requirements of 40 CFR 64, Compliance Assurance Monitoring (CAM) are applicable as per §64.2(a):

(1) The engines are subject to emission limitations established in the NSR and Part 70 permits;

(2) The engines use control devices to achieve compliance with these emission limitations; and

(3) As seen in the table below, the uncontrolled NO_X and CO emissions from the engines are in excess of 100 tons per year.

II. Emissions

Source Description	Unit Number	Pollutant	Uncontrolled Emissions		Controlled Emissions	
			pph	tpy	pph	tpy
Waukesha 7042G	17	NOX	30.8	134.9	2.1	9.3
		CO	25.0	109.6	3.9	16.9
Waukesha 7042GSI	18	NOX	51.7	226.6	3.6	15.6
		CO	42.0	184.1	6.5	28.3

Harvest Four Corners, LLC has elected to install three-way non-selective catalytic reduction (NSCR) systems on their engines. The controlled emissions in this table are the emissions limits established in the permits.

III. Monitoring

The monitoring requirements of this CAM plan are identified in the table at the end of this plan.

IV. Response to Excursions

Excursions beyond the allowable indictor ranges will trigger an inspection, corrective action, and reporting. Maintenance personnel will inspect the units within 24 hours of receiving notification and make needed repairs as soon as practicable.

V. Justification

The monitoring requirements of this plan apply to the three-way non-selective reduction catalyst system used on rich burn engines at the plant. The catalyst systems are passive units and do not have mechanical components. The reduction reaction does not take place properly if the temperature of the engine exhaust gas into the catalyst system is too low or too high. A significant change in the pressure drop across the catalyst can indicate damage to or fouling of the catalyst.

Rationale for Selection of Performance Indicators

- The temperature of the engine exhaust gas flowing into the catalyst is measured because temperature excursions indicate problems with engine operation that can prevent the chemical reaction from taking place in the catalyst bed. Too low an exhaust gas temperature reduces the activity of the intended chemical/catalyst reaction. Too high an exhaust gas temperature can damage the catalyst. Monitoring of the catalyst inlet gas temperature will help assure proper operation of the catalyst.

- The pressure differential across the catalyst can indicate if the catalyst is damaged, resulting in channeling or other problems, or if there is fouling/plugging in the catalyst. Both conditions would result in reduced catalyst performance.

- Quarterly NO_X and CO emissions testing will demonstrate continued compliance with emission limits.

Rationale for Selection of Indicator Ranges

- An exhaust gas temperature range of 750°F to 1250°F has been selected based upon the catalyst manufacturer's suggested operating parameters for optimal chemical reaction. This is also the temperature range that is a required operating limitation for rich burn, catalytically controlled engines subject to Subpart ZZZZ.

- A pressure differential change of more than 2 inches of water is based on information from catalyst vendors which indicate such a change may indicate catalyst damage or fouling. This indicator range is also consistent with operating limitations in Subpart ZZZZ.

- The emission rates are established in the construction and Title V operating permit.

MONITORING REQUIREMENTS

	Indicator No. 1	Indicator No. 2	Indicator No. 3
I. Indicator	Temperature of exhaust gas into the catalyst.	Pressure differential across the catalyst.	NO_X and CO measurement.
Measurement Approach	Exhaust gas temperature is monitored continuously as required by Subpart ZZZZ.	The pressure differential between the inlet and outlet of the catalyst is measured as required by Subpart ZZZZ.	NO_X and CO are measured using portable analyzers.
II. Indicator Range	Temperature at the inlet of the catalyst shall be maintained between 750°F and 1250°F as required by Subpart ZZZZ.	The pressure differential across the catalysts shall be maintained within 2 inches of water to the pressure differential measured during the performance test as required by Subpart ZZZZ.	NO_X and CO emissions shall be maintained within the limits identified by the permits.
III. Performance Criteria A. Data Representativeness	Temperature is measured at the inlet of the catalyst by a thermocouple as required by Subpart ZZZZ.	Pressure differential is measured at the inlet and outlet of the catalyst as required by Subpart ZZZZ.	Gases are measured at the exhaust of the catalyst under normal operating conditions.
B. QA/QC Practices and Criteria	Thermocouple calibrated as required by Subpart ZZZZ.	The pressure gauge is calibrated as required by Subpart ZZZZ.	Testing is conducted as required by the permit.
C. Monitoring Frequency	Temperature is monitored continuously as required by Subpart ZZZZ.	Pressure differential is monitored at least once per calendar month as required by Subpart ZZZZ. No monitoring is required for months when engine is not operated.	Quarterly testing is conducted to verify compliance with permit limits.
Data Collection Procedures	Temperature data is recorded as required by Subpart ZZZZ.	Pressure differential data will be recorded at least once per month. A note will be made on months when engine is not operated.	Data is collected as required by the permit.
Averaging Period	4-hour rolling average as required by Subpart ZZZZ.	Not applicable.	Not applicable.

Title V Annual Compliance Certification for Permits P046-R2M1 & P046-R2M2

Title (TV) Permit Administration Amendment

On **December 19, 2018** NMED AQB issued an Administrative Amendment to Operating Permit **P046-R2M1**.

The Administrative Amendment **P046-R2M2** corrected the following:

1. **The Department clarifies the information on page 1 of the permit as follows:**

a.	**Permittee is changed to**	**Harvest Four Corners LLC** **1755 Arroyo Dr** **Bloomfield, NM 87413**
b.	**Facility Owner is**	**Harvest Four Corners LLC** **1755 Arroyo Dr** **Bloomfield, NM 87413**

For this Administrative Amendment **(P046-R2M2)**, the facility can use one Annual Compliance Certification (ACC) Form which will cover both TV Permits.

Although the facility is only required to submit one ACC Form, the facility shall submit **two (2)** separate TV Report Certification Forms. Each form shall list the corresponding TV Permit number, TV Permit Issue Date and Reporting Period.

Please note that this is a one-time authorization. Submittal forms for future Administrative Revisions will be evaluated on a case by case basis.

This form can also be used for future submittals that cover only the **P046-R2M2** permit.

Part 1 - Permit Requirements Certification Table

Annual Compliance Certification Data for Title V Permit No. P046-R2M1 & P046-R2M2

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
FACILITY SPECIFIC REQUIREMENTS **A101 Permit Duration (expiration)** A. This permit P046-R2M1 supersedes permit P046-R2, and will expire on May 16, 2019. Application for renewal of this permit is due twelve (12) months prior to the date of expiration. (20.2.70.300.B.2 and 302.B NMAC)	Permits P046-R2-M1 and P046-R2-M2 expire May 16, 2019. An application for renewal was submitted August 19, 2017 prior to May 16, 2018, demonstrating compliance with this condition. Also, administrative revisions were submitted in October 2019 by affected parties notifying NMED of the change of ownership (resulting in P046-R2-M2).	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A101 Permit Duration (expiration) B. If a renewal permit is not issued prior to the expiration date, the permittee may continue to operate beyond the expiration date, provided that a timely renewal application is submitted no later than twelve (12) months prior to the expiration date. (20.2.70.400.D NMAC)	Permits P046-R2-M1 and P046-R2-M2 expire May 16, 2019. An application for renewal was submitted August 19, 2017 prior to May 16, 2018, demonstrating compliance with this condition. Also, administrative revisions were submitted in October 2019 by affected parties notifying NMED of the change of ownership (resulting in P046-R2-M2).	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A102 Facility: Description B. This facility is located approximately 24 miles east of Blanco, New Mexico in Rio Arriba County. (20.2.70.302.A(7) NMAC)	Semi-annual reports and this ACC are used to determine that the source continues to comply with this condition.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A103 Facility: Applicable Regulations A. The permittee shall comply with all applicable sections of the requirements listed in Table 103.A	Semi-annual reports and the annual emissions inventory are used to demonstrate compliance with the identified applicable requirements of Table 103-A.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?

Table 103.A: Applicable Requirements

Applicable Requirements	Federally Enforceable	Unit No.
NSR Permit No. PSD340-M11 (Per 20.2.72 NMAC)	X	Entire Facility
20.2.1 NMAC General Provisions	X	Entire Facility
20.2.7 NMAC Excess Emissions	X	Entire Facility
20.2.61 NMAC Smoke and Visible Emissions	X	1-10, 15-18, 20, 28, & 37
20.2.70 NMAC Operating Permits	X	Entire Facility
20.2.71 NMAC Operating Permit Emission Fees	X	Entire Facility
20.2.72 NMAC Construction Permit	X	Entire Facility
20.2.73 NMAC Notice of Intent and Emissions Inventory Requirements	X	Entire Facility
20.2.74 NMAC Permits – Prevention of Significant Deterioration (PSD)	X	Entire Facility
20.2.77 NMAC New Source Performance	X	15, 16 (10 may be subject)
20.2.82 NMAC MACT Standards for Source Categories of HAPS	X	17, 18 (10 may be subject)
40 CFR 50 National Ambient Air Quality Standards	X	Entire Facility
40 CFR 60, Subpart A, General Provisions	X	15, 16 (10 may be subject)
40 CFR 60, Subpart GG	X	15, 16
40 CFR 60, Subpart JJJJ	X	10 may be subject
40 CFR 63, Subpart A, General Provisions	X	17, 18 (10 may be subject)
40 CFR 63, Subpart ZZZZ	X	17 & 18 (10 may be subject)
40 CFR 64 Compliance Assurance Monitoring	X	17 & 18

A103 Facility: Applicable Regulations C. Compliance with the terms and conditions of this permit regarding source emissions and operation demonstrate compliance with national ambient air quality standards specified at 40 CFR 50, which were applicable at the time air dispersion modeling was performed for the facility's NSR Permit 340-M9.	Semi-annual reports and this ACC are used to determine that the source continues to comply with the source emissions and operation.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A104 Facility: Regulated Sources	Semi-annual reports and the annual emissions inventory, along with the Management of Change	☐ **Continuous**	☒ **Yes**	☐ **Yes**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
A. Table 104.A lists the emission units authorized for this facility. Emission units identified as insignificant or trivial activities (as defined in 20.2.70.7 NMAC) and/or equipment not regulated pursuant to the Act are not included.	Request (MOCR) procedures, are used to determine that no unauthorized equipment has been added or operated during the applicable period.	☒ **Intermittent**	☐ **No**	☒ **No**

Table 104.A: Regulated Sources List

Unit No.	Source Description	Make Model	Skid Package Serial No.	Engine / Combustor Serial No.	Nameplate / Site Rated Capacity[1]	Manufacture Date[2]
1	4SLB RICE	Waukesha 7042GL	X00387	C-10461/7	1232 hp ISO / 1142 hp Site-rated	12/16/1991
2	4SLB RICE	Waukesha 7042GL	X00388	C-12554/5	1232 hp ISO / 1142 hp Site-rated	02/06/1998
3	4SLB RICE	Waukesha 7042GL	X00389	C-61028/3	1232 hp ISO / 1142 hp Site-rated	04/22/1998
4	4SLB RICE	Waukesha 7042GL	X00390	C-12095/2	1232 hp ISO / 1142 hp Site-rated	07/25/1996
5	4SLB RICE	Waukesha 7042GL	X00391	402862	1232 hp ISO / 1142 hp Site-rated	12/04/1990
6	4SLB RICE	Waukesha 7042GL	X00392	403191	1232 hp ISO / 1142 hp Site-rated	03/03/1991
7	4SLB RICE	Waukesha 7042GL	X00393	269514	1232 hp ISO / 1142 hp Site-rated	09/30/1974
8	4SLB RICE	Waukesha 7042GL	X00394	403116	1232 hp ISO / 1142 hp Site-rated	02/22/1991
9	4SLB RICE	Waukesha 7042GL	X00068	C-10413/5	1232 hp ISO / 1142 hp Site-rated	09/23/1991
10	4SLB RICE	Waukesha 7042GL	TBD	TBD	1232 hp ISO / 1142 hp Site-rated	TBD
15	Turbine	Solar Mars 90 T12000S	MC81315	OHC12-M0031	12,579 hp ISO/ 11,647 hp Site-rated (at 0 ^{o}F)	11/15/1996
16	Turbine	Solar Mars 90 T12000S	MC81316	OHD13-M8920	12,579 hp ISO/ 11,647 hp Site-rated (at 0 ^{o}F)	07/11/1995

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?

17	4SRB RICE	Waukesha L7042G	Not Reported	308280/C	1025 hp ISO / 873 hp Site-rated	5/1/1994
18	4SRB RICE	Waukesha L7042GSI	Not Reported	363966	1480 hp ISO / 1467 hp Site-rated	06/08/1981
20	Heater	BS&B Inc.	13634	NA	0.5 MM BTU/hr	02/16/1981 12/1991 (reconstruction)
28	Heater	Pesco	404851	NA	0.7 MMBtu/hr	2002
37	Condensate Stabilizer Reboiler	Exotherm Corp.	4332	NA	0.8 MMBtu/hr	2000
38	Loading/Un-loading Rack	Not Reported	Not Reported	NA	Not Reported	Not Reported
F1	Fugitive Equipment Leaks	NA	NA	NA	NA	N/A
T91019*	Condensate Tank - Above Ground	American Tank & Steel Corp.	8364	NA	500 bbl	1981
T91020*	Condensate Tank - Above Ground	American Tank & Steel Corp.	3263	NA	300 bbl	5/1969
T91021*	Condensate Tank - Above Ground	American Tank & Steel Corp.	3265	NA	300 bbl	5/1969
T91028*	Condensate Tank - Above Ground	NATCO	8J54101-03	NA	500 bbl	1/24/2008

* Tanks T-91019, 91020, 91021, and 91028 are connected through a manifold. Due to the physical configuration of the tanks, the maximum storage capacity of all four tanks is 62,854 gallons.

1. Site Rated Capacity is the basis for emissions limits if not based on nameplate capacity.
2. All TBD (to be determined) units and like-kind engine replacements must be evaluated for applicability to NSPS and NESHAP requirements.
3. All like-kind engine and other emission unit replacements must be evaluated for PSD applicability in accordance with 20.2.74.200 NMAC.

A105 Facility: Control Equipment A. Table 105.A lists all the pollution control equipment required for this facility. Each emission point is identified by the same number that was assigned to it in the permit application.	Semi-annual reports, periodic emissions tests and the annual emissions inventory, along with the Management of Change Request (MOCR) procedures, are used to determine that control equipment is used as required.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

Table 105.A: Control Equipment List:

Control	Control Description	Pollutant being controlled	Control for

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?

Equipment Unit No.			Unit No.[1]
17	Air/fuel controller & non-selective catalytic converter	NO_X, CO, & VOC	17 Waukesha L7042G
18	Air/fuel controller & non-selective catalytic converter	NO_X, CO, & VOC	18 Waukesha L7042GSI

1 Control for unit number refers to a unit number from the Regulated Equipment List

1. Permit Condition # and Permit Condition	2. Method(s)	3. Frequency	4. Compliance	5. Deviations
A106 Facility: Allowable Emissions A. The following Section lists the emission units, and their allowable emission limits. (40 CFR 50, NSPS 40 CFR 60, Subparts A & GG; NESHAP 40 CFR 63, Subparts A & ZZZZ, 20.2.70.302.A NMAC and NSR Permit PSD 0340-M11).	Semi-annual reports, periodic monitoring, the annual emissions inventory and this ACC are used to determine that the source continues to comply with allowable emissions.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

Table 106.A: Allowable Emissions

Table 106.A: Allowable Emissions

Unit No.	[1]NO_x pph	NO_x tpy	CO pph	CO tpy	VOC pph	VOC tpy	SO_2 pph	SO_2 tpy	TSP pph	TSP tpy	PM_{10} pph	PM_{10} tpy	$PM_{2.5}$ pph	$PM_{2.5}$ tpy
1	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
2	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
3	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
4	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
5	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
6	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
7	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
8	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
9	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
10	3.8	16.5	6.7	29.2	2.5	11.0	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?

15	13.5	59.1	10.8	47.3	3.1	13.6	<[4]	1.3	<[4]	2.6	<[4]	2.6	<[4]	2.6
16	13.5	59.1	10.8	47.3	3.1	13.6	<[4]	1.3	<[4]	2.6	<[4]	2.6	<[4]	2.6
17	2.1	9.3	3.8	16.9	0.4	1.7	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
18	3.6	15.6	6.5	28.3	0.6	2.8	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]	<[4]
38	-[3]	-[3]	-[3]	-[3]	77.5	14.9	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]
T91019, T91020, T91021, T91028[6]	-[3]	-[3]	-[3]	-[3]	*[5]	95.8	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]	-[3]

1 Nitrogen dioxide emissions include all oxides of nitrogen expressed as NO2.
2 Title V annual fee assessments are based on the sum of allowable tons per year emission limits in Sections A106 and A107.
3 "-" indicates the application represented emissions as not expected for this pollutant.
4 "<" indicates the application represented uncontrolled emissions less than 1.0 pph or 1.0 tpy for this pollutant. Allowable limits are not imposed on this level of emissions, except for flares and pollutants with controls.
5 "*" indicates hourly emission limits are not appropriate for this operating situation.
6 Units T91019, T91020, T91021, & T92128 are connected by a manifold, therefore a single VOC emission limit is used.

A106 Facility: Allowable Emissions B. For Units 15 and 16, the permittee shall comply with the NSPS Subpart GG NOx emissions limitation of 150 ppmv at 15% O2, dry basis (40 CFR 63.332).	Initial NSPS Subpart GG NOx compliance testing on Units 15 and 16 was successfully completed in August 1999. Periodic testing is used to demonstrate ongoing compliance with this requirement.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A106 Facility: Allowable Emissions C. For Units 15 and 16, the permittee shall comply with the NSPS Subpart GG SO2 emissions limitation of 0.015% by volume at 15% O2 dry basis or through use of any fuel not exceeding 8000 ppmw (40 CFR 60.333).	The NSPS GG CFMS records document compliance with the applicable SO2 emissions limits.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A106 Facility: Allowable Emissions D. Table 106.B: Best Available Control Technology (BACT) emission limits for Units	Periodic testing is used to determine compliance with this requirement.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
1-9, 15-18				

Table 106.B: Best Available Control Technology (BACT) emission limits for Units 1-9, 15-18

Unit No.	**NOx BACT g/hp-hr**	**NOx BACT ppmvd @ 15% O_2**	**CO BACT g/hp-hr**	**CO BACT ppmvd @ 15% O_2**	**VOC BACT g/hp-hr**	**VOC BACT ppmvd @ 15% O_2**
1-9	**1.5**	**N/A**	**2.65**	**N/A**	**1.0**	**N/A**
15, 16	**N/A**	**42**	**N/A**	**50**	**N/A**	**25**
17, 18	**1.1**	**N/A**	**2.0**	**N/A**	**0.2**	**N/A**

1. Permit Condition	2. Method	3. Frequency	4. Compliance	5. Deviations
A106 Facility: Allowable Emissions E. Units 17 and 18, the permittee shall comply with the NESHAP Subpart ZZZZ formaldehyde emission reduction limit of 76 percent or greater or emission outlet concentration of 35 ppbv or less at 15% O2, dry basis (40 CFR 63.660(a)).	Compliance with the requirements in condtion A201.F (NESHAP ZZZZ) is used to determine compliance with this requirement.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions A. The maximum allowable SSM and Malfunction emissions limits for this facility are listed in Table 107.A and were relied upon by the Department to determine compliance with applicable regulations.	Compliance with these limits are demonstrated through compliance with the requirements of A107.C and A107.D, below. An Excess Emissions Report was submitted in accordance with 20.2.7 NMAC, reporting emissions associated with the Dec. 2, 2018 freezing of the facility's PSV.	☐ **Continuous** ☒ **Intermittent**	☐ **Yes** ☒ **No**	☒ **Yes** ☐ **No**

A107 Facility: Allowable SSM and Malfunction Units, Activities, and Emission Limits[1]

Unit No.	**Description**	**VOC (tpy)**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
SSM from 1-10, 15 & 16 / Compressor & Associated Piping Blowdowns during Routine and Predictable Startup, Shutdown, and/or Maintenance (SSM) / 9.2				
M1 / [1]Venting of Gas Due to Malfunction / 10.0				
1. This authorization does not include VOC combustion emissions.				
A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions B. The authorization of emission limits for startup, shutdown, maintenance, and malfunction does not supersede the requirements to minimize emissions according to Conditions B101.C and B107.A.	Harvest has developed and follows its SSM/M Plan.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions C. SSM VOC Emissions for venting of gas (Units 1-10, 15 & 16) **Requirement**: The permittee shall perform a facility inlet gas analysis once every year (based on a calendar year) and complete the following recordkeeping to demonstrate compliance with routine and predictable startup, shutdown, and maintenance (SSM) emission limits in Table 107.A. (NSR permit 340-M11 Condition A107.C)	Inlet extended gas analyses are collected and reported in the semi-annual reports; routine and predictable SSM events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The permittee shall monitor the permitted routine and predictable startups and shutdowns and scheduled maintenance events.	Routine and predictable SSM events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: To demonstrate compliance, each month records shall be kept of the	Inlet extended gas analyses are collected and reported in the semi-annual reports; routine and	☐ **Continuous**	☒ **Yes**	☐ **Yes**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
cumulative total of VOC emissions due to SSM events during the first 12 months due to SSM events and, thereafter of the monthly rolling 12 month total of VOC emissions due to SSM events. Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis and of the volume of total gas vented in MMscf used to calculate the VOC emissions. The permittee shall record the calculated emissions and parameters used in calculations in accordance with Condition B109, except the requirement in B109.E to record the start and end times of SSM events shall not apply to the venting of known quantities of VOC.	predictable SSM events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☒ **Intermittent**	☐ **No**	☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Inlet extended gas analyses are collected and reported in the semi-annual reports; routine and predictable SSM events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A107 Facility: Allowable Startup, Shutdown, & Maintenance (SSM) and Malfunction Emissions D. Malfunction Emissions (M1- Total Facility) **Requirement**: The permittee shall perform a facility inlet gas analysis once every year (based on a calendar year) and complete the following recordkeeping to demonstrate compliance with malfunction (M1) emission limits in Table 107.A. (NSR permit 340-M11 Condition A107.D)	Inlet extended gas analyses are collected and reported in the semi-annual reports; malfunction events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
Monitoring: The permittee shall monitor all malfunction events that result in VOC emissions including identification of the equipment or activity that is the source of emissions.	Malfunction events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: To demonstrate compliance, each month records shall be kept of the cumulative total of VOC emissions due to malfunction events during the first 12 months and, thereafter of the monthly rolling 12 month total of VOC emissions due to malfunction events. Records shall also be kept of the inlet gas analysis, the percent VOC of the gas based on the most recent gas analysis, of the volume of total gas vented in MMscf used to calculate the VOC emissions, a description of the event, and whether the emissions resulting from the event will be used toward the permitted malfunction emission limit or whether the event is reported under 20.2.7 NMAC. The permittee shall record the calculated emissions and parameters used in calculations in accordance with Condition B109, except the requirement in B109.E to record the start and end times of malfunction events shall not apply to the venting of known quantities of VOC.	Inlet extended gas analyses are collected and reported in the semi-annual reports; malfunction events and VOC emissions are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Inlet extended gas analyses are collected and reported in the semi-annual reports; malfunction events, VOC emissions and record of whether the emissions were used toward M1 or reported under 202.7 NMAC are monitored and recorded, as described, and summarized in the semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
A108 Facility: Hours of Operation A. This facility is authorized for continuous operation. Monitoring, recordkeeping, and reporting are not required to demonstrate compliance with continuous hours of operation.				
A109 Facility: Reporting Schedules A. A Semi-Annual Report of monitoring activities is due within 45 days following the end of every 6-month reporting period. The six month reporting periods start on February 1st and August 1st of each year.	The first semi-annual monitoring activity report of the applicable annual period was submitted to the Department on August 30, 2018, prior to the Sept. 14 due date. Submittal of the semi-annual report associated with this ACC within 45 days of January 31 will demonstrate compliance with this requirement.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A109 Facility: Reporting Schedules B. The Annual Compliance Certification Report is due within 30 days of the end of every 12-month reporting period. The 12-month reporting period starts on February 1st of each year.	This ACC will be submitted within 30 days of January 31.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A110 Facility: Fuel and Fuel Sulfur Requirements (as required) A. Fuel Sulfur Requirements (All combustion units except Units 15 and 16) **Requirement**: All combustion emission units shall combust only natural gas containing no more than 2.0 grains of total sulfur per 100 dry standard cubic feet. (NSR permit 340-M11 Condition A110.A)	Only natural gas, containing no more than 0.25 grains of total sulfur per 100 dscf, is used for fuel.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: None **Recordkeeping**: The permittee shall demonstrate compliance with the natural gas limit on total sulfur content by maintaining	Fuel sulfur is monitored per the CFMS. Results are maintained as required and are included with the applicable semi-annual report.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
records of a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, or fuel gas analysis, specifying the allowable limit or less. If fuel gas analysis is used, the analysis shall not be older than one year.				
Reporting: The permittee shall report in accordance with Section B110.	CFMS results are included with the applicable semi-annual report.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A111 Facility: 20.2.61 NMAC Opacity A. 20.2.61 NMAC Opacity Limit (Units 1-10, 15-18, 20, 28 & 37) **Requirement:** Visible emissions from all stationary combustion emission stacks shall not equal or exceed an opacity of 20 percent in accordance with the requirements at 20.2.61.109 NMAC.	Only natural gas is used for fuel. No visible emissions from combustion emission stacks were observed during the applicable period.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: Use of natural gas fuel constitutes compliance with 20.2.61 NMAC unless opacity equals or exceeds 20% averaged over a 10-minute period. When any visible emissions are observed during operation other than during startup mode, opacity shall be measured over a 10-minute period, in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 9 (EPA Method 9) as required by 20.2.61.114 NMAC, or the operator will be allowed to shut down the equipment to perform maintenance/repair to eliminate the visible emission. Following completion of equipment maintenance/repair, the operator shall conduct visible emission observations following startup in accordance with the following	Only natural gas is used for fuel. No visible emissions from combustion emission stacks were observed during the applicable period.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
procedures: • Visible emissions observations shall be conducted over a 10-minute period during operation after completion of startup mode in accordance with the procedures at 40 CFR 60, Appendix A, Reference Method 22 (EPA Method 22). If no visible emissions are observed, no further action is required. • If any visible emissions are observed during completion of the EPA Method 22 observation, subsequent opacity observations shall be conducted over a 10-minute period, in accordance with the procedures at EPA Method 9 as required by 20.2.61.114 NMAC. For the purposes of this condition, Startup mode is defined as the startup period that is described in the facility's startup plan.				
Recordkeeping: The permittee shall keep records of any visible emissions observations in accordance with the requirements of EPA Method 22, Section 11 and/or of any opacity observations in accordance with the requirements of EPA Method 9, Section 2.	No visible emissions from combustion emission stacks were observed during the applicable period.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	No visible emissions from combustion emission stacks were observed during the applicable period.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
EQUIPMENT SPECIFIC REQUIREMENTS **A201 Engines** A. Initial Compliance Testing (Unit 10) **Requirement**: The permittee shall demonstrate compliance with the allowable	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
emission limits in Table 106.A by performing an initial compliance test. (NSR permit 340-M11 Condition A201.A)				
Monitoring: The permittee shall perform an initial compliance test in accordance with the General Testing Requirements of Section B111. Emission testing is required for NOx and CO. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. The monitoring exemptions of Section B108 do not apply to this requirement.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: The permittee shall maintain records in accordance with the applicable Sections in B109, B110, and B111.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with the applicable Sections in B109, B110, and B111.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A201 Engines B. Periodic Testing (Units 1-10, 17 & 18) **Requirement:** The permittee shall comply with the allowable emission limits in Table 106.A and Table 106.B by performing periodic emissions testing. (NSR permit 340-M11 Condition A201.B)	Periodic testing is used to determine compliance with this requirement. Unit 10 is not currently installed.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The permittee shall test using EPA reference methods or a portable analyzer subject to the requirements and limitations of Section B108, General Monitoring Requirements. For periodic	Periodic testing of NOx and CO is performed, as described, and summarized in the applicable semi-annual reports. During the annual testing, several units failed to meet the g/hp-hr CO emission limit. These	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
testing of NOx and CO emissions tests shall be carried out as described below. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the VOC emission limits. For units with g/hp-hr emission limits, in addition to the requirements stated in Section B108, the engine load shall be calculated by using the following equation: Load (Hp) = $$\frac{\text{Fuel consumption (scfh) x Measured fuel LHV (LHV btu/scf)}}{\text{Mfg's rated BSFC(btu/bhp-hr) at 100\% load or best efficiency}}$$ (a) The monitoring period for Units 1-10 shall be annually, based on a calendar year. (b) The monitoring period for Units 17 & 18 shall be quarterly, based on a calendar quarter defined as: January 1 – March 31, April 1 – June 30, July 1 – September 30 and October 1 – December 31. (c) These tests shall continue based on the existing testing schedule. (d) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period. (e) Follow the General Testing Procedures of Section B111. (f) Fuel consumption may be directly	deviations were reported in accordance with 20.2.7 NMAC.			

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
measured or, upon performance of EPA Methods 1-4 (stack exhaust measurement), the fuel consumption may be calculated by using the equations in EPA Method 19.				
Recordkeeping: The permittee shall maintain records in accordance with Section B109.	Records of periodic testing are maintained as required, and summarized in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Periodic tests are summarized in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A201 Engines C. Air Fuel Ratio (AFR) Controller and Non-Selective Catalytic Converter Operation (Units 17 & 18) **Requirement:** The units shall be equipped and operated with an AFR and a non-selective catalytic converter to control NOx, CO, and VOC emissions. The permittee shall maintain the units according to manufacturer's or suppliers recommended maintenance, including replacement of oxygen sensor as necessary for oxygen-based controllers. (NSR permit 340-M11 Condition A201.C)	Units 17 and 18 are equipped with an not operated without AFR and NSCR converters in place. The units are shut down during periods of catalyst maintenance. The NESHAP ZZZZ semi-annual compliance reports included more information and a certification to this end.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The unit(s) shall be operated with the control device, specifically including during catalyst maintenance periods. During periods of catalyst maintenance, the permittee shall either (1) shut down the engine(s); or (2) replace the catalyst with a functionally equivalent spare to allow the engine to remain in operation.	Units 17 and 18 are equipped with an not operated without AFR and NSCR converters in place. The units are shut down during periods of catalyst maintenance. The NESHAP ZZZZ semi-annual compliance reports included more information and a certification to this end.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: The permittee shall maintain records, including a copy of the	Records of AFR and catalyst maintenance, along with unit operation, are maintained and	☐ **Continuous**	☒ **Yes**	☐ **Yes**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
manufacturer's or supplier's recommended maintenance schedule, in accordance with Section B109.	summarized in the NESHAP ZZZZ semi-annual compliance reports.	☒ **Intermittent**	☐ **No**	☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Records of AFR and catalyst maintenance, along with unit operation, are maintained and summarized in the NESHAP ZZZZ semi-annual compliance reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A201 Engines D. NSPS JJJJ (Unit 10) **Requirement**: The unit will be subject to 40 CFR 60, Subparts A and JJJJ if the source is constructed (ordered) and manufactured after the applicability dates in 40 CFR §60.4230 and the permittee shall comply with the notification requirements in Subpart A and the specific requirements of Subpart JJJJ.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The permittee shall comply with all applicable monitoring requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to §60.4243.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to §60.4245.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall comply with all applicable reporting requirements in 40 CFR 60, Subpart A and Subpart JJJJ, including but not limited to §60.4245.	Unit 10 has not been installed to date.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A201 Engines E. NESHAP ZZZZ (Units 10, 17 & 18) **Requirement**: Units 17 and 18 are subject to 40 CFR 63, Subpart ZZZZ and the permittee	The compliance status with 40 CFR 63, Subpart ZZZZ, is reported semi-annually via ZZZZ compliance status reports. In addition, notification of compliance status (NOCS) reports are submitted upon the completion of all ZZZZ performance tests.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
shall comply with the emission and operating limits in §63.6600(a) (see also Tables 1a and 1b of Subpart ZZZZ) and all other applicable requirements of Subpart A and Subpart ZZZZ. Emission limitations are also listed in Section A106.G. Upon installation of Unit 10, the permittee shall comply with all applicable requirements of 40 CFR 63, Subparts A and ZZZZ.	Unit 10 has not been installed to date.			
Monitoring: The permittee shall comply with all applicable monitoring requirements of 40 CFR 63 Subpart A and Subpart ZZZZ, including monitoring and measuring the pressure drop across the catalyst and measuring catalyst temperature using a continuous parameter monitoring system (CPMS) in accordance with §63.6625(b). Continuous compliance shall be demonstrated in accordance with §63.6635 and §63.6640.	The compliance status with 40 CFR 63, Subpart ZZZZ, is reported semi-annually via ZZZZ compliance status reports. As per 63.6625(b)(5) - the 2018 annual CPMS performance evaluation was not completed, the requirement not being identified when the facility changed owners in October 2018.	☐ **Continuous** ☒ **Intermittent**	☐ **Yes** ☒ **No**	☒ **Yes** ☐ **No**
Recordkeeping: The permittee shall comply with all applicable recordkeeping requirements of 40 CFR 63 Subpart A and Subpart ZZZZ, including but not limited to §63.6655 and §63.10.	The compliance status with 40 CFR 63, Subpart ZZZZ, is reported semi-annually via ZZZZ compliance status reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall comply with all applicable notification and reporting requirements of 40 CFR 63 Subpart A and ZZZZ, including but not limited to §63.6645, §63.6650, §63.9, and §63.10.	Notifications and reports per 40 CFR 63 Subparts A and ZZZZ are submitted, as required, and summarized in the semi-annual ZZZZ compliance status reports and NOCS reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A201 Engines F. Facility CAM Requirements per 40 CFR 64 – Appendix C CAM Plan for Units 17 & 18 **Requirement**: Compliance Assurance Monitoring (CAM) contained in 40 CFR 64	The compliance status with 40 CFR 64, Compliance Assurance Monitoring, is reported semi-annually via the Part 70 Title V Operating Permits in accordance with 40 CFR 64.9(a).	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
applies to the Emissions Units 17 and 18 and the associated AFR controllers and non-selective catalytic converters. The permittee shall meet the requirements of the Provisions in Subparts 64.3(a) and (b); 64.7(d)(2); and 64.8, if applicable.				
Monitoring: The permittee shall monitor the following indicators according to the approved CAM Plan in Appendix C and pursuant to 40 CFR 64.3(a) and (b): • The temperature of the engine exhaust gas flowing into the catalyst • The pressure differential across the catalyst • Quarterly NOX and CO emissions testing The permittee shall continue the monitoring pursuant to 40 CFR 64.7. The permittee shall comply with the measurement approach, performance criteria, and defined excursion for each indicator range or condition that is described in the approved CAM Plan in Appendix C (40 CFR 64.6(c)). The frequency of temperature and pressure differential data collection shall be at least once every 24 hours per 40 CFR 64.3(b)(4)(i) and (iii). The permittee shall respond to any excursion of indicator range or condition in accordance with the CAM Plan and 40 CFR 64.7(d).	The exhaust temperature and the catalyst pressure differential are monitored as per the indicator ranges identified in the CAM Plan as required, and excursions are noted in the applicable reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: The permittee shall meet the recordkeeping requirements of the CAM Plan and of 40 CFR 64.9(b).	Records of the exhaust temperature and the catalyst pressure differential, along with any excursions should they occur, are maintained as required, and summarized in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
Reporting: The permittee shall meet the reporting requirements in 40 CFR 64.9(a) and in Section B110. Pursuant to 40 CFR 64.7(e), the permittee shall document and promptly notify the Department's Permit Section, and modify the permit as necessary, of the need for improved monitoring or the need to modify existing indicator ranges or designated conditions pursuant to 40 CFR 64.7(e).	Records of the exhaust temperature and the catalyst pressure differential, along with any excursions should they occur, are summarized in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A203 Tanks and Loadout A. Condensate throughput for Units 38, T91019, T91020, T91021 & T91028 **Requirement**: To demonstrate compliance with the emission limits in Table 106.A, the total condensate (stabilized and unstabilized) throughput to the facility shall not exceed 3,390,000 gallons per year. No more than 325,920 gallons of condensate per year shall be untreated by the stabilizer and allowed to flash in the condensate storage tanks. (NSR permit 340-M11 Condition A203.A)	Records of condensate throughput and loadout included with the applicable semi-annual reports demonstrate that condensate limits are not exceeded.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: 1) The permittee shall obtain truck loadout tickets for all condensate removed from the condensate storage tanks. 2) The permittee shall monitor the untreated condensate throughput during stabilizer bypass events using the tank liquid level gauge or other equivalent method approved by the Department. The permittee shall record the tank liquid levels before and after	Condensate is monitored as described, and records of condensate throughput/loadout monitoring are included in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
each bypass event to determine the volume of unstabilized condensate transferred.				
Recordkeeping: 1) Using the condensate truck loadout tickets, the permittee shall on a monthly basis determine the monthly and monthly rolling 12-month total condensate throughput. 2) The permittee shall record the dates and times of any condensate transfer events that bypass the condensate stabilizer and shall record the tank liquid levels before and after the bypass transfer event. 3) Using the records of untreated condensate volumes (calculated from the tank liquid level gauge readings), the permittee shall on a monthly basis determine the monthly and monthly rolling 12-month total untreated condensate throughput. 4) The permittee shall maintain records in accordance with Section B109. Working/breathing losses were calculated using TANKS 4.0.9d. Emission rates calculated using the same parameters, but with a different Department approved algorithm that exceeds these values will not be determined non-compliance with this permit.	Condensate is monitored as described, and records of condensate throughput/loadout monitoring are included in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Records of condensate throughput/loadout monitoring are included with the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
A203 Tanks and Loadout B. Condensate stabilizer for Units T91019, T91020, T91021 & T91028 **Requirement:** The condensate stabilizer shall operate within the stabilized temperature and pressure range as shown on the El Cedro Stabilizer Operating Ranges figure dated 4/22/2008, attached as Permit Appendix A. (NSR permit 340-M11 Condition A203.B)	Records of condensate stabilizer parameter monitoring included with the applicable semi-annual reports demonstrate compliance.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The permittee shall continuously monitor the stabilizer operating pressure and stabilizer bottoms temperature during stabilizer operations and compare to the stabilized temperature and pressure range to verify that no tank flash emissions are generated from the stabilized condensate.	Condensate stabilizer parameters are monitored and recorded, as specified, and summarized in the applicble semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: The permittee shall continuously record the stabilizer operating pressure and stabilizer bottoms temperature during stabilizer operations. The permittee shall record and maintain records in accordance with Section B109.	Condensate stabilizer parameters are monitored and recorded, as specified, and summarized in the applicble semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Records of condensate stabilizer parameter monitoring are included in the applicble semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A203 Tanks and Loadout C. Separator pressure for Units T91019, T91020, T91021, & T91028 **Requirement**: To demonstrate compliance with the allowable limits in Table 106.A, the separator pressure shall not exceed 112 psia.	Separator pressure is monitored and recorded monthly and summarized in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
(NSR permit 340-M11 Condition A203.C)				
Monitoring: The permittee shall measure the inlet separator tank pressure monthly under normal operations.	Separator pressure is monitored and recorded monthly and summarized in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: Each month the permittee shall record the monthly separator pressure and use this value to calculate and record a monthly rolling, 12-month average separator pressure. Tank flashing emissions were calculated using HYSYS 2.4.1. Emission rates computed using the same parameters, but with a different Department approved algorithm that exceeds these values will not be deemed non-compliance with this permit. Records shall be maintained in accordance with Section B109.	Records of separator pressure monitoring are included with the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Records of separator pressure monitoring are included with the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A203 Tanks and Loadout D. Tank configuration for Units T91019, T91020, T91021, & T91028 **Requirement:** The condensate storage tanks shall at all times (except during required water draining as documented by using the OSHA lockout/tagout procedures), be connected through a manifold so that incoming and outgoing condensate flows between all four condensate storage tanks maintain an equal liquid level. This configuration results in a maximum capacity for the four tanks of 62,854 gallons. (NSR permit 340-M11	The condensate tank configuration is inspected at least semi-annually to ensure compliance with this requirement.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
Condition A203.D)				
Monitoring: The permittee shall monitor semi-annually, based on a calendar year, verifying the tanks are properly configured.	The condensate tank configuration is inspected at least semi-annually to ensure compliance with this requirement. The inspection for the 1st half of this annual compliance period was missed, as documented in Part 2 of the semi-annual report submitted August 29, 2017. x x x x x x x x x	☐ **Continuous** ☐ **Intermittent**	☐ **Yes** ☐ **No**	☐ **Yes** ☐ **No**
Recordkeeping: The permittee shall maintain records in accordance with Section B109.	Records of tank inspection are maintained as required.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Records of tank inspection are included in the applicable semi-annual report.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A205 Turbines A. Periodic Emissions Test for Units 15 & 16 **Requirement**: The permittee shall comply with the allowable emission limits in Table 106.A and Table 106.B by performing periodic emissions testing. (NSR permit 340-M11 Condition A205.A)	Periodic testing is used to determine compliance with this requirement.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
Monitoring: The permittee shall test using EPA reference methods or a portable analyzer subject to the requirements and limitations of Section B108, General Monitoring Requirements. For periodic testing of NOx and CO, emissions tests shall be carried out as described below. Test results that demonstrate compliance with the CO emission limits shall also be considered to demonstrate compliance with the volatile organic compound (VOC) emission limits. (a) The test period shall be annually, based on a calendar year. (b) These tests shall continue on the existing schedule. (c) All subsequent monitoring shall occur in each succeeding monitoring period. No two monitoring events shall occur closer together in time than 25% of a monitoring period. (d) Follow the General Testing Procedures of Section B111.	Records of the periodic test monitoring are included in the applicable semi-annual reports. Continuous data collection and there were no deviations during the reporting period	☐ **Continuous**	☒ **Yes**	☐ **Yes**
Recordkeeping: The permittee shall maintain periodic emissions test records in accordance with Section B109. The permittee shall also record the results of the periodic emissions tests, including the turbine's fuel flow rate and horsepower at the time of the test. The permittee shall also keep records of all raw data used to determine exhaust gas flow and of all calculations used to determine flow rates and mass emissions rates.	Records of the periodic test monitoring are maintained as required. Yes, the facility was in compliance during the reporting period.	☒ **Intermittent**	☐ **No**	☒ **No**
Reporting: The permittee shall submit reports in accordance with Section B110.	Records of the periodic test monitoring are included in the applicable semi-annual reports. Continuous data collection and there were no	☐ **Continuous**	☒ **Yes**	☐ **Yes**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
	deviations during the reporting period			
A205 Turbines B. 40 CFR 60, Subpart GG for Units 15 & 16 **Requirement:** The units are subject to 40 CFR 60, Subparts A & GG. The permittee shall comply with all applicable requirements of 40 CFR 60, Subpart GG.	The CFMS confirms compliance with the only ongoing NSPS GG monitoring requirements - fuel sulfur.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The permittee shall comply with the monitoring and testing requirements of 40 CFR 60.334 and 60.335.	The CFMS confirms compliance with the only ongoing NSPS GG monitoring requirements - fuel sulfur.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Recordkeeping: The permittee shall comply with the recordkeeping requirements of 40 CFR 60.334 and 40 CFR 60.7.	The CFMS confirms compliance with the only ongoing NSPS GG monitoring requirements - fuel sulfur.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall comply with the reporting requirements of 40 CFR 60.7.	Any applicable reporting under 40 CFR 60.7 would be included in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
A205 Turbines C. Fuel Sulfur Requirements for Units 15 & 16 **Requirement**: All combustion emission units shall combust only natural gas containing no more than 2.0 grains of total sulfur per 100 dry standard cubic feet. Compliance with this limit shall also demonstrate compliance with the GG sulfur limit. (NSR permit 340-M11 Condition A205.C)	The CFMS is used to confirm compliance with the NSR-required fuel sulfur limit.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Monitoring: The permittee shall monitor	The CFMS is used to confirm compliance with the NSR-required fuel sulfur limit.	☐ **Continuous**	☒ **Yes**	☐ **Yes**

1. Permit Condition # and Permit Condition:	2. Method(s) or other information or other facts used to determine the compliance status:	3. What is the frequency of data collection used to determine compliance?	4. Was this facility in compliance with this requirement during the reporting period?	5. Were there any deviations associated with this requirement during the reporting period?
the sulfur fuel content by following the Custom Fuel Monitoring Schedule attached in Appendix B or by maintaining records specified below. Where GPA Standard 2377-86 is used, total sulfur concentration is measured as hydrogen sulfide.		☒ **Intermittent**	☐ **No**	☒ **No**
Recordkeeping: The permittee shall demonstrate compliance with the natural gas limit on total sulfur content by maintaining records of a current, valid purchase contract, tariff sheet or transportation contract for the gaseous or liquid fuel, specifying the allowable limit or less. Alternatively, compliance may be demonstrated by keeping a receipt or invoice from a commercial fuel supplier, with each fuel delivery, which shall include the delivery date, the fuel type delivered, the amount of fuel delivered, and the maximum sulfur content of the fuel. If fuel gas analysis is used, the analysis shall not be older than one year. If the permittee elects to follow the Custom Fuel Monitoring Schedule, records shall be maintained.	Records of CFMS monitoring used to confirm compliance with the NSR-required fuel sulfur limit are maintained as required.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**
Reporting: The permittee shall report in accordance with Section B110.	Reports of CFMS monitoring used to confirm compliance with the NSR-required fuel sulfur limit are included in the applicable semi-annual reports.	☐ **Continuous** ☒ **Intermittent**	☒ **Yes** ☐ **No**	☐ **Yes** ☒ **No**

PART 1 B General Conditions

1. **Have these General Conditions been met during this reporting period?** ***If the section Heading is marked as N/A no remarks are required.*** ***Check only one box per subject heading.*** ***Explain answers in remarks row under subject heading.***	2. Was this facility in compliance with this requirement during the reporting period?		3. Does not apply
B100 Introduction A. N/A	☐ **Yes** Explain Below	☐ **No** Explain Below	☒ **N/A** Explain Below
REMARKS: No requirement.			
B101 Legal A. Permit Terms and Conditions (20.2.70 sections 7, 201.B, 300, 301.B, 302, 405 NMAC) (1) The permittee shall abide by all terms and conditions of this permit, except as allowed under Section 502(b)(10) of the Federal Act, and 20.2.70.302.H.1 NMAC. Any permit noncompliance is grounds for enforcement action, and significant or repetitious noncompliance may result in termination of this permit. Additionally, noncompliance with federally enforceable conditions of this permit constitutes a violation of the Federal Act. (20.2.70.302.A.2.a NMAC) (2) Emissions trading within a facility (20.2.70.302.H.2 NMAC) (a) The Department shall, if an applicant requests it, issue permits that contain terms and conditions allowing for the trading of emissions increases and decreases in the permitted facility solely for the purpose of complying with a federally enforceable emissions cap that is established in the permit in addition to any applicable requirements. Such terms and conditions shall include all terms and conditions required under 20.2.70.302 NMAC to determine compliance. If applicable requirements apply to the requested emissions trading, permit conditions shall be issued only to the extent that the applicable requirements provide for trading such increases and decreases without a case-by-case approval. (b) The applicant shall include in the application proposed replicable procedures and permit terms that ensure the emissions trades are quantifiable and enforceable. The Department shall not include in the emissions trading provisions any emissions units for which emissions are not quantifiable or for which there are no replicable procedures to enforce the emissions trades. The permit shall require compliance with all applicable requirements. (3) It shall not be a defense for the permittee in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (20.2.70.302.A.2.b NMAC) (4) If the Department determines that cause exists to modify, reopen and revise, revoke and reissue, or terminate	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below

this permit, this shall be done in accordance with 20.2.70.405 NMAC. (20.2.70.302.A.2.c NMAC)

(5) The permittee shall furnish any information the Department requests in writing to determine if cause exists for reopening and revising, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. This information shall be furnished within the time period specified by the Department. Additionally, the permittee shall furnish, upon request by the Department, copies of records required by the permit to be maintained by the permittee. (20.2.70.302.A.2.f NMAC)

(6) A request by the permittee that this permit be modified, revoked and reissued, or terminated, or a notification by the permittee of planned changes or anticipated noncompliance, shall not stay any conditions of this permit. (20.2.70.302.A.2.d NMAC)

(7) This permit does not convey property rights of any sort, or any exclusive privilege. (20.2.70.302.A.2.e NMAC)

(8) In the case where an applicant or permittee has submitted information to the Department under a claim of confidentiality, the Department may also require the applicant or permittee to submit a copy of such information directly to the Administrator of the EPA. (20.2.70.301.B NMAC)

(9) The issuance of this permit, or the filing or approval of a compliance plan, does not relieve the permittee from civil or criminal liability for failure to comply with the state or Federal Acts, or any applicable state or federal regulation or law. (20.2.70.302.A.6 NMAC and the New Mexico Air Quality Control Act NMSA 1978, Chapter 74, Article 2)

(10) If any part of this permit is challenged or held invalid, the remainder of the permit terms and conditions are not affected and the permittee shall continue to abide by them. (20.2.70.302.A.1.d NMAC)

(11) A responsible official (as defined in 20.2.70.7.AE NMAC) shall certify the accuracy, truth and completeness of every report and compliance certification submitted to the Department as required by this permit. These certifications shall be part of each document. (20.2.70.300.E NMAC)

(12) Revocation or termination of this permit by the Department terminates the permittee's right to operate this facility. (20.2.70.201.B NMAC)

(13) The permittee shall continue to comply with all applicable requirements. For applicable requirements that will become effective during the term of the permit, the permittee shall meet such requirements on a timely basis. (Sections 300.D.10.c and 302.G.3 of 20.2.70 NMAC)

B. Permit Shield (20.2.70.302.J NMAC)

(1) Compliance with the conditions of this permit shall be deemed to be compliance with any applicable requirements existing as of the date of permit issuance and identified in Table 103.A. The requirements in Table 103.A are applicable to this facility with specific requirements identified for individual emission units.

(2) The Department has determined that the requirements in Table 103.B as identified in the permit application are

not applicable to this source, or they do not impose any conditions in this permit.

(3) This permit shield does not extend to administrative amendments (Subsection A of 20.2.70.404 NMAC), to minor permit modifications (Subsection B of 20.2.70.404 NMAC), to changes made under Section 502(b)(10), changes under Paragraph 1 of subsection H of 20.2.70.302 of the Federal Act, or to permit terms for which notice has been given to reopen or revoke all or part under 20.2.70.405 and 20.2.70.302J(6).

(4) This permit shall, for purposes of the permit shield, identify any requirement specifically identified in the permit application or significant permit modification that the department has determined is not applicable to the source, and state the basis for any such determination. (20.2.70.302.A.1.f NMAC)

C. The owner or operator of a source having an excess emission shall, to the extent practicable, operate the source, including associated air pollution control equipment, in a manner consistent with good air pollutant control practices for minimizing emissions. (20.2.7.109 NMAC). The establishment of allowable malfunction emission limits does not supersede this requirement.

REMARKS:
Facility was in compliance with applicable requirements during the compliance period.

B102 Authority	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below

A. This permit is issued pursuant to the federal Clean Air Act ("Federal Act"), the New Mexico Air Quality Control Act ("State Act") and regulations adopted pursuant to the State and Federal Acts, including Title 20, New Mexico Administrative Code, Chapter 2, Part 70 (20.2.70 NMAC) - Operating Permits.

B. This permit authorizes the operation of this facility. This permit is valid only for the named permittee, owner, and operator. A permit modification is required to change any of those entities.

C. The Department specifies with this permit, terms and conditions upon the operation of this facility to assure compliance with all applicable requirements, as defined in 20.2.70 NMAC at the time this permit is issued. (20.2.70.302.A.1 NMAC)

D. Pursuant to the New Mexico Air Quality Control Act NMSA 1978, Chapter 74, Article 2, all terms and conditions in this permit, including any provisions designed to limit this facility's potential to emit, are enforceable by the Department. All terms and conditions are enforceable by the Administrator of the United States Environmental Protection Agency ("EPA") and citizens under the Federal Act, unless the term or condition is specifically

designated in this permit as not being enforceable under the Federal Act. (20.2.70.302.A.5 NMAC) E. The Department is the Administrator for 40 CFR Parts 60, 61, and 63 pursuant to the Modification and Exceptions of Section 10 of 20.2.77 NMAC (NSPS), 20.2.78 NMAC (NESHAP), and 20.2.82 NMAC (MACT).			
REMARKS: Only the permitted owner operated the facility during the applicable period.			
B103 Annual Fee The permittee shall pay Title V fees to the Department consistent with the fee schedule in 20.2.71 NMAC - Operating Permit Emission Fees. The fees will be assessed and invoiced separately from this permit. (20.2.70.302.A.1.e NMAC)	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below
REMARKS: The 2017 operating permit emissions fees were paid to the Department on May 7, 2018.			
B104 Appeal Procedures (20.2.70.403.A NMAC) A. Any person who participated in a permitting action before the Department and who is adversely affected by such permitting action, may file a petition for a hearing before the Environmental Improvement Board ("board"). The petition shall be made in writing to the board within thirty (30) days from the date notice is given of the Department's action and shall specify the portions of the permitting action to which the petitioner objects, certify that a copy of the petition has been mailed or hand-delivered, and attach a copy of the permitting action for which review is sought. Unless a timely request for a hearing is made, the decision of the Department shall be final. The petition shall be copied simultaneously to the Department upon receipt of the appeal notice. If the petitioner is not the applicant or permittee, the petitioner shall mail or hand-deliver a copy of the petition to the applicant or permittee. The Department shall certify the administrative record to the board. Petitions for a hearing shall be sent to: Secretary, New Mexico Environmental Improvement Board 1190 St. Francis Drive, Runnels Bldg. Rm N2153 Santa Fe, New Mexico 87502	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below
REMARKS: No petitions were filed or received by the Permittee during the compliance period. The Permittee is cognizant of the appeal procedure outline above.			

PART 1 B General Conditions

B105 **Submittal of Reports and Certifications**	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below
A. Stack Test Protocols and Stack Test Reports shall be submitted electronically to Stacktest.AQB@state.nm.us or as directed by the Department. B. Excess Emission Reports shall be submitted as directed by the Department. (20.2.7.110 NMAC) C. Compliance Certification Reports, Semi-Annual monitoring reports, compliance schedule progress reports, and any other compliance status information required by this permit shall be certified by the responsible official and submitted to the mailing address below, or as directed by the Department: Manager, Compliance and Enforcement Section New Mexico Environment Department Air Quality Bureau 525 Camino de los Marquez, Suite 1 Santa Fe, NM 87505-1816 D. Compliance Certification Reports shall also be submitted to the Administrator at the address below (20.2.70.302.E.3 NMAC): Chief, Air Enforcement Section US EPA Region-6, 6EN-A 1445 Ross Avenue, Suite 1200 Dallas, TX 75202-2733			

REMARKS:
Stack test reports, semi-annual reports, ACCs and other compliance status reports and information are submitted to the appropriate regulatory personnel.

B106 NSPS and/or MACT Startup, Shutdown, and Malfunction Operations	☒ Yes Explain Below	☐ No Explain Below	☐ N/A Explain Below
A. If a facility is subject to a NSPS standard in 40 CFR 60, each owner or operator that installs and operates a continuous monitoring device required by a NSPS regulation shall comply with the excess emissions reporting requirements in accordance with 40 CFR 60.7(c). B. If a facility is subject to a NSPS standard in 40 CFR 60, then in accordance with 40 CFR 60.8(c), operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard. C. If a facility is subject to a MACT standard in 40 CFR 63, then the facility is subject to the requirement for a Startup, Shutdown and Malfunction Plan (SSM) under 40 CFR 63.6(e)(3), unless specifically exempted in the applicable subpart. (20.2.70.302.A.1 and A.4 NMAC)			

REMARKS:
NSPS requirements for affected sources (Units 15 and 16, turbines) do not require a continuous monitoring device. No excess emissions of the applicable NSPS emission limit(s) occurred from affected NSPS sources (Units 15 and 16, turbines). An SSM Plan (under 40 CFR 63.6(e)(3)) is not required for the MACT ZZZZ stationary RICE at the facility (Units 10, 17 and 18) per Table 8 of 40 CFR 63, Subpart ZZZZ

A. There are no NSPS requirements to install a CMS device for the affected sources (Units 15 and 16) operating at this facility.

B. No emissions in excess of the applicable NSPS standards occurred from affected sources (Units 15 and 16) during the compliance period.

C. Although some units at the facility are subject to 40 CFR 63 (Subparts A and ZZZZ), a SSM Plan is not required for the affected sources (Units 10, 17 and 18) per Table 8 to Subpart ZZZZ of Part 63.

B107 Startup, Shutdown, and Maintenance Operations	☒ Yes Explain Below	☐ No Explain Below	☐ N/A Explain Below
A. The establishment of permitted startup, shutdown, and maintenance (SSM) emission limits does not supersede the requirements of 20.2.7.14.A NMAC. Except for operations or equipment subject to Condition B106, the permittee shall establish and implement a plan to minimize emissions during routine or predictable start up, shut down, and scheduled maintenance (SSM work practice plan) and shall operate in accordance with the procedures set forth in the plan. (20.2.7.14.A NMAC)			

PART 1 B General Conditions

REMARKS:
The facility is operated in accordance with the Permittee's SSM work practice plan.

B108 General Monitoring Requirements (20.2.70. 302.A and C NMAC)	☒ Yes Explain Below	☐ No Explain Below	☐ N/A Explain Below
A. These requirements do not supersede or relax requirements of federal regulations. B. The following monitoring and/or testing requirements shall be used to determine compliance with applicable requirements and emission limits. Any sampling, whether by portable analyzer or EPA reference method, that measures an emission rate over the applicable averaging period greater than an emission limit in this permit constitutes noncompliance with this permit. The Department may require, at its discretion, additional tests pursuant to EPA Reference Methods at any time, including when sampling by portable analyzer measures an emission rate greater than an emission limit in this permit; but such requirement shall not be construed as a determination that the sampling by portable analyzer does not establish noncompliance with this permit and shall not stay enforcement of such noncompliance based on the sampling by portable analyzer. C. If the emission unit is shutdown at the time when periodic monitoring is due to be accomplished, the permittee is not required to restart the unit for the sole purpose of performing the monitoring. Using electronic or written mail, the permittee shall notify the Department's Enforcement Section of a delay in emission tests prior to the deadline for accomplishing the tests. Upon recommencing operation, the permittee shall submit any pertinent pre-test notification requirements set forth in the current version of the Department's Standard Operating Procedures For Use Of Portable Analyzers in Performance Test, and shall accomplish the monitoring. D. The requirement for monitoring during any monitoring period is based on the percentage of time that the unit has operated. However, to invoke monitoring period exemptions at B108.D(2), hours of operation shall be monitored and recorded. (1) If the emission unit has operated for more than 25% of a monitoring period, then the permittee shall conduct monitoring during that period. (2) If the emission unit has operated for 25% or less of a monitoring period then the monitoring is not required. After two successive periods without monitoring, the permittee shall conduct monitoring during the next period regardless of the time operated during that period, except that for any monitoring period in which a unit has operated for less than 10% of the monitoring period, the period will not be considered as one of the two successive periods. (3) If invoking the monitoring period exemption in B108.D(2), the actual operating time of a unit shall not exceed the monitoring period required by this permit before the required monitoring is performed. For example, if the monitoring period is annual, the operating hours of the unit shall not exceed 8760 hours before monitoring is			

conducted. Regardless of the time that a unit actually operates, a minimum of one of each type of monitoring activity shall be conducted during the five year term of this permit. E. The permittee is not required to report a deviation for any monitoring or testing in a Specific Condition if the deviation was authorized in this General Condition B108. F. For all periodic monitoring events, except when a federal or state regulation is more stringent, three test runs shall be conducted at 90% or greater of the unit's capacity as stated in this permit, or in the permit application if not in the permit, and at additional loads when requested by the Department. If the 90% capacity cannot be achieved, the monitoring will be conducted at the maximum achievable load under prevailing operating conditions except when a federal or state regulation requires more restrictive test conditions. The load and the parameters used to calculate it shall be recorded to document operating conditions and shall be included with the monitoring report. G. When requested by the Department, the permittee shall provide schedules of testing and monitoring activities. Compliance tests from previous NSR and Title V permits may be re-imposed if it is deemed necessary by the Department to determine whether the source is in compliance with applicable regulations or permit conditions. H. If monitoring is new or is in addition to monitoring imposed by an existing applicable requirement, it shall become effective 120 days after the date of permit issuance. For emission units that have not commenced operation, the associated new or additional monitoring shall not apply until 120 days after the units commence operation. All pre-existing monitoring requirements incorporated in this permit shall continue to apply from the date of permit issuance. All monitoring periods, unless stated otherwise in the specific permit condition or federal requirement, shall commence at the beginning of the 12 month reporting period as defined at condition A109.B.			

REMARKS:
Periodic monitoring is performed as required, including the pre-and post-test-notifications, where necessary.

B109 <u>**General Recordkeeping Requirements**</u> (20.2.70.302.D.1 NMAC)	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below
A. The permittee shall maintain records to assure and verify compliance with the terms and conditions of this permit and any applicable requirements that become effective during the term of this permit. The minimum information to be included in these records is (20.2.70.302.D.1 NMAC): (1) Records required for testing and sampling: (a) equipment identification (include make, model and serial number for all tested equipment and emission controls); (b) date(s) and time(s) of sampling or measurements; (c) date(s) analyses were performed; (d) the company or entity that performed the analyses; (e) analytical or test methods used; (f) results of analyses or tests; and (g) operating conditions existing at the time of sampling or measurement. (2) Records required for equipment inspections and/or maintenance required by this permit: (a) equipment identification number (including make, model and serial number) (b) date(s) and time(s) of inspection, maintenance, and/or repair (c) date(s) any subsequent analyses were performed (if applicable) (d) name of the person or qualified entity conducting the inspection, maintenance, and/or repair (e) copy of the equipment manufacturer's or the owner or operator's maintenance or repair recommendations (if required to demonstrate compliance with a permit condition) (f) description of maintenance or repair activities conducted (g) all results of any required parameter readings (h) a description of the physical condition of the equipment as found during any required inspection (i) results of required equipment inspections including a description of any condition which required adjustment to bring the equipment back into compliance and a description of the required adjustments			

B. The permittee shall keep records of all monitoring data, equipment calibration, maintenance, and inspections, Data Acquisition and Handling System (DAHS) if used, reports, and other supporting information required by this permit for at least five (5) years from the time the data was gathered or the reports written. Each record shall clearly identify the emissions unit and/or monitoring equipment, and the date the data was gathered. (20.2.70.302.D.2 NMAC)			
C. If the permittee has applied and received approval for an alternative operating scenario, then the permittee shall maintain a log at the facility, which documents, contemporaneously with any change from one operating scenario to another, the scenario under which the facility is operating. (20.2.70.302.A.3 NMAC)			
D. The permittee shall keep a record describing off permit changes made at this source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under this permit, and the emissions resulting from those changes. (20.2.70.302.I.2 NMAC)			
E. Unless otherwise indicated by Specific Conditions, the permittee shall keep the following records for malfunction emissions and routine and predictable emissions during startup, shutdown, and scheduled maintenance (SSM):			
(1) The owner or operator of a source subject to a permit, shall establish and implement a plan to minimize emissions during routine or predictable startup, shutdown, and scheduled maintenance through work practice standards and good air pollution control practices. This requirement shall not apply to any affected facility defined in and subject to an emissions standard and an equivalent plan under 40 CFR Part 60 (NSPS), 40 CFR Part 63 (MACT), or an equivalent plan under 20.2.72 NMAC - Construction Permits, 20.2.70 NMAC - Operating Permits, 20.2.74 NMAC - Permits - Prevention of Significant Deterioration (PSD), or 20.2.79 NMAC - Permits - Nonattainment Areas. (20.2.7.14.A NMAC) The permittee shall keep records of all sources subject to the plan to minimize emissions during routine or predictable SSM and shall record if the source is subject to an alternative plan and therefore, not subject to the plan requirements under 20.2.7.14.A NMAC.			
(2) If the facility has allowable SSM emission limits in this permit, the permittee shall record all SSM events, including the date, the start time, the end time, a description of the event, and a description of the cause of the event. This record also shall include a copy of the manufacturer's, or equivalent, documentation showing that any maintenance qualified as scheduled. Scheduled maintenance is an activity that occurs at an established frequency pursuant to a written protocol published by the manufacturer or other reliable source. The authorization of allowable SSM emissions does not supersede any applicable federal or state standard. The most stringent requirement applies.			
(3) If the facility has allowable malfunction emission limits in this permit, the permittee shall record all malfunction			

events to be applied against these limits. The permittee shall also include the date, the start time, the end time, and a description of the event. **Malfunction means** any sudden and unavoidable failure of air pollution control equipment or process equipment beyond the control of the owner or operator, including malfunction during startup or shutdown. A failure that is caused entirely or in part by poor maintenance, careless operation, or any other preventable equipment breakdown shall not be considered a malfunction. (20.2.7.7.E NMAC) The authorization of allowable malfunction emissions does not supersede any applicable federal or state standard. The most stringent requirement applies. This authorization only allows the permittee to avoid submitting reports under 20.2.7 NMAC for total annual emissions that are below the authorized malfunction emission limit. (4) The owner or operator of a source shall meet the operational plan defining the measures to be taken to mitigate source emissions during malfunction, startup or shutdown. (20.2.72.203.A(5) NMAC)			
REMARKS: Records are maintained in accordance with the above recordkeeping requirements.			
B110 **<u>General Reporting Requirements</u>** (20.2.70.302.E NMAC) A. Reports of required monitoring activities for this facility shall be submitted to the Department on the schedule in section A109. Monitoring and recordkeeping requirements that are not required by a NSPS or MACT shall be maintained on-site or (for unmanned sites) at the nearest company office, and summarized in the semi-annual reports, unless alternative reporting requirements are specified in the equipment specific requirements section of this permit. B. Reports shall clearly identify the subject equipment showing the emission unit ID number according to this operating permit. In addition, all instances of deviations from permit requirements, including those that occur during emergencies, shall be clearly identified in the reports required by section A109. (20.2.70.302.E.1 NMAC) C. The permittee shall submit reports of all deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. These reports shall be submitted as follows: (1) Deviations resulting in excess emissions as defined in 20.2.7.7 NMAC (including those classified as emergencies as defined in section B114.A) shall be reported in accordance with the timelines specified by 20.2.7.110 NMAC and in the semi-annual reports required in section A109. (20.2.70.302.E.2 NMAC) (2) All other deviations shall be reported in the semi-annual reports required in section A109. (20.2.70.302.E.2 NMAC).	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below

D. The permittee shall submit reports of excess emissions in accordance with 20.2.7.110.A NMAC.

E. Results of emission tests and monitoring for each pollutant (except opacity) shall be reported in pounds per hour (unless otherwise specified) and tons per year. Opacity shall be reported in percent. The number of significant figures corresponding to the full accuracy inherent in the testing instrument or Method test used to obtain the data shall be used to calculate and report test results in accordance with 20.2.1.116.B and C NMAC. Upon request by the Department, CEMS and other tabular data shall be submitted in editable, MS Excel format.

F. At such time as new units are installed as authorized by the applicable NSR Permit, the permittee shall fulfill the notification requirements in the NSR permit.

G. Periodic Emissions Test Reporting: The permittee shall report semi-annually a summary of the test results.

H. The permittee shall submit an emissions inventory for this facility annually. The emissions inventory shall be submitted by the later of April 1 or within 90 days after the Department makes such request. (20.2.73 NMAC and 20.2.70.302.A.1 NMAC)

(1) The facility emits, or has the potential to emit, 5 tons per year or more of lead or lead compounds, or 100 tons per year or more of PM10, PM2.5, sulfur oxides, nitrogen oxides, carbon monoxide, or volatile organic compounds.

(2) The facility is defined as a major source of hazardous air pollutants under 20.2.70 NMAC (Operating Permits).

(3) The facility is located in an ozone nonattainment area and which emits, or has the potential to emit, 25 tons per year or more of nitrogen oxides or volatile organic compounds.

(4) Upon request by the department.

(5) The permittee shall submit the emissions inventory report by April 1 of each year, unless a different deadline is specified by the current operating permit.

I. Emissions trading within a facility (20.2.70.302.H.2 NMAC)

(1) For each such change, the permittee shall provide written notification to the department and the administrator at least seven (7) days in advance of the proposed changes. Such notification shall state when the change will occur and shall describe the changes in emissions that will result and how these increases and decreases in emissions will comply with the terms and conditions of the permit.

(2) The permittee and department shall attach each such notice to their copy of the relevant permit.

PART 1 B General Conditions

REMARKS:
Reports are submitted in accordance with the above reporting requirements

B111 General Testing Requirements	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below
A. Compliance Tests (1) Compliance test requirements from previous permits (if any) are still in effect, unless the tests have been satisfactorily completed. Compliance tests may be re-imposed if it is deemed necessary by the Department to determine whether the source is in compliance with applicable regulations or permit conditions. (20.2.72 NMAC Sections 210.C and 213) (2) Compliance tests shall be conducted within sixty (60) days after the unit(s) achieve the maximum normal production rate. If the maximum normal production rate does not occur within one hundred twenty (120) days of source startup, then the tests must be conducted no later than one hundred eighty (180) days after initial startup of the source. (3) Unless otherwise indicated by Specific Conditions or regulatory requirements, the default time period for each test run shall be **at least** 60 minutes and each performance test shall consist of three separate runs using the applicable test method. For the purpose of determining compliance with an applicable emission limit, the arithmetic mean of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the owner or operator's control, compliance may, upon the Department approval, be determined using the arithmetic mean of the results of the two other runs. (4) Testing of emissions shall be conducted with the emissions unit operating at 90 to 100 percent of the maximum operating rate allowed by the permit. If it is not possible to test at that rate, the source may test at a lower operating rate, subject to the approval of the Department. (5) Testing performed at less than 90 percent of permitted capacity will limit emission unit operation to 110 percent of the tested capacity until a new test is conducted. (6) If conditions change such that unit operation above 110 percent of tested capacity is possible, the source must submit a protocol to the Department within 30 days of such change to conduct a new emissions test. B. EPA Reference Method Tests			

(1) All compliance tests required by this permit, unless otherwise specified by Specific Conditions of this permit, shall be conducted in accordance with the requirements of 40 CFR 60, Subpart A, General Provisions, and the following EPA Reference Methods as specified by 40 CFR 60, Appendix A: (a) Methods 1 through 4 for stack gas flowrate (b) Method 5 for TSP (c) Method 6C and 19 for SO_2 (d) Method 7E for NO_X (test results shall be expressed as nitrogen dioxide (NO_2) using a molecular weight of 46 lb/lb-mol in all calculations (each ppm of NO/NO_2 is equivalent to 1.194 x 10-7 lb/SCF) (e) Method 9 for opacity (f) Method 10 for CO (g) Method 19 may be used in lieu of Methods 1-4 for stack gas flowrate upon approval of the Department. A justification for this proposal must be provided along with a contemporaneous fuel gas analysis (preferably on the day of the test) and a recent fuel flow meter calibration certificate (within the most recent quarter). (h) Method 7E or 20 for Turbines per 60.335 or 60.4400 (i) Method 29 for Metals (j) Method 201A for filterable PM_{10} and $PM_{2.5}$ (k) Method 202 for condensable PM (l) Method 320 for organic Hazardous Air Pollutants (HAPs) (m) Method 25A for VOC reduction efficiency (n) Method 30B for Mercury (2) Alternative test method(s) may be used if the Department approves the change. C. Periodic Monitoring and Portable Analyzer Requirements (1) Periodic emissions tests (periodic monitoring) may be conducted in accordance with EPA Reference Methods or by utilizing a portable analyzer. Periodic monitoring utilizing a portable analyzer shall be conducted in accordance with the requirements of the current version of ASTM D 6522. However, if a facility has met a previously approved Department criterion for portable analyzers, the analyzer may be operated in accordance with that criterion until it is replaced.			

(2) Unless otherwise indicated by Specific Conditions or regulatory requirements, the default time period for each test run shall be **at least** 20 minutes.

Each performance test shall consist of three separate runs. The arithmetic mean of results of the three runs shall be used to determine compliance with the applicable emission limit.

(3) Testing of emissions shall be conducted in accordance with the requirements at Section B108.F.

(4) During emissions tests, pollutant and diluent concentration shall be monitored and recorded. Fuel flow rate shall be monitored and recorded if stack gas flow rate is determined utilizing Method 19. This information shall be included with the test report furnished to the Department.

(5) Stack gas flow rate shall be calculated in accordance with 40 CFR 60, Appendix A, Method 19 utilizing fuel flow rate (scf) determined by a dedicated fuel flow meter and fuel heating value (Btu/scf) determined from a fuel sample obtained preferably during the day of the test, but no earlier than three months prior to the test date. Alternatively, stack gas flow rate may be determined by using EPA Methods 1-4.

D. Test Procedures:

(1) The permittee shall notify the Department's Program Manager, Compliance and Enforcement Section at least thirty (30) days before the test to afford a representative of the Department an opportunity to be present at the test. (40CFR 60.8(d))

(2) Equipment shall be tested in the "as found" condition. Equipment may not be adjusted or tuned prior to any test for the purpose of lowering emissions, and then returned to previous settings or operating conditions after the test is complete.

(3) Contents of test notifications, protocols and test reports shall conform to the format specified by the Department's Universal Test Notification, Protocol and Report Form and Instructions. Current forms and instructions are posted to NMED's Air Quality web site under Compliance and Enforcement Testing.

(4) The permittee shall provide (a) sampling ports adequate for the test methods applicable to the facility, (b) safe sampling platforms, (c) safe access to sampling platforms and (d) utilities for sampling and testing equipment.

(5) The stack shall be of sufficient height and diameter and the sample ports shall be located so that a representative test of the emissions can be performed in accordance with the requirements of EPA Method 1 or ASTM D 6522-00 as applicable.

(6) Where necessary to prevent cyclonic flow in the stack, flow straighteners shall be installed

(7) Unless otherwise indicated by Specific Conditions or regulatory requirements, test reports shall be submitted to the Department no later than 30 days after completion of the test.

REMARKS:

Testing that has occurred during the compliance period (periodic monitoring) was performed in accordance with the the applicable requirements above.

B112 Compliance	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below
A. The Department shall be given the right to enter the facility at all reasonable times to verify the terms and conditions of this permit. Required records shall be organized by date and subject matter and shall at all times be readily available for inspection. The permittee, upon verbal or written request from an authorized representative of the Department who appears at the facility, shall immediately produce for inspection or copying any records required to be maintained at the facility. Upon written request at other times, the permittee shall deliver to the Department paper or electronic copies of any and all required records maintained on site or at an off-site location. Requested records shall be copied and delivered at the permittee's expense within three business days from receipt of request unless the Department allows additional time. Required records may include records required by permit and other information necessary to demonstrate compliance with terms and conditions of this permit. (NMSA 1978, Section 74-2-13) B. A copy of the most recent permit(s) issued by the Department shall be kept at the permitted facility or (for unmanned sites) at the nearest company office and shall be made available to Department personnel for inspection upon request. (20.2.70.302.G.3 NMAC) C. Emissions limits associated with the energy input of a Unit, i.e. lb/MMBtu, shall apply at all times unless stated otherwise in a Specific Condition of this permit. The averaging time for each emissions limit, including those based on energy input of a Unit (i.e. lb/MMBtu) is one (1) hour unless stated otherwise in a Specific Condition of this permit or in the applicable requirement that establishes the limit. (20.2.70.302.A.1 and G.3 NMAC) D. The permittee shall submit compliance certification reports certifying the compliance status of this facility with respect to all permit terms and conditions, including applicable requirements. These reports shall be made on the pre-populated Compliance Certification Report Form that is provided to the permittee by the Department, and shall be submitted to the Department and to EPA at least every 12 months. For the most current form, please contact the Compliance Reports Group at submittals.aqb@state.nm.us. For additional reporting guidance see https://www.env.nm.gov/air-quality/compliance-submittal-forms/. (20.2.70.302.E.3 NMAC) E. The permittee shall allow representatives of the Department, upon presentation of credentials and other documents as may be required by law, to do the following (20.2.70.302.G.1 NMAC):			

(1) enter the permittee's premises where a source or emission unit is located, or where records that are required by this permit to be maintained are kept; (2) have access to and copy, at reasonable times, any records that are required by this permit to be maintained; (3) inspect any facilities, equipment (including monitoring and air pollution control equipment), work practices or operations regulated or required under this permit; and (4) sample or monitor any substances or parameters for the purpose of assuring compliance with this permit or applicable requirements or as otherwise authorized by the Federal Act.			
REMARKS: Records and permits are maintained as required. Compliance certification reports are submitted as required. Representatives have not been denied access to the facility or records.			
B113 Permit Reopening and Revocation A. This permit will be reopened and revised when any one of the following conditions occurs, and may be revoked and reissued when A(3) or A(4) occurs. (20.2.70.405.A.1 NMAC) (1) Additional applicable requirements under the Federal Act become applicable to a major source three (3) or more years before the expiration date of this permit. If the effective date of the requirement is later than the expiration date of this permit, then the permit is not required to be reopened unless the original permit or any of its terms and conditions has been extended due to the Department's failure to take timely action on a request by the permittee to renew this permit. (2) Additional requirements, including excess emissions requirements, become applicable to this source under Title IV of the Federal Act (the acid rain program). Upon approval by the Administrator, excess emissions offset plans will be incorporated into this permit. (3) The Department or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the terms and conditions of the permit. (4) The Department or the Administrator determines that the permit must be revised or revoked and reissued to assure compliance with an applicable requirement.	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below

B. Proceedings to reopen or revoke this permit shall affect only those parts of this permit for which cause to reopen or revoke exists. Emissions units for which permit conditions have been revoked shall not be operated until new permit conditions have been issued for them. (20.2.70.405.A.2 NMAC)			

REMARKS:
No conditions have occurred during the compliance period to cause the permit to be reopened, revoked, reissued or revised. The Permittee is cognizant of the above requirements regarding when to reopen or revise the permit.

B114 Emergencies (20.2.70.304 NMAC)	☒ **Yes** Explain Below	☐ **No** Explain Below	☐ **N/A** Explain Below

A. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the permittee, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventive maintenance, or careless or improper operation.

B. An emergency constitutes an affirmative defense to an action brought for noncompliance with technology-based emission limitations contained in this permit if the permittee has demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An emergency occurred and that the permittee can identify the cause(s) of the emergency;

(2) This facility was at the time being properly operated;

(3) During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit; and

(4) The permittee submitted notice of the emergency to the Department within 2 working days of the time when emission limitations were exceeded due to the emergency. This notice fulfills the requirement of 20.2.70.302.E.2 NMAC. This notice must contain a description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

C. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden

of proof. D. This provision is in addition to any emergency or upset provision contained in any applicable requirement.			
REMARKS: No emergencies occurred during this compliance period. The Permittee is cognizant of the above requirements regarding an emergency and an affirmative defense.			
B115 **Stratospheric Ozone** (20.2.70.302.A.1 NMAC) A. If this facility is subject to 40 CFR 82, Subpart F, the permittee shall comply with the following standards for recycling and emissions reductions: (1) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices, except for motor vehicle air conditioners (MVAC) and MVAC-like appliances. (40 CFR 82.156) (2) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment. (40 CFR 82.158) (3) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program. (40 CFR 82.161)	☐ **Yes** Explain Below	☐ **No** Explain Below	☒ **N/A** Explain Below
REMARKS: The Permittee does not service, maintaine or repair appliances containing refrigerants. Appliance maintenance, service, repair or disposal is contracted to an approved, certified contractor per 40 CFR 82, Subpart F.			
B116 **Acid Rain Sources** (20.2.70.302.A.9 NMAC) A. If this facility is subject to the federal acid rain program under 40 CFR 72, this section applies. B. Where an applicable requirement of the Federal Act is more stringent than an applicable requirement of regulations promulgated under Title IV of the Federal Act, both provisions are incorporated into this permit and are federally enforceable.	☐ **Yes** Explain Below	☐ **No** Explain Below	☒ **N/A** Explain Below

C. Emissions exceeding any allowances held by the permittee under Title IV of the Federal Act or the regulations promulgated thereunder are prohibited. D. No modification of this permit is required for increases in emissions that are authorized by allowances acquired pursuant to the acid rain program, provided that such increases do not require a permit modification under any other applicable requirement. E. The permittee may not use allowances as a defense to noncompliance with any other applicable requirement. F. No limit is placed on the number of allowances held by the acid rain source. Any such allowance shall be accounted for according to the procedures established in regulations promulgated under Title IV of the Federal Act. G. The acid rain permit is an enclosure of this operating permit.			
REMARKS: The facililty is not subject to 40 CFR 72.			
B117 **<u>Risk Management Plan</u>** (20.2.70.302.A.1 NMAC) A. If this facility is subject to the federal risk management program under 40 CFR 68, this section applies. B. The owner or operator shall certify annually that they have developed and implemented a RMP and are in compliance with 40 CFR 68. C. If the owner or operator of the facility has not developed and submitted a risk management plan according to 40 CFR 68.150, the owner or operator shall provide a compliance schedule for the development and implementation of the plan. The plan shall describe, in detail, procedures for assessing the accidental release hazard, preventing accidental releases, and developing an emergency response plan to an accidental release. The plan shall be submitted in a method and format to a central point as specified by EPA prior to the date specified in 40 CFR 68.150.b.	☐ **Yes** Explain Below	☐ **No** Explain Below	☒ **N/A** Explain Below
REMARKS: The facililty is not subject to 40 CFR 68.			

PART 1 B General Conditions

Part 2

ACC Deviation Summary Report for Permit P046-R2M1 & P046-R2M2

1. Are there any deviations identified in Part 1, Column 5. If NO, no further information is required on Part 2 of this form. If YES, answer question 2 below.	☒ **Yes** ☐ **No**
2. Have all deviations identified in Part 1, Column 5 been reported to the NMED as required by 20.2.7 NMAC or in a Semi-Annual Monitoring Report (20.2.70.302.E.1 NMAC)? If Yes, no further information is required on Part 2 of this form. If No, answer question 3 below and enter the required information in the Deviation Summary Table for each deviation not yet reported to the NMED.	☒ **Yes** ☐ **No**
3. Did any of the deviations result in excess emissions? For excess emissions deviations that have not previously been reported per requirements of 20.2.7 NMAC, a completed Excess Emission Form for each deviation must be attached to this report.	☐ **Yes** ☐ **No**

Deviation Summary Table for deviations not yet reported.

No.	Applicable Requirement (Include Rule Citation)	Emission Unit ID(s)	Cause of Deviation	Corrective Action Taken
1				
2				
3				
4				
5				

Deviation Summary Table (cont.)

	Deviation Started		Deviation Ended					Did you attach an excess emission form?
No.	Date	Time	Date	Time	Pollutant	Monitoring Method	Amount of Emissions	
1								☐ **Yes** ☐ **No**
2								☐ **Yes** ☐ **No**
3								☐ **Yes** ☐ **No**
4								☐ **Yes** ☐ **No**
5								☐ **Yes** ☐ **No**

Section 21

Addendum for Landfill Applications

Landfill Applications are not required to complete Sections 1-C Input Capacity and Production Rate, 1-E Operating Schedule, 17 Compliance Test History, and 18 Streamline Applications. Section 12 – PSD Applicability is required only for Landfills with Gas Collection and Control Systems and/or landfills with other non-fugitive stationary sources of air emissions such as engines, turbines, boilers, heaters. All other Sections of the Universal Application Form are required.

EPA Background Information for MSW Landfill Air Quality Regulations:
https://www3.epa.gov/airtoxics/landfill/landflpg.html

NM Solid Waste Bureau Website: https://www.env.nm.gov/swb/

Not applicable, as this facility is not a landfill.

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Section 22

Certification

Company Name: Harvest Four Corners, LLC

I, Travis Jones, hereby certify that the information and data submitted in this application are true and as accurate as possible, to the best of my knowledge and professional expertise and experience. Signed this 5th day of May, 2020, upon my oath or affirmation, before a notary of the State of New Mexico.

*Signature

5/5/2020
Date

Travis Jones
Printed Name

EHS Manager
Title

Scribed and sworn before me on this 5th day of May, 2020.

My authorization as a notary of the State of New Mexico expires on the 4th day of April, 2022.

Rebecca L. Beard
Notary's Signature

5/5/20
Date

Rebecca L. Beard
Notary's Printed Name

*For Title V applications, the signature must be of the Responsible Official as defined in 20.2.70.7.AD NMAC.